

Spelling variation in the Latin text of Codex Bezae

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1. Introduction

This document consists of a survey of spelling variation in the Latin text of Codex Bezae relative to the “standard” Latin spellings such as those instantiated in editions of the Vulgate, with the goal of identifying patterns of variation attributable to particular factors.

The focus of the survey is on variant spellings; variation arising from the use of different lexical items or different syntactic constructions is not considered. Most spelling variants appear to arise from phonological factors such as sound change (diachronically or as a result of borrowing), or in some cases from graphological factors relating specifically to the psychology of writing. Various factors which may influence such variation have been considered, principally the phonological and graphological environment of a change and the effects on certain morphemes (whether lexemes or inflectional or derivational affixes). The names of people and places, which as loanwords often show unusual patterns of variation between the manuscripts, are sometimes considered separately from other words. Phonological aspects not marked in writing, such as stress and vowel length, have not been considered, although it is possible they could affect the patterns of variation; neither have possible effects of letters in neighbouring words been considered.

Many instances of Codex Bezae employing a different spelling to the Vulgate are probably best regarded as morphological rather than phonological or graphological in nature, arising from the use of a different part of the same paradigm whilst maintaining a similar meaning rather than simply substituting one letter for another. These types of variation are excluded here. In some instances of confusion of two parts of a paradigm, however, a non-morphological explanation is considered more likely as the meanings of the two forms are sufficiently distinct that a straightforward confusion of similar sounds would appear more plausible than the deliberate use of one inflected form in the place of another. These instances are covered here and are noted as such in the relevant sections. Also included are some substitutions that could potentially be explained as a word being reanalysed as belonging to a different conjugation or declension; though this explanation should be borne in mind in a small number of instances as a competitor for the phonological explanation, variants of this sort are not treated any differently here.

All figures in this document are based on a survey of the whole of Codex Bezae. It should be noted that there may be a small degree of inaccuracy in these figures owing to human error in identifying and counting variant spellings; this should not, however, be of great import. Where a substitution occurs twice in a single word (e.g. **bibam** > **uiuam**), this is counted as two instances of that substitution. Percentages are typically rounded.

The following conventions are utilised in this survey:

- Letters or short sequences of letters are typically enclosed in angle brackets, e.g. , <ae>. Types of substitutions, however, may be referred to with bolded letters separated by an arrow, e.g. **b** > **u** to denote the writing of <u> for Vulgate .

- Occurring Latin wordforms are typically given in bold lowercase, e.g. **uidebitis**. Where the reference is to a lexical headword encompassing a variety of actually occurring inflected forms, this is given in bold capitals, e.g. **VIDEO**.
- Words given in square brackets denote a standard spelling of a word in Codex Bezae when that word does not occur in the corresponding part of the Vulgate, e.g. [inchoauit].
- The following abbreviations are used: “Mt” for the Gospel of Matthew, “Mk” for the Gospel of Mark, “Lk” for the Gospel of Luke, “Jn” for the Gospel of John, and “Ac” for the Book of Acts.

2. Variation between <u> and

2.1. <u> for Vulgate

There about 155 instances of this substitution. Excluding instances where it is written in place of Vulgate <u> (see section 2.2), the letter occurs in the manuscript around 5708 times. Thus overall only around 2.7% of instances of are affected by the substitution.

2.1.1. Immediate phonological/graphological environment

The table below gives the number of occurrences of the substitution **b > u** in the contexts of the immediately preceding and following letters between which it occurs (such contexts where it does not occur are not included). # represents a word boundary, i.e. occurs where a substitution takes place at the start of a word (this substitution never occurs word-finally). A dash indicates that there are zero instances of the substitution in the environment in question. Only environments in which the substitution occurs are included in the table. Superscript numerals refer to the notes given below the table.

FOLLOWING LETTER	PRECEDING LETTER						
	#	a	e	i	o	r	
a	1	7 ¹	-	1	-	-	
e	4	7	1	12 ²	1	-	
i	14 ³	44 ⁴	13 ⁵	8 ⁶	2	1	
o	4 ⁷	30 ⁸	-	-	-	-	
u	-	-	-	-	-	1	

Notes – the following observations seem particularly significant:

1. All instances of the substitution in this environment affect inflectional endings.
2. This figure includes 10 instances affecting forms based on the root **LIBER-**.
3. This figure includes 12 instances affecting forms of **BIBO**.
4. This figure includes 32 instances affecting inflectional endings.
5. This figure includes 11 instances affecting inflectional endings, of which 9 occur in forms of **VIDEO**.
6. This figure includes 6 instances affecting forms of **BIBO**.
7. All instances of the substitution in this environment affect forms of **BONVS**.
8. This figure includes 12 instances affecting forms of **PARABOLA** and 14 instances affecting inflectional endings.

The following table gives the number of occurrences of unchanged in the environments listed above. Examples of **u > b** have been subtracted. Grey cells correspond to environments where **b > u** does not occur.

FOLLOWING LETTER	PRECEDING LETTER						
	#	a	e	i	o	r	
a	140	373	673	86	18	192	
e	137	353	35	55	4	12	
i	43	276	56	295	533	33	
o	81	92	1	2	6	46	
u	3	80	83	622	54	115	

Thus is replaced by <u> with the following percentage frequencies in the following environments (and with 0% frequency in all other environments – a dash in the table below also indicates 0% frequency):

FOLLOWING LETTER	PRECEDING LETTER						
	#	a	e	i	o	r	
a	1%	2%	-	1%	-	-	
e	3%	2%	3%	18%	20%	-	
i	25%	14%	19%	3%	1%	3%	
o	5%	25%	-	-	-	-	
u	-	-	-	-	-	1%	

Overall only about 40% of instances of occur in environments which are ever subject to change.

2.1.2. Wider phonological/graphological environment within the word

The table below gives data relating to five letters, namely those corresponding to labial sounds, which it was thought might affect the rate of the **b > u** substitution. These are given in the first column

The second column gives approximately the total number of occurrences of the letter in the entire manuscript. The third gives an estimate¹ of the probability, P_7 , with which the letter is likely to occur in a random selection of seven letters (calculated as $P_7 = 1 - (1 - \frac{n}{388000})^7$, where n is the figure in the previous column and 388000 is an approximation of the total number of letters in the MS).

The fourth column gives the number of words containing the substitution **b > u** that also include the letter in question (not including the letter affected by the change). The fifth contains this figure as a percentage of the total number of words containing this substitution (where a substitution occurs twice in a word, this is counted as two occurrences of that word for current purposes).

	Entire MS		b > u words	
	Count, n	P_7	Count	Frequency
p	8800	15%	16	11%
b	6600	11%	29	19%
m	21150	32%	27	18%
f	3500	6%	2	1%
u	24300	36%	44	29%

¹ A more accurate estimate would take into account that when letters appear in sequence there are restrictions on the ways in which they may combine, but the estimate given here is probably sufficient for the current purpose.

Any of the above		72%	95 ²	63%
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The reason the P_7 figures are given is that the average length of the words undergoing the **b > u** substitution is 8 letters; thus there will be an average of 7 letters in each word in addition to the substituted letter, and P_7 serves as a rough estimate of the chance of a word undergoing this substitution containing the letter in question assuming the substitution is not affected by the presence or absence of that letter in the word.

In general the difference between P_7 for a given letter and the actual frequency of that letter in words containing the substitution **b > u** is probably not significant. However, words containing another seem 1.64 times more likely to undergo the substitution than would be expected if there was no effect from other letters, and the substitution is apparently only 0.55 times as likely in words containing <m>. There is also a much lower frequency of substitutions in words containing <f> than might be expected (it only happens 0.22 times as often as P_7 predicts), but this may not be significant owing to the relative scarcity of <f> overall.

2.1.3. Inflectional endings

In about 73 instances (or 48% of the total) of the substitution **b > u** an inflectional ending is affected. Only verbal endings seem to be affected by this substitution.

There are 26 instances of the 3ps. future indicative active **-bit** being replaced with **-uit** (i.e. the same form as the 3ps. *perfect* indicative active). This substitution accounts for 17% of **b > u** substitutions overall. Around 15% of instances of **-bit** undergo this change.

There are three other examples involving the confusion of future and perfect forms: **adsimilabimus > adsimilauimus** (Mk 4:30), **condemnaberis > condemnaueris** and **iustificaberis > iustificaueris** (both Mt 12:37). Note that **-bimus** is rare in the MS (about 7 instances overall) and unchanged **-beris** does not seem to occur at all.

The following other endings are also affected (the rate at which these endings are affected by this substitution is given in brackets):

- (1) **-bo** – 14 instances (including 6 instances of **dabo > dauo**) (24%)
- (2) **-bitis** – 11 instances (including 7 instances of **uidebitis > uideuitis**) (27%)
- (3) **-bis** – 6 instances (20%)
- (4) **-bitur** – 6 instances (13%)
- (5) **-bat** – 2 instances (1%)
- (6) **-batur** – 2 instances (2%)
- (7) **-bor** – 1 instance (14%)

Substitutions affecting verbal endings are mostly restricted to the first conjugation, where the suffixes above are preceded by **-a-**. There are only 11 exceptions (16% of substitutions of this type affecting inflections), of which 9 affect forms of **VIDEO**.

2.1.4. Lexical items

² This figure is not a sum of the above figures as several words contain more than one of the letters in question, in addition to the substituted letter.

The following lexical items undergo the **b > u** substitution three or more times (the lexeme is given in capitals; the forms in which it undergoes the substitution in lower-case, with substitutions reversed):

- **ADNVNTIO** adnuntiabit adnuntiabo
- **BIBO** bibam bibens bibere biberitis bibit bibiturus
- **BONUS** bonus bone
- **DO** dabit dabimus dabo
- **INTERROGO** interrogabo
- **LABORO** laborastis laboratis laborauerunt
- **LIBER** liberi (**libertinorum** and **liberatio** are also affected)
- **LIBERO** libera liberat liberabantur liberabit
- **PARABOLA** parabolam parabolis parabolis
- **VIDEO** uidebit uidebitis
- **VOCO** uocabis uocabitur

Overall 52% of instances of this substitution affect one of these lexical items. 41% affect one of **BIBO**, **DO**, **LIBERO**, **PARABOLA** or **VIDEO**.

The table below lists the number of times the forms listed above undergoes the substitution, the number of times it occurs unaffected in the MS, and the frequency with which it is changed. **DO** is not included in the table; however, the change only affects its forms in **dab-**, of which there are 18 affected and 41 unaffected occurrences (a rate of change of 29%).

Lexical item	b > u	No b > u	Frequency b > u
ADNVNTIO	3	28	10%
BIBO	21	41	34%
BONUS	4	75	5%
INTERROGO	3	89	3%
LABORO	3	3	50%
LIBER	3	0	100%
LIBERO	5	4	56%
PARABOLA	10	36	22%
VIDEO	8	389	2%
VOCO	3	90	3%

2.1.5. Names

This substitution only affects proper names twice: **bethleem > uethleem** (Lk 2:04) and [**bethaniam**] (Vulgate **bethsaida**) > **uethaniam** (Mk 8:22). This change thus affects only a very small percentage of occurrences of the letter in proper names.

The spellings used for *Bethlehem*, *Bethany* and *Bethsaida* contain initial in around 7, 12 and 6 instances respectively. Thus even these words are only affected in about 6% of instances.

2.1.6. Interaction between areas

There appears to be some interaction between morphology and lexical items in determining the probability of this substitution, as well as patterns as to whether it is the root of a word or its inflectional endings that are affected (these are often for trivial reasons – the root may not contain any instances of , or inflectional endings for that form containing may be rare or nonexistent).

Only inflectional suffixes are affected in **ADNVNTIO**, **DO**, **INTERROGO**, **VIDEO** and **VOCO**, which account for 23% of instances of this substitution overall and 48% of instances affecting inflectional endings. Of the other lexical items which undergo the change more than three times identified in section 2.1.4, the root of **LIBERO** is affected twice and its inflectional endings 3 times; the other forms are only affected in the root.

Five lexemes affected by this substitution are of the form <IVbVr>-, where V stands for any vowel. Between them these account for 14 instances of the substitution, or 9% of the total.

2.2. for Vulgate <u>

There are about 135 instances of this substitution.

2.2.1. Immediate phonological/graphological environment

The table below gives the number of occurrences of the substitution **u > b** in the contexts of the immediately preceding and following letters between which it occurs. See also the information accompanying the corresponding tables and notes in section 2.1.1., which also applies here.

		PRECEDING LETTER							
		#	a	e	i	o	u	r	l
FOLLOWING LETTER	a	5 ¹	4 ²	2	1	-	1	12 ³	27 ⁴
	e	7 ⁵	7 ⁶	-	-	8 ⁷	2	-	2 ⁸
	i	7	17 ⁹	1	13 ¹⁰	4	1	-	-
	o	6 ¹¹	1	-	-	2	-	-	-
	u	-	-	-	-	-	-	1	-

Notes:

1. This figure comprises 3 instances affecting forms of **VADO** and 2 affecting **uapulabit**.
2. This figure includes 3 instances affecting forms of **LAVO**.
3. All instances of the substitution in this environment affect forms containing the root **SERV**-.
4. All but one of the instances of the substitution in this environment affect forms containing the roots **SOLV**- or **SALV**-.
5. This figure includes 3 instances affecting forms of **VERBVM**.
6. This figure includes 3 instances affecting **haue** and 1 affecting **haute**.
7. This figure includes 3 instances affecting forms of **OVIS**.
8. Both instances of the substitution in this environment affect **soluere**.
9. All instances of the substitution in this environment affect inflectional endings.
10. All instances of the substitution in this environment affect inflectional endings (12 instances affecting **-uit** and 1 affecting **-ui**).
11. This figure includes 3 instances affecting forms of **VOS**.

The following table gives the number of occurrences of unchanged <u> in the environments listed above. Examples of **b > u** have been subtracted. Grey cells correspond to environments where **u > b** does not occur.

		PRECEDING LETTER							
		#	a	e	i	o	u	r	l
FOLLOWING LETTER	a	131	7	71	7	3	2	21	27
	e	1181	274	90	74	62	7	39	53

	i	904	453	46	255	81	5	78	48
	o	950	34	12	10	3	0	21	2
	u	34	0	1	18	9	0	35	18

Thus is replaced by <u> with the percentage frequencies given below in these environments (and with 0% frequency in all other environments). A dash in the table below also indicates 0% frequency; grey cells indicate environments where there are no examples of <u> either changed or unchanged.

		PRECEDING LETTER							
		#	a	e	i	o	u	r	l
FOLLOWING LETTER	a	4%	36%	3%	13%	-	33%	36%	50%
	e	1%	2%	-	-	11%	22%	-	4%
	i	1%	4%	2%	5%	4%	17%	-	-
	o	1%	3%	-	-	40%		-	-
	u	-		-	-	-		3%	-

2.2.2. Wider phonological/graphological environment within the word

The same method of analysis will be used in this section as for the substitution **b** > **u** in section 2.1.2 above, although in place of P_7 is given a figure $P_6 = 1 - (1 - \frac{n}{388000})^6$, as the average length of words undergoing the substitution **u** > **b** is only 7 letters.

The relevant figures are as follows (refer to section 2.1.2 for information on interpreting this table):

	Entire MS		u > b words	
	Count, <i>n</i>	P_7	Count	Frequency
p	8800	13%	7	5%
b	6600	10%	28	21%
m	21150	29%	21	16%
f	3500	5%	2	1%
u	24300	32%	33	25%
Any of the above		66%	73	55%

These data suggest the **u** > **b** substitution may be particularly likely in words containing (words containing this substitution contain another 2.14 times more often than might be expected), and particularly unlikely in words containing <p> (0.41 times as often as might be expected), <m> (0.55 times as often) and possibly <f> (0.28 times as often, although this may be skewed by the scarcity of this letter). The effect of the presence or absence of another <u> may not be significant.

2.2.3. Inflectional endings

This variation affects inflectional endings (all verbal) in about 25 cases, or 19% of the total instances in which it occurs.

23 of these instances involve the replacement of **-uit** (3ps. perfect indicative active) with **-bit** (i.e. the usual form of the 3ps. *future* indicative active). Overall, however, only around 4% of instances of **-uit** undergo change.

One change instantiates replacement of the ending for the 1pp. perfect indicative active with that of the 1pp. future indicative active: **cantauimus** > **cantabimus** (Lk 7:32). This means that only about 2% of instances of **-uimus** undergo this change.

There are no cases of **-ueris** (2ps. future perfect active and 2ps. perfect subjunctive active) > **-beris** (2ps. future indicative passive). There are about 13 unchanged instances of **-ueris**.

There is also one case of **exiui** > **exibi** (Mt 12:44) and one case of **seruauerunt** > **serbaberunt** (Jn 17:6).

About 50% of these changes affect first conjugation verbs. About 42% affect the irregular verbs **INTROEO** and **EXEO**.

2.2.4. Lexical items

The following lexical items undergo the **u > b** substitution more than three times (the lexeme is given in capitals; the forms in which it undergoes the substitution in lower-case, with substitutions reversed):

- **ELEVO** eleuabit
- **EXEO** exiui exiuit
- **HAVE** haue hauete
- **INTROEO** introiuit
- **LAVO** lauabis lauans lauit
- **LEVO** leuiuit
- **OVIS** oues ouis
- **SALVO** saluabit saluabitur saluare saluata saluate (also note **soluere** and **soluator**)
- **SALVVS** salua salui saluos saluum saluus
- **SERVO** serua seruabant seruabam seruare seruat seruate seruaui seruauerunt
- **VADO** uade uadis
- **VERBVM** uerba uerbi uerbum
- **VIDEO** uideatur uideritis uidetur
- **VOS** uos uobis

Lexical item	u > b	No u > b	Frequency u > b
ELEVO	3	5	38%
EXEO	3	162	2%
HAVE	5	1	83%
INTROEO	6	100	6%
LAVO	4	12	25%
LEVO	3	13	19%
OVIS	6	27	18%
SALVO	17	29	37%
SALVVS	10	20	33%
SERVO	10	26	28%
VADO	3	72	4%
VERBVM	4	171	2%
VIDEO	3	389	1%
VOS	4	720	1%

2.2.5. Names

This substitution does not affect any proper names.

2.2.6. Interaction between areas

8 instances of the substitution **u > b** in inflectional endings affect **INTROEO**; this accounts for 32% of instances of this substitution affecting such endings and 6% of instances of this substitution overall. **EXEO** is also affected only in its endings, although it undergoes this substitution only 3 times. All instances affecting **LEVO** affect an ending, although 2 out of 3 also affect the root. 3 out of 10 instances affecting **SERVO** affect an ending; 2 of these also affect the root. The other lexical items which undergo the change more than three times identified in section 2.2.4 are affected only in the root.

Of the approx. 53 lexemes affected by this substitution, 5 are of the form <sv{r,l}u>-, where uppercase V stands for any vowel (in practice <a>, <e> or <o>). These account for 40 instances of the substitution, or 30% of the total.

3. Variation between <ae>, <e> and <e>

3.1. <ae> for Vulgate <e>

This substitution occurs around 116 times, of which 22 (19%) affect names. <e> occurs around 44000 times in the MS as a whole, thus it is only affected in about 0.2% of cases.

3.1.1. <pre> and <que>

The majority of instances affect either the sequence <pre> or the sequence <que>, e.g. **adprehendere > adprahendere** (Jn 6:30 *et alibi*), **quaecumque > quaecumquae** (Mk 10:21). No affected proper names fall into either of these categories.

<pre> is affected in 42 instances, or 36% of the total instances of this substitution. Unaffected <pre> occurs 31 times in the MS; thus 58% of instances of <pre> are affected.

<que> is affected in 18 instances, or 16% of the total instances of this substitution, always in final position. Unaffected <que> occurs 750 times in the document; thus about 2% of instances of <que> are affected; but unaffected final <que> occurs only 393 times, thus 4% of instances are affected in this position.

The substitutions affect 5 instances of clitic **-que** “and” and otherwise affect the words **cumque**, **itaque**, **neque**, **quaecumque**, **quemcumque** and **usque**, as follows:

| | Affected | Unaffected | Rate of substitution |
|-------------------|-----------------|-------------------|-----------------------------|
| cumque | 1 | 6 | 14% |
| itaque | 1 | 6 | 14% |
| neque | 5 | 66 ³ | 7% |
| quaecumque | 1 | 11 | 8% |
| quemcumque | 1 | 3 | 25% |
| usque | 4 | 72 | 5% |

3.1.2. Other instances

Of the remaining instances, the immediate phonological/graphological environment (i.e. the letters or word boundaries immediately before and after the affected <e>) may possibly have some effect in the following cases – although the significance of all of these is dubious:

³ Not including numerous instances of **neque > nec**.

- Initially before <p>, <e> is changed in 4 out of 23 possible instances (17%).
- Finally after <e>, <e> is changed in 1 out of 4 possible instances (25%).
- Between <c> and <c>⁴, <e> is changed in 4 out of 33 possible instances (12%).
- Between <f> and <n>, <e> is changed in 2 out of 8 possible instances (25%).
- Between <h> and <d>, <e> is changed in 2 out of 9 possible instances (22%).
- Between <p> and <m>, <e> is changed in 2 out of 10 possible instances (20%).

In other environments the rate of change does not seem significantly different from the average.

The presence of another <e> in the word does not seem significant; there are around 44000 instances of <e> in the MS as a whole, in 75000 words, thus around 59% of words can be expected to contain <e>. Amongst the words affected by this substitution, 67 (64%) contain another <e> (excluding <ae>), not much more than would be expected by random chance. When the average number of letters in each word containing the change (10) is taken into account, the random chance of one of the these words containing another instance of <e> can be estimated more precisely as follows, using a variant of the equation from sections 2.1.2 and 2.2.2:

$$P_9 = 1 - \left(1 - \frac{44000}{388000}\right)^9 = 66\%$$

Again, this estimated figure does not seem significantly different from the actual frequency of another <e> in the affected words.

There are around 2400 instances of <ae> in the MS as a whole; thus about 3% of words can be expected to contain <ae>. Of the words affected by this substitution, 7 (7%) contain another <ae>, suggesting the presence of another <ae> may be a minor contributing factor to the substitution. (An equation of the type used above to give a more precise estimate would not be relevant here as it is only accurate for estimating the frequency of single letters.)

The change affects inflectional endings in 9 instances. There are 5 instances where it affects the vocative singular ending **-e**, 2 where it affects the accusative singular **-em**, 1 where it affects the ablative singular **-e** and 1 where it affects the singular imperative **-e**. There are also 2 instances where the derivational ending **-e**, forming adverbs from adjectives, is affected.

Excluding words in which <pre> or <que> is affected by the substitution, one lexeme is affected by the change 4 times, and four lexemes are affected by it 3 times. The forms of **CADO** formed on the perfect stem (**cecid-**) are affected in 4 out of 32 instances (13%). **EPULOR**, **PRETIVM** and **ZACCHEVS** do not occur in the MS without being affected. Additionally, the spelling **haebraice** replaces **hebraice** in all instances, although other forms of **HEBRAICUS** always retain the simple <e>.

There is 1 instance of **chananea** > **chananaea** (Mt 15:24), and 1 of **cananeus** > **chananaeus** (Mt 10:4). This lexeme only appears on one other occasion in the MS, where it is spelled **cananeum** (Mk 3:18).

Vulgate **nazarene** appears as **nazorenae** in Mk. 1:24 and **nazarenae** in Lk 4:34. This wordform does not appear without this substitution.

⁴ Here and in the following examples, the first letter precedes the affected <e>; the second follows it.

Beyond this, there does not appear to be any significant patterning to the substitution.

3.2. <e> for Vulgate <ae>

This substitution occurs around 57 times, affecting names in 10 instances (17%). There are around 2400 instances of unaffected <ae>, thus this substitution is operative in about 2.4% of possible instances.

In 22 instances (39%) the substitution affects the sequence <quae>. This includes 5 instances of **quae** (pronoun) > **que** and 15 instances affecting **QVAERO**, plus 1 instance of **conquaerebant** > **conquerebant**, and 1 of of **aquae** > **aque** (Mt 10:42). **quae** occurs spelled with <ae> in 222 instances, and is thus only affected in about 2%. There are 66 instances of **QVAERO** with the <ae> spelling (as well as two instances where it is spelled **quær**-); thus it is affected by this particular substitution in about 22% of instances. **aquae** occurs with the <ae> spelling on 7 occasions and is thus affected 13% of the time.

In 4 instances the substitution affects the sequence <prae>. There are around 256 instances of <prae> in the text, excluding instances of **-pre-** > **-prae-**. Thus this change only affects this sequence in about 1.7% of possible instances.

Excluding words where <quae> is affected, in 24 out of 36 instances (66%) this substitution occurs in words containing another <e> (9 of these in the sequence <ae>; if these are excluded the proportion falls to 56%). The average length of the words containing the change is seven letters; the following equation can be used to estimate the chance of a word of this length containing another <e>:

$$P_6 = 1 - \left(1 - \frac{44000}{388000}\right)^6 = 52\%$$

This is about 14% lower than expected if the presence of <e> in the sequence <ae> is not excluded; however, if it is excluded then the difference does not seem significant. In 9 out of 36 (25%) instances this substitution occurs in words containing another <ae> in the Vulgate spelling (in three of these this is replaced by <e>). As estimated in section 3.1.2, only about 3% of randomly selected words are expected to contain <ae>, thus the presence of another <ae> seems likely to be significant.

In 7 of these nine instances Codex Bezae has <ae> where the Vulgate has <aeae>, There are 27 unchanged instances of <aeae>. Thus change <aeae> to <ae> occurs in around 21% of possible cases.

The following other environments may possibly also be significant in favouring the substitution, although it is likely that all or most are not:

- Initially before <q>, <ae> is changed in 1 out of 4 possible instances (25%).
- Finally after <c>, <ae> is changed in 1 out of 6 possible instances (17%).
- Finally after <m>, <ae> is changed in 1 out of 9 possible instances (11%).
- Between <d> and <a>⁵, <ae> is changed in 4 out of 35 possible instances (11%).
- Between <h> and <s>, <ae> is changed in 1 out of 3 possible instances (33%).
- Between <l> and <a>, <ae> is changed in 3 out of 57 possible instances (5%).
- Between <r> and <a>, <ae> is changed in 2 out of 2 possible instances (5%).

⁵ Here and in the following examples, the first letter precedes the affected <ae>; the second follows it.

- Between <r> and <s>, <ae> is changed in 2 out of 33 possible instances (5%).
- Between <s> and <e>, <ae> is changed in 1 out of 1 possible instance (100%).
- Between <s> and <n>, <ae> is changed in 1 out of 1 possible instance (100%).

In other environments the rate of change does not seem to differ significantly from the average.

Excluding its effects on **quae**, this substitution affects inflectional endings in the 11 instances (19% of the total) where it occurs at the end of a word. The endings affected are those of the **-ae** in their various nominal functions. These endings occur very frequently (more than 500 times) where they are not affected.

Aside from **QVAERO**, the only lexical items affected more than twice by this substitution are all names: **GALILAEA**, **IUDAEA** and **ZEBEDAEVS**. **GALILAEA** occurs with this substitution in 3 out of 67 possible instances (4%). **IUDAEA** occurs with this substitution in 4 out of 164 possible instances (2%). **ZEBEDAEVS** occurs with this substitution in 3 out of 12 possible instances (25%).

3.3. <e> for Vulgate <ae>

The spelling <e> for <ae> occurs 14 times in the manuscript's supplementary leaves.

4. Degemination and doubling

4.1. Degemination

There are about 83 cases where a letter that is written double in the Vulgate occurs singly in Codex Bezae. This includes 42 instances affecting <ii> and 24 affecting <nn>.

4.1.1. <i> for Vulgate <ii>

The writing of a double <ii> as single <i> occurs 42 times in the MS. This includes 32 instances affecting **fili** and 1 affecting **filiis**. **fili** is spelled with <ii> 3 times, **filiis** 15 times. Thus overall **FILIVS** is affected in 67% of instances where it is eligible for the substitution; **fili** is affected in 91% of instances and **filiis** in 7%.

Of the remaining 9 occurrences, 6 occur finally and 3 occur before a final <t> (<ii> does not otherwise occur, except in numerals (not counted here) and 75 times in the sequence <iis>). There are around 99 instances of final <ii> (excluding examples of **fili**) and 92 instances of final <iit> in the MS. Thus the substitution affects final <ii> in about 6% of instances and final <iit> in 3%. It does not otherwise occur, except once in **filiis**. Overall, <ii> is affected in about 13% of instances, or about 3% once examples of **FILIVS** are excluded.

All instances of the change result from a sequence <ii> created as a result of a morphological ending on a word. Apart from **FILIVS**, no lexeme is affected more than twice.

The opposite substitution, of <ii> in place of single <i>, does not occur.

4.1.2. Other instances

23 out of the 24 cases of **nn** > **n** affect the name **IOHANNES**. This name is, however, spelled with <nn> on about 77 occasions, and therefore only affected in about 24%.

The only other instance of **nn** > **n** is **gehennam** > **gehenam** (Lk 12:5). **GEHENNA** is spelled with <nn> on 8 occasions.

There are 8 instances of **aa** > **a**, all affecting **isaac**. The MS includes 1 instance of unaffected **isaac** and 13 other instances of <aa>, 5 of which occur from omission of <h> in **ABRAHAM**.

2 instances (100%) of **saddoc** are spelled **sadoc** (both Mt 1:14). There are also 2 instances where the perfect stem of **REPELLO** is spelled with <p> rather than <pp> (Ac 7:27,39); no forms with <pp> occur.

There are also isolated examples of **cc** > **c**, **ff** > **f**, **ll** > **l**, **rr** > **r** and **ss** > **s**. None of these occurs more than once.

4.2. Doubling

There are about 25 instances of a letter being doubled, namely 11 instances of **t** > **tt**, 8 instances of **s** > **ss**, 5 of **l** > **ll** and 1 of **e** > **ee**. Needless to say, the vast majority of letters (more than 99.9%) do not undergo this doubling.

This doubling is primarily lexically conditioned. It affects **COTIDIE** (> **cottidi-**) in around 11 instances, **camelum** (> **camellum**) in 4 instances, and **osanna** (> **ossan(n)a**) in 4 instances. Apart from one instance of **camelorum** in the supplementary leaves, these words do not occur in Codex Bezae with their Vulgate spellings.

The exceptional instances are **prophetarum** > **propheetarum** (Lk 24:27), **nummulariis** > **nummulariis** (Mt 25:27), **misissent** > **mississent** (Ac 19:31), **discipulos** > **discipuloss** (Lk 5:30), and (twice) **scribis** > **sscribis** (Mk 2:6, 7:1). Of these words, all but **NUMMULARIS** are common with the non-doubled spelling (there is, however, one occurrence of **nummulariorum**). It might be noted that this non-lexically-conditioned doubling is possibly more likely in words with another doubled letter or (in the case of **s** > **ss**) <sc>, as all affected words but **prophetarum** have one of these; however, the number of words which contain doubled letters or <sc> and do not undergo a doubling of one of the other letters is very great.

5. Variation between <m> and <n>

5.1. Introduction

There are about 79 instances where Codex Bezae has <n> in place of Vulgate <m>, and 29 where the opposite substitution occurs. These fall into two main groups, together accounting for all but about 10 (9%) of the substitutions of these types: 1) instances where these substitutions affect the derivational prefixes **in--im-** and **con--com-** before labial consonants, where both texts vary in whether or not the phonological assimilation is shown graphologically; 2) instances where the substitutions affect a final nasal consonant, almost always on proper nouns. Both main types will be considered here in turn, followed by an analysis of the exceptional forms.

5.2. Prefixes

There are about 31 examples of this substitution where Codex Bezae has <n> in place of Vulgate <m> in the prefixes **in--im-** and **con--com-** before labial consonants, and 14 where the opposite substitution occurs. Such is the nature of the variation, with both <m> and <n> variants occurring widely in both texts, that this section will not primarily consider it in terms of Codex Bezae

“substituting” the Vulgate form (the approach adopted elsewhere in this study), but rather in terms of the distribution of the prefixes within Codex Bezae itself. This distribution is as follows (forms before <f> are included as **com-** occurs twice before this letter in Codex Bezae; <u>, however, is excluded as there are no <m> forms which precede it):

| <i>Spelling</i> | <i>Number of occurrences</i> | <i>Spelling</i> | <i>Number of occurrences</i> |
|-----------------|------------------------------|-----------------|------------------------------|
| imp- | 18 | inp- | 91 |
| imb- | 1 | inb- | 2 |
| imm- | 16 | inm- | 24 |
| imf- | 0 | inf- | 81 |
| comp- | 6 | conp- | 53 |
| comb- | 1 | conb- | 3 |
| comm- | 52 | conm- | 5 |
| comf- | 2 | conf- | 77 |

From this can be derived the following values for the distribution of the forms of the prefixes before labial consonants:

| | <i>Frequency im-</i> | <i>Frequency in-</i> | <i>Frequency com-</i> | <i>Frequency con-</i> |
|------------|----------------------|----------------------|-----------------------|-----------------------|
| Before <p> | 17% | 83% | 10% | 90% |
| Before | 33% | 67% | 25% | 75% |
| Before <m> | 40% | 60% | 91% | 9% |
| Before <f> | 0% | 100% | 3% | 97% |

In total **im-** is found in preference to **in-** before these consonants on 35 out of 233 occasions (15%), rising to 35 out of 152 (23%) once examples before <f> are excluded. **com-** is found in preference to **con-** in 61 out of 199 instances (31%), but 59 out of 122 (48%) excluding examples before <f>.

Certain lexical items may be noted particularly in regard to the variation between the forms found in Codex Bezae and in the Vulgate. In 23 instances, the Vulgate has the spelling <m> in **IMPLEO** where Codex Bezae has <n>; **ADIMPLEO** is likewise affected in 3 instances. Together these account for 79% of instances of the substitution **m > n**. These words are also found without the substitution; **IMPLEO** occurs in forms with <m> on 10 occasions (including 5 in the supplementary leaves), **ADIMPLEO** on 4 occasions. Thus **IMPLEO** is spelled with <n> 70% of the time and **ADIMPLEO** 43% of the time. If these words are excluded from the data above, the **in~im-** prefix is spelled with <m> before <p> 6% of the time and with <n> 94% of the time.

On 9 occasions (64% of total instances of the substitution **n > m**) **INMVNDVS** is spelled with <m> in Codex Bezae, whereas it is spelled with <n> in the Vulgate. It is also found with <n> in Codex Bezae on 14 occasions, and thus affected by **n > m** on 36% of instances of its occurrence. Excluding these instances from the data above, the **in~im-** prefix in Codex Bezae is spelled with <m> before <m> 70% of the time and with <n> 30% of the time.

5.2.1. Other instances of assimilation

Relatedly, other processes of assimilation affecting the suffixes **in-** and **con-** are not always shown in writing in Codex Bezae. The distribution of various forms of these prefixes before various letters in the MS is as follows:

| <i>Spelling</i> | <i>Number of occurrences</i> | <i>Spelling</i> | <i>Number of occurrences</i> |
|-----------------|------------------------------|-----------------|------------------------------|
| irr- | 0 | inr- | 7 |

| | | | |
|--------------|----|--------------|---|
| ill- | 0 | inl- | 5 |
| ign- | 42 | ingn- | 1 |
| corr- | 26 | conr- | 6 |
| coll- | 4 | conl- | 2 |

5.3. Final consonants

5.3.1 <m> to <n> finally

There are about 41 instances where Codex Bezae has <n> in place of Vulgate final <m>. There appear to be strong lexical effects and most of the forms affected are proper names. The affected forms are listed below, with figures giving the number of times they occur affected and unaffected:

| | <n> spellings | <m> spellings | Frequency m > n |
|------------------------------|---------------|---------------|-----------------|
| hieremiam | 2 | 1 | 67% |
| iohannem | 31 | 2 | 94% |
| iudam | 3 | 0 | 100% |
| matthiam | 1 | 0 | 100% |
| quemquam ⁶ | 2 | 4 | 33% |
| silam | 2 | 2 | 50% |

Final <am> is affected by this change in less than 1% of instances, final in about 1%. No other sequences are affected in final position.

5.3.2. <n> to <m> finally

There are about 12 instances where Codex Bezae has <m> in place of Vulgate final <n>. Again, there appear to be strong lexical effects and most of the forms affected are proper names (of the 3 exceptions, 2 affect a loan word, **CORBAN**). The affected forms are listed below, with figures giving the number of times they occur affected and unaffected:

| | <m> spellings | <n> spellings | Frequency m > n |
|-----------------------------|---------------|---------------|-----------------|
| barabban | 3 | 5 | 38% |
| barnaban | 3 | 6 | 33% |
| chanaan ⁷ | 2 | 3 | 40% |
| corban(an) | 2 | 0 | 100% |
| forsitan | 1 | 0 | 100% |
| satanan | 1 | 3 | 25% |

Final <an>, the only affected sequence, undergoes this substitution in about 5% of instances.

5.4. Exceptional instances

7 cases of **m > n** do not fall into the categories above.

2 of the 7 exceptional cases, like those affecting prefixes, occur before labial consonants. These are **emmanuhel > inmanuel** (Mt 1:23) and **promptus > pronptus** (Mt 26:41). There are about 312 examples of unchanged <mp> in the text (including those affecting **(AD)IMPLEO**) and about 144

⁶ Only affected in supplementary leaves

⁷ Also spelled **chanan**, **canan** in Codex Bezae

examples of unchanged <mm>. Thus this substitution takes place before <p> in about 8% of possible instances (1% if the **(AD)IMPLEO** examples are not considered), and before <m> in about 2%.

There are also 5 other instances of **m > n**, affecting three different words. **quamdiu > quandiu** occurs twice; **quamdiu** does not occur in Codex Bezae. **quemquam > quenquan** also occurs twice; there are 4 examples of an <m> spelling (all of **quemquam**; none of ***quemquan**), and thus this word is affected in 33% of instances. There is also 1 example of **mamonae > manonae** (Lk 16:13) – **mamona** occurs twice but otherwise this word does not appear in the text.

There are 3 exceptional examples of **n > m**, all affecting [**identidem**] (> **identidem**). 2 of these occur in corrections. The spelling **identidem** occurs 4 times in Codex Bezae and this word is thus affected in 43% of instances.

6. Deletion and insertion of <h>

6.1 Deletion of <h>

There are around 77 examples of this change, of which 52 (68%) affect names.

9 of the instances affecting proper names and 19 of the remainder involve the loss of initial <h> (including **heliseo > leiseo** (Lk 4:27)). There are about 2102 instances of initial <h> in the MS; thus the letter is omitted initially in about 1% of instances.

The following table shows the effect of the following letter (always a vowel) on the deletion or retention of initial <h>:

| <i>Following vowel</i> | <i><h> deleted</i> | <i><h> retained</i> | <i>Frequency of deletion</i> |
|------------------------|--------------------------|---------------------------|------------------------------|
| a | 3 | 603 | Less than 1% |
| e | 3 | 99 | 3% |
| i | 5 | 365 | 1% |
| o | 11 | 690 | 2% |
| u | 1 | 117 | 1% |
| y | 3 | 14 | 18% |

There are 22 instances of **th > t**, all but one (**pythonem > phytonem** in Ac 16:16) affecting names. Unchanged <th> occurs 347 times in the MS, and the sequence is therefore affected by this substitution in 6% of possible instances. The change is particularly common in the sequence <eth>, which is affected in 12 out of 30 instances (40%). Names containing <eth> which are affected are **NAZARETH**, **ELISABETH**, **BETHSAIDA** and **GETHSEMANI**. **GENNESARETH**, **SETH**, **BETHLEEM** and **BETHANIA** are not affected. See also section 13.15.

ch > c occurs in 6 instances, 4 affecting **SEPVLCHRVM**, 1 affecting the name **seruch** (Lk 3:35) and 1 affecting [**inchoauit**] (Ac 1:1). There are 154 examples of unchanged <ch> in the MS (excluding instances of **c > ch**); thus this substitution occurs in about 4% of possible instances.

Loss of <h> happens 12 times before Vulgate word-final <el> (although in **samuhel > samul** (Ac 3:24) the <e> is also lost), all in names. There is also one example of this occurring before non-final <el>, where an inflectional suffix has been added, namely **danihelo > danihelum** (Mt 24:15). There are 82 examples of unaffected <hel> in the document (rate of <h> loss is therefore 14%); however in final position there are only 41 unaffected instances of this string of letters, of which all but one (**rachel** in Mt 2:18) occur in **israhel** or **istrahel**. In word-final position, therefore, <hel> is affected in

23% of instances, rising to 92% once examples of **is(t)rahel** are excluded. All examples of loss of <h> before <el> occur after a vowel, and <h> is never retained in these positions except in **is(t)rahel**. <h> loss in **is(t)rahel** does not occur.

Of the remaining examples 5 affect forms of **ABRAHAM**, which is found spelled with <h> on 36 occasions (and thus undergoes the substitution 12% of the time). There are also 2 examples of **iohanna** > **ioana** (Lk 8:03, 24:10) and 1 of **exhortabatur** > **exortabatur** (Ac 2:40).

Apart from **ABRAHAM**, the following lexemes are affected three or more times (**HORA** is affected 5 times as **hora** and once as **horam**, **SEPVLCHRVM** 3 times as **sepulchrum** and once as **sepulchra**; the other words are only affected in a single inflectional form):

| <i>Word</i> | <i><h> deleted</i> | <i><h> retained</i> | <i>Frequency of deletion</i> |
|--------------------------------|--------------------------|---------------------------|------------------------------|
| HORA | 6 | 96 | 6% |
| SEPVLCHRVM | 4 | 2 | 67% |
| elisabeth | 6 | 0 | 100% |
| hiericho ⁸ | 4 | 1 | 80% |
| nazareth | 4 | 2 | 67% |
| salithihel ⁹ | 3 | 0 | 100% |

There do not seem to be any strong effects of the morphological form used on the frequency of <h> deletion in declinable words.

Deletion of <h> never affects inflectional endings.

6.2. Insertion of <h>

There are about 26 instances of an additional <h> being inserted into a word, of which 17 (65%) affect names.

Two environments predominate with regards to this insertion. It occurs 10 times initially and 11 times after <c>, although this is only a tiny fraction (significantly less than 0.1%) of the number of times these environments occur. Initially it is most common before <e>, accounting for 7 instances, 6 of which occur before <l> – this means that before initial <el> insertion of <h> occurs in about 9% of instances. There are no other clear trends regarding phonological or graphological environment.

Vulgate **exortum** (Mk 4:5) and **exorta** (Mt 13:5) are spelled as **exhortum** and **exhorta** in Codex Bezae, although the <xh>- spelling also occurs in the Vulgate. The various forms of **EXORIOR** are spelled with <h> 9 times in Codex Bezae (69%) and without <h> 4 times (31%).

There is also 1 case of **tarsum** > **tharso** (Ac 11:25) and 2 of <h> insertion after <p>: **philippi** > **philipphi** (Mk 8:27) and **pythonem** > **phytonem** (Ac 16:16).

No lexical item is affected more than by <h> insertion on more than two occasions. It does not affect inflectional endings.

7. Variation between <f> and <ph>

7.1. <f> for Vulgate <ph>

⁸ First <h> lost in all instances

⁹ Second <h> lost in all instances

This substitution occurs about 70 times. 26 (37%) of the affected words are personal names.

The following words are affected by the substitution more than 3 times:

| | Affected | Unaffected | Frequency |
|--|----------|------------|-----------|
| alpei ¹⁰ | 3 | 4 | 43% |
| caiaphas ¹¹ | 3 | 2 | 60% |
| capharnaum | 12 | 0 | 100% |
| PHARISAEVS | 11 | 65 | 14% |
| PROPHETA ¹² ,
PROPHETO | 27 | 89 | 23% |

Between them these words make up 80% of instances of this substitution.

7.2. <ph> for Vulgate <f>

There are about 13 instances of this change. Only 3 words are affected more than once:

- **GAZOFILACIVM** appears 5 times with <ph> and never with <f>.
- The name **bethfage** appears twice as **betphage** (Mt 21:1, Lk 19:29), and does not appear with any other spelling.
- The name **frygiam** appears once as **phrygiam** (Ac 18:23) and once as **phygiam** (Ac 16:6). It also appears once with an <f> spelling.

Between them these words account for 85% of instances of this change. The remaining examples are:

- **cofinos** > **cophinos** (Jn 6:13)
- **orfanos** > **orphanos** (Jn 14:18)
- **foenicen** > **phoenicen** (Ac 11:19)
- **saffira** > **sapphira** (Ac 5:1)

Note especially the change **ff** > **pph** in **saffira** and the corresponding countersubstitution **pph** > **ff** in **eppheta** > **effecta** (Mk 7:34).

8. Variation between <t> and <d>

8.1. <d> for Vulgate <t>

There are about 55 examples of this substitution. In all but 8 instances (including 5 examples of **quotquot** > **quodquod** where both instances of <t> are affected – these are each counted as 2 instances of the substitution) it occurs in final position.

This substitution shows clear lexical conditioning. Five words – **at**, **caput**, **quot**, **quotquot** and **reliquit** – make up 40 (73%) of examples of the substitution; there is also one affected example of **dereliquit**. These words are affected by the substitution as follows:

| | Affected | Unaffected | Frequency |
|--|----------|------------|-----------|
|--|----------|------------|-----------|

¹⁰ Also spelled **alphaei** in Codex Bezae.

¹¹ This word is spelled without the second <a> in Codex Bezae. There are also 5 unaffected instances of the lexeme with different inflectional endings.

¹² Includes instance of **PSEUDOPROPHETA**, 1 affected and 5 unaffected.

| | | | |
|-----------------------------|----|----|------|
| at | 20 | 3 | 87% |
| caput | 5 | 21 | 19% |
| quot | 4 | 0 | 100% |
| quotquot | 5 | 0 | 100% |
| reliquit, dereliquit | 7 | 0 | 100% |

No other word is affected by the substitution more than twice. **et** > **ad** occurs 2 times (Lk 11:7 and 22:10); there are 3650 instances of unaffected **et** in the MS. The following substitutions also occur, in addition to those already mentioned:

- **arfaxat** > **arphaxad** (Lk 3:36) (personal name)
- **[adpropisat]** > **adpropisad** (Lk 19:41)
- **dentibus** > **dendibus** (Ac 7:54)
- **dimittit** > **dimidtit** (Lk 16:18)
- **[emet]** > **emed** (Lk 22:36)
- **esset** > **essed** (Lk 7:06)
- **tacerent** > **dacerent** (Mt 20:31)

8.2. <t> for Vulgate <d>

Not counting numerous examples of **aput** for Vulgate **apud**, there are about 8 examples of this substitution. It always occurs in final position. **dauid** > **dauit** (personal name) occurs in 4 out of 44 occurrences of the word (9%). **istud** > **istut** and **heliud** > **heliut** each occur in 2 out of 3 occurrences of these words. There is also 1 instance of **ad** > **at** (Mt 17:14) and 1 of **aliud** > **aliut** (Mk 4:4).

9. Variation between <e> and <i>

9.1. <e> for Vulgate <i>

9.1.1. Introduction

Several apparent instances of this substitution may have a purely morphological explanation: a different form from the same paradigm has been used, with only a slight but not particularly great, e.g. nominative plural **-es** for nominative singular **-is**, or future **-et** for present **-it**. It is not always easy to judge whether an instance of **i** > **e** is best judged as phonological or morphological, however. Several examples, such of the those of the types above, are not covered here; in other instances, where a possible morphological explanation seems however particularly unlikely, these forms have been retained for analysis. This latter category comprises 9 instances where **-es** (nominative/accusative/vocative plural) has been used in place of genitive singular **-is**, and 1 example where **diabole** (vocative singular) is used for **diaboli** (genitive singular) (Ac 13:10)¹³. All words are included in instances where the form resulting from the substitution is not part of the standard paradigm.

This considered, there are in total 55 instances of this substitution which have been included in the analysis which follows. There are around 44000 occurrences of the letter <i> in D, so the substitution only affects around 0.1% of possible instances.

9.1.2. Phonological/graphological factors

¹³ Though note that in fact a morphological explanation for this is not utterly implausible, as **diabol-** follows a word in the vocative (**fili**), which could have led to some sort of psychological interference.

There is a possibility that the following environments may slightly favour the substitution:

- Between <d> and <d>¹⁴, where <i> is changed in 7 out of 119 possible instances (6%).
- Between <d> and <m>, where <i> is changed in 4 out of 149 possible instances (3%).
- Between <t> and <u>, where <i> is changed in 8 out of 113 possible instances (7%) (all substitutions occur in **osteum**).
- Between <n> and <s>, where <i> is changed in 4 out of 544 possible instances (1%).

The substitution occurs, affecting the first <i>, in 5 out of 52 instances of the sequence <didi> (10%). This may have a morphological motivation; see section 9.1.3 below.

This substitution never occurs word-initially.

35 (70%) of the affected words contain at least one other instance of <e>. 22 (46%) contain at least one other instance of <i>. There are about 44000 instances of each of <e> or <i> in the manuscript as a whole and the average length of words undergoing this change is about eight letters; the following equation suggests both the likelihood of a random sequence of seven letters containing <e> and that of a random sequence of seven letters containing <i>:

$$P_7 = 1 - \left(1 - \frac{44000}{388000}\right)^7 = 57\%$$

Thus the change is possibly slightly more likely in the presence of another <e> in the same word, and slightly less likely in the presence of another <i>.

9.1.3. Morphological factors

8 of the substitutions occur in words beginning with **con-** (assimilated in two instances to **col-**). There are around 686 words containing this prefix, including forms where it has undergone phonological assimilation. As there are about 44000 occurrences of <i> in 75000 words, it can be estimated that about 58% of words contain this letter; thus the number of words containing both **col-** and <i> can be estimated at about 398. Thus around 2% of such words are subject to the change.

There are several cases, about 38% of the total, where there exists some sort of alternation between **-e-** and **-i-** in different morphological forms, which may be a causal factor. (Those those instances not included here on the grounds that the alternation is *primarily* morphological rather than phonological could also be categorised here.) The bulk of these are instances where **-es** is used in place of **-is**, where **-es** does exist as part of the paradigm with a distinct function; the case of **diabole** used for **diaboli** mentioned above is also an example.

A number of further examples affect verbs. The spelling **confidete** for **confidite** (Mk 6:50) may be influenced by in the introduction the second conjugation thematic vowel **-e-** where the third conjugation (to which **CONFIDO** standardly belongs) uses **-i-**. **CONFIDO** does not occur with thematic **-i-** in D. The spelling **accipit** for **accepit** may be influenced by other forms of the verb which have a stem **accip-** (Jn 21:13) (note that spellings in **accep-** do occur 68 times, those in **accep-** 31 on occasions).

Likewise, the substitution affects three verbs which have perfect stems formed with **-id**, in forms which employ this stem: **credidistis** > **crededistis** (Mk 11:31, Mt 21:25), **crediderunt** > **credederunt**

¹⁴ Here and in the following examples, the first letter precedes the affected <i>; the second follows it.

(Ac 17:13) and **tradidistis** > **tradedistis** (Mk 7:13), as well as **uendidit** > **uindedit** (Mt 13:46) where the root is affected. Forms in **credid-** are affected therefore in 3 out of 56 possible instances (5%); forms in **credidi-** in 2 out of 18 possible instances (11%). Forms in **tradid-** are affected therefore in 1 out of 32 possible instances (3%); forms in **tradidi-** in 1 out of 23 possible instances (4%). Forms in **uendidi-** are affected in 1 out of 2 instances (50%); **uendid-** does not otherwise occur.

9.2. <i> for Vulgate <e>

9.2.1. Introduction

As in section 9.1 above, several apparent instances of this substitution have not been covered on the grounds that the differences may be easily accounted for morphologically: such as the use of a present for a future (e.g. **dicetis** > **dicitis** in Lk 22:11), a plural for a singular in the same case (e.g. **menses** > **mensis** in Jn 4:34), or an dative for an accusative after **in** (e.g. **mare** > **mari** in Mt 13:47), and others. Examples of datives being used for ablatives (e.g. **agente** > **agenti** in Lk 15:10) have also not been considered, on the grounds that for many nouns, and in the plural, these cases are not distinct, which could be a non-phonological factor in their confusion.

The following examples of this substitution could be construed as morphological in nature, but have not been analysed as such here, as the change in meaning resulting from the use of a different form of the same paradigm is considered too great, even in some instances going to the extent of rendering the sentence nonsensical:

- 3 uses of a passive for an active infinitive form: **egere** > **egeri** (Lk 15:14), **murmurare** > **murmurari** (Jn 6:43), **seruare** > **serbari** (Ac 15:5). (Other instances, where the change in meaning seems less significant, have not been analysed here, e.g. **transplantare** > **transplantari** in Lk 17:6.)
- The use of **cognosceres** (2ps. imperfect active subjunctive) for **cognosceris** (2ps. present passive indicative) in Ac 22:14
- The use of **iohanis** (genitive) for **iohannes** (nominative) in Ac 3:1, and **ihannis** for **iohannis** in Ac 1:13.
- The use of **orationis** (genitive singular) for **orationes** (nominative plural) in Ac 10:4.

These considerations made, there are around 28 instances of this substitution which have been analysed here. The substitution affects less than 0.1% of occurrences of the letter <e>.

9.2.2. Phonological/graphological factors

There is a possibility that the following environments may slightly favour the substitution:

- Between <m> and <s>, where <e> is changed in 2 out of 25 possible instances (8%).
- Between <s> and <s>, where <e> is changed in 3 out of 58 possible instances (5%) (all substitutions occur in **praeses**).
- After <o>, where <e> is changed in 2 out of 104 possible instances (2%).
- Between <o> and <p>, where <e> is changed in 2 out of 62 possible instances (3%).
- Between <l> and <n>, where <e> is changed in 2 out of 90 possible instances (2%) (initially <len> is affected in 2 out of 7 instances, or 29%).
- Between <d> and <s>, where <e> is changed in 3 out of 258 possible instances (1%).

17 (21%) of words undergoing this substitution contain at least one other instance of <e>. 12 (43%) contain at least one other <i>. Based on the figures produced by the equations in section 9.1.2, this suggests the presence of these letters, and particularly of <e>, makes this substitution less likely.

9.2.3. Other factors

The substitution affects inflectional endings in 15 instances (54%), excluding those possible instances not considered for the reasons given above. This includes 7 instances affecting **-es** (the only nominal ending affected; including 3 instances affecting **praeses**) and 3 affecting **-re**. Affected on 1 occasion each are **-edit**, **-eres**, **-ete** and **-eunt**. It does not seem to be the case that a significant proportion of any of these endings is affected by this substitution.

The prefix **de-** is affected 4 times, in three words: **DESPONSATVS** (twice), **destruit** and **deuastabat**. **DEVASTO** does not occur elsewhere in the MS; **DESPONSATVS** only occurs on one other occasion. **DESTRVO**, however, occurs 8 times with unchanged <e>.

Only 1 lexeme (**praeses** > **praesis**) is affected three times by this substitution; no words are affected by it more than three times. The spelling **praeses** does not occur in D.

The only proper names affected by this substitution are **iohannes** (in Ac 1:13 and 3:1) and **caesareae** (in Mt 16:13).

10. Insertion of <n>

There are about 29 instances of this change, not including instances of **n** > **nn** (for which see section 4.1.2). These include 14 instances where <n> is inserted before <s>; in all but 1 of these the preceding vowel is <e> (in the exception, **congregas** > **congregans** (Mt 25:24), it is <a>). However, only about 1% of instances of final <es> are affected. 5 of these changes occur before final <s>; 3 of those 5 affect verbal inflectional endings. **THESAVRVS** (> **thensaur-**) is affected 9 times and does not occur in Codex Bezae without <n>.

Other instances of the insertion occur in **ignorabant** > **ignorabant** (Mk 14:40), **nouum** > **nonuum** (Mk 2:21), **praegnatibus** > **praegnantibus** (Mk 3:17) and **regum** > **regnum** (Mt 11:8). It may be notable that 3 of these forms contain another instance of <n>. Overall, 9 out of 29 of the words undergoing this change (31%) contain another <n>, but this does not appear to be significant.

11. Variation between <e> and <a>

11.1. <a> for Vulgate <e>

Since these letters frequently occur in morphological endings where their alternation represents different parts of the same paradigm, often with only a small change of meaning (e.g. 3ps. present indicative **-at** vs. subjunctive **-et** in the first conjugation), a number of apparent examples of the substitution **e** > **a** can be assigned to morphological factors. About 30 require separate treatment.

Only about 9 out of 30 (30%) of words undergoing this change contain another instance of the letter <e>. The average length of words undergoing this change is about eight letters; thus the equation from section 9.1.2 which estimate the random chance of the letter <e> in a sequence of 7 letters as 57% can be reutilised. This figure is significantly higher than the actual rate of occurrence of <e> in the affected words, suggesting the presence of this letter may inhibit the substitution. There does not seem

to be any other strong evidence that this change may be conditioned by the phonological/graphological environment.

The change affects morphological endings in 10 instances (33%), excluding those not here considered; 5 of these affect proper names, where final **-e** is changed to **-a**. In 4 of the remaining instances, the resulting ending is one which, although not usual with the word in question, does exist in other conjugations or declensions.

Four lexemes, two of which are related, account for 40% of the instances of this change considered here. These are **DISPERGO** (which is found 5 times as **disparg-**), **IEIVNIVM** and **IEIVNO** (found 4 times as **iaun-**, the nominal and the verbal forms being affected twice each), and **et** (found as **at** once and **ad** twice). **DISPERGO** is never found with <e> in the root; however the root **ieun-** occurs with this spelling on 14 occasions (11 times as a verb and 3 times as a noun). There are 3650 unaffected instances of **et**. Thus **DISPERGO** is affected by the change in 100% of instances, **iaun-** in 22% (**IEIVNIVM** in 40% and **IEIVNO** in 15%), and **et** in 0.1%.

This substitution affects proper names in 8 instances, or 27% of the total.

11.2. <e> for Vulgate <a>

Nearly all examples of this substitution can be assigned to morphological factors.

12. Deletion and insertion of <m>

The majority of instances of these common changes can be attributed to the confusion of the ablative and accusative cases, e.g. acc. **iustitiam** > abl. **iustitia** (Mt 5:10), abl. **monte** > acc. **montem** (Lk 8:32). This can also occur where the difference between the two cases is dependent on more than presence or absence of final **-m**, e.g. acc. **desertum** > abl. **deserto** (Mk 1:12), abl. **mensibus** > acc. **menses** (Lk 1:24). When affecting morphological endings, the change does not typically produce forms that are not part of the same paradigm. Potential changes affecting other cases, such as loss of **-m** in genitive plurals, do not occur; neither does this change generally affect verbal inflections. Thus in most cases this change can be seen as primarily morphological rather than phonological in character, and hence not treated here, although the presence of a phonological factor (historical loss of final /m/) cannot be denied.

A small number of instances of these changes cannot be readily attributed to morphological factors. **nequam** > **nequa** occurs twice (Mt 18:32, 25:26); there is also 1 instance in the MS of unchanged **nequam**. **mnas** > **nas** occurs twice (Lk 19:16, 19:24); there is 1 unaffected instance of **mnas** and 2 of **mna**. Initial <mn> does not otherwise occur.

There are also 4 cases where <m> is lost before <pt> (**temptantes** > **teptantes** in Mt 19:03, **temptatis** > **teptatis** in Mt 22:18, **temptare** > **teptare** in Ac 5:09 and **adsumpto** > **adsupto** in Ac 12:25). There are 45 instances of unaffected <mpt>, hence this change occurs in about 8% of instances. Forms containing **tempt-** are affected in 3 out of 32 cases (9%).

There is also 1 instance where <m> is inserted in this position (**[uoluptatem]** > **uolumptatem** in Ac 20:27); as there are 465 instances of <pt> occurring without preceding <m>, this change is not particularly general.

The other instances of these changes are:

- **sequere** > **sequerem** (Mt 19:21)
- **quamcumque** > **quacumque** (Lk 10:10)
- **manus** > **manums** (Jn 7:44)

13. Other changes

13.1. <oy> for Vulgate <o>

The insertion of <y> after <o> is a common change, occurring 41 times; however, it only affects one word, **MOSES**, in its various forms. This name is only spelled once without <y> (in Luke 24:27), and is therefore affected in 98% of instances.

13.2. <str> for Vulgate <sr>

There are 34 instances of this change, affecting only **israhel** (29 times) and **israhelitae** (5 times). **israhel** occurs without <t> 10 times and **israhelitae** never; thus they are affected in 74% and 100% of instances respectively.

There are 18 occurrences of unaffected <sr>; over all words, therefore, this change therefore occurs 65% of the time. Apart from in **israhel(itae)**, this sequence of letters only occurs in **DISRUMPO** (times), in the name **asron** (twice) and in **resrespondit** (Mk 7:28), an erroneous spelling of **respondit**.

13.3. <c> for Vulgate <qu> or <que>

Vulgate **neque** is often spelled **nec** in Codex Bezae, and occasionally vice versa. Codex Bezae has about 66 instances of **neque** and 43 of **nec**.

There are about 8 further examples of **qu** > **c**. 6 of these occur before <u>; the sequence <quu> only occurs once in the MS and is thus affected in 86% of instances. **INIQVVS** is affected 3 times; twice in the form **iniquus** > **inicus** (both in Lk 16:10) and once as **iniquo** > **inico** (Lk 16:11). This adjective occurs with the <qu> spelling on 18 occasions and is thus affected in 14% of instances.

The only other instance of this substitution (**aquilam** > **acylam** in Ac 18:2) affects a personal name.

13.4. <o> for Vulgate <a>

There are about 17 examples of this alternation, of which 8 affect forms of **NAZARENVS** (> **nazoren-**) and 6 affect forms of **SALOMON** (> **solomon-**). **SALOMON** occurs with the <a> spelling on 1 occasion, **NAZARENVS** on 4 (3 of which are in the supplementary leaves). Note that **NAZARETH** is always spelled with <a>.

There does not appear to be any significant patterning to the remaining 3 examples

13.5. Deletion of <a>

The letter <a> is deleted on about 14 occasions. 7 of these affect the name **CAIAPHAS**, where the second <a> is deleted; the letter is never retained in this word in this position. **CLAVSVM** is spelled **clus-** on all 4 occasions on which it occurs. The remaining 3 instances of this change all also involve deletion of <a> before <u>, twice in initial position, but overall less than 1% of instances of <au> are affected both initially and elsewhere.

13.6. <i> for Vulgate <i>

There are about 14 examples of <i> being written < i >. All but 3 affect names and all but 2 occur initially. < i > does not otherwise occur.

13.7. <y> for Vulgate <i>

There are 14 examples of this change, 5 affecting **GAZOFILACIVM** (> **gazophylaci-**) and 3 affecting **PAMPHILIA** (> **pamphili-**). Neither occurs with the <i> spelling at any point in the MS.

The remaining examples affect only names. None is affected more than once.

13.8. <i> for Vulgate <u>

There are about 14 examples of this change, 11 of which affect forms of **MONVMENTVM** (> **moniment-**), which occurs 34 times with the <u> spelling and is therefore affected in 24% of instances. Of the remaining three examples, two affect adjective endings in **-us**.

13.9. Deletion of <e>

There are about 16 examples of this change, excluding those with a simple morphological explanation (e.g. confusion of cases) and about 8 instances where <e> is deleted along with a preceding consonant. However, 2 of the changes which have been included here affect the inflectional endings of personal names: **iudae** > **iuda** (Lk 3:33) and **mathusalae** > **mathulala** (Lk 3:37, corrected to **mathusala**). The spelling **iudae** occurs twice, **mathusalae** (or **mathulalae**) never.

quae > **qua** (Mk 12:44) has also been counted here, as the morphological forms which have been confused (accusative neuter plural and ablative feminine singular: the relative clause is headed by **omnia**) are felt distinct enough that a purely graphological/phonological explanation is more likely. There are two other instances of the deletion occurring finally: **audite** > **audit** (Mt 13:18) **me** > **m** (Lk 22:37). Overall, however, both **quae** and **me** are affected in less than 1% of instances; **audite** in only 1 instance out of 9.

<e> deletion occurs initially twice: **eam** > **am** (Mk 6:26) and **eum** > **um** (Mt 9:19). The change affects about 1% of instances of **eam** and 0.1% of instances of **eum**. Other forms of the pronoun are not affected.

nubes > **nubs** occurs twice (Mk 9:6, Lk 9:34); there are 3 instances of unaffected **nubes**.

13.10. Insertion of <s>

There are about 12 instances where <s> is inserted into a word. 4 of these affect instances of **DIMITTO** (> **dismi-**), which however occurs unaffected around 107 times (and is thus only affected in 4%). The remainder consist of 5 instances where <s> is added to the end of a word (although these could be considered purely morphological in nature, the resultant change in meaning has been considered too great) and 2 where <s> is inserted before <t>, but no further strong patterns are particularly obvious.

13.11. <o> for Vulgate <u>

There are about 12 instances of this change. 5 affect forms containing **fructu-**, where the second <u> is affected; this form occurs without the substitution on 33 occasions (including 26 instances of **fructum**), and is thus affected in 13% of instances (42% excluding instances of **fructum**).

13.12. Deletion of <c>

There are about 17 instances of <c> deletion. 9 affect forms of **ZACCHARIAS**, which occurs only once with the <cch>- spelling.

Stone (1946) writes that this change occurs “frequently” in **SANCTVS**; in fact it occurs in 4 out of 21 instances of **sanctus** and 1 out of 5 instances of **sancta**, and is absent in other forms of the adjective.

13.13. Deletion of <t>

There are about 11 instances of this change. In 8 of these, one form of a verbal paradigm is erroneously spelt the same as another form. There is one other example affecting a verbal form where the resulting spelling is not part of the standard paradigm, namely **habebat** > **habeba** (Mt 13:05).

[**auscultate**] > **ausculate** (Ac 2:14) is the only instance of <t> deletion in non-final position. Overall, however, less than 0.01% of instances of final <t> are omitted.

13.14. Deletion of <n>

There are about 9 instances of <n> deletion, excluding some cases where there is the possibility of a morphological explanation (e.g. singular **dicebat** for plural **dicebant**). Excluding **Aenon** > **Aeno** (Jn 3:23), a proper noun, the change occurs only before consonants: 4 times before <s>, twice before <t> and twice before <c>. However, no more than 1% of instances of each of the clusters <ns>, <nt> and <nc> are affected overall in the MS. No further patterns to the deletion are readily apparent.

13.15. <d> for Vulgate <th>

This change occurs 9 times, all affecting names containing **-eth**. **nazareth** and **elisabeth** are each affected 3 times, **bethsaida** twice, and **gennesareth** once. Names containing **-eth** which are not affected are **GETHSEMANI**, **SETH**, **BETHLEEM** and **BETHANIA**.

13.16. <u> for Vulgate <o>

There are about 9 examples of this substitution, of which all but one (**theodas** > **theudas** (Ac 5:36), a personal name) occur immediately adjacent to either <ɾ> or <l>. From the point of view of the text as a whole, however, only 0.2% of instances of <o> in these positions are affected (similarly small frequencies are also found when the individual sequences <or>, , <ro>, <lo> are considered, including when initial and final instances of these sequences are discounted).

13.17. Insertion of <i>

There are about 8 instances of this change. 5 involve the insertion of <i> immediately before or after another vowel and 2 take place initially before a consonant, but no other patterns are obvious.

13.18. Deletion of <s>

There are about 11 examples of this change, disregarding those which have a simple morphological explanation and those where <s> deleted as part of a longer sequence of letters. 6 affect <s> in final

position (final <s> survives in the MS in over 13000 instances). There are 3 examples of **xs** > **x**; 16% of instances of this sequence are affected by this change. There are also 2 examples of a verb's **-re** form being used in place of its **-res** form (**audires** > **audire** and **uideres** > **uidere** (both Ac 22:14)) and 2 of **iudas** > **iuda** (Mt 26:25 and John 13:2) but otherwise no clear patterning to the change.

13.19. Deletion of <u>

There are about 8 instances of this change, excluding examples where **-iit** is written in place of **-iuit** in verbal endings. In 3 examples the deletion takes place between <ng> and a vowel; there are 73 examples where this does not occur so the rate of deletion is 4% (the change never occurs more than once before any individual vowel, so it is probably not worth giving the rate of change on the basis of the following vowel letter). In 3 it occurs before final **-um**; it is retained in this position in 164 instances so the rate of deletion is 2%.

13.20. Insertion of <t>

This change occurs 7 times, in 5 after <i> (creating verb forms which resemble other verb forms but which have been judged not to count as “morphological” changes in these instances). It happens finally 6 times and initially once.

13.21. <o> for Vulgate <au>

5 out of 6 instances of **CLAVDUS** are spelled **clod-**. The exception, **claudorum** in Jn 5:3, is the only time the word appears inflected **-orum**.

13.22. <l> for Vulgate

Codex Bezae has **beelzebul** for all 6 instances of Vulgate **beelzebub**.

13.23. Deletion of <i>

This change occurs 6 times; in 4 the deleted <i> is immediately before or after a vowel. The frequency of deletion in these environments is still very low, however, and no clear patterning to the deletion is apparent.

13.24. Deletion of <o>

This change occurs 6 times. 3 times, twice in corrections, **filio** is spelled **fili** (unchanged **filio** occurs 9 times). Jesus's Aramaic words on the cross given in the Vulgate as **heloi heloi** (Mk 15:34) are spelled **heli heli** in Codex Bezae. There is also 1 case of **operor** > **peror** (Jn 5:17).

13.25. <p> for Vulgate

This substitution occurs 5 times. 3 affect **obtulerunt**, which occurs with on 4 occasions and is thus affected in 43% (there are also 5 instances of the verb in other forms, all of which contain). Including these examples and also **subtus** > **suptus** (Lk 8:16), the sequence <bt> is affected in 4 out of 27 instances (15%) and <btu> in 4 out of 17 (24%). There is also 1 example of **piscibus** > **piscipus** (Jn 6:11).

13.26. <d> for Vulgate <c>

This change occurs 5 times. There are 3 instances of **quicquam** > **quidquam**. There are also 2 instances of initial <acc>- being replaced with <adc>- (both involving the **ad-** prefix); this change only occurs in 1% of possible instances.

13.27. Numbers

Numbers are frequently written as Roman numerals in Codex Bezae.

13.28. Infrequent changes

The changes in this section occur four times or fewer. Between them these changes make up about 18% of the total. Due to the small number of occurrences of these changes it is only possible to identify patterns in a few cases.

13.28.1. Changes occurring 4 times

The following changes occur 4 times:

- **b** > **m**. This affects both instances of **scabillum** and both instances of **obmutesce**.
- **e** > **s**.
- Insertion of <a>.
- Deletion of <r>. This occurs in 2 out 10 (20%) of instances of the sequence <ursu>.

13.28.2. Changes occurring 3 times

The following changes occur 3 times:

- **c** > **g**.
- Deletion of **g**. This occurs twice before <n>.
- Insertion of <e>.

13.28.3. Changes occurring once or twice

The following changes occur only twice: **a** > **u**, **c** > **k**, **d** > **p**, **d** > **s**, **d** > **th**, **e** > **u**, **g** > **c**, **g** > **ch**, **g** > **q**, **i** > **a**, **i** > **ae**, **is** > **e**, **n** > **s**, **y** > **i**, **o** > **a**, **oe** > **au**, **i** > **ei**, **s** > **t**, **m** > **b**, **t** > **c**, **t** > **n**, **t** > **r**, **t** > **s**, **i** > **u**, **u** > **a**, **u** > **e**; insertion of <re>; deletion of <de>, <in>, <ne>, <eth>, <or>, <p>, <ta>.

About 130 changes occur only once.