# Beinecke MS 408

## 1 Introduction

In Section 3, mainly to promote easier readability and comparability, a transcription of the manuscript is provided, based on a transliteration by Takahashi (1999). Takahashi's transliteration is obtained in an automatically capitalized version of the *European* or *Extensible Voynich Alphabet* (EVA), using the *Interlinear Transcription Archive Extractor* by Schwerdtfeger (2004).<sup>1</sup> It is then converted back into glyphs using a font by Bettencourt (2019).

Using the manuscript's reproduction in Clemens (2016) and the scans provided by Yale University's Beinecke Rare Book and Manuscript Library (2004), Takahashi's transliteration is compared with what I am able to make out of the manuscript. Glyphs that I interpret in another way than Takahashi are printed in orange, showing my interpretation. Removed spaces are marked with — and added spaces are indicated by —. For sake of simplicity, places, where the writing is interrupted by illustrations, are also marked by spaces. Especially the recognition of spaces in running text is sometimes very difficult; therefore, my adjustments in this — just as in any other — regard should be taken with a certain amount of caution. In total, I made changes in 76 places of Takahashi's transliteration.

Each line of the transcription is preceded by a locator in square brackets, informing the reader about the element a line is part of (i.e., paragraph, title, or label) and assigning the line a number. For example, a line located at [P2, 9] is part of the page's second paragraph (P2) and is counted as the overall ninth line (9) on this page.

<sup>1</sup> Schwerdtfeger (2004) builds on an online archive of Voynich transcriptions that was maintained by Jorge Stolfi (1998). For a general overview of transcription efforts, see Zandbergen (2023).

## 2 Analysis

## 2.1 Glyph Frequencies

Based on a transliteration by Takahashi (see Section 1), a first basic analysis of glyph frequencies can be performed, simply counting each latin letter of the transliteration. This results in Table 1.

| Letter       | Glyph             | Count     |
|--------------|-------------------|-----------|
| 0            | 0                 | 25,468    |
| e            | С                 | 20,070    |
| h            | 5                 | 17,856    |
| У            | 9                 | 17,655    |
| $\mathbf{a}$ | а                 | 14,281    |
| $\mathbf{c}$ | c                 | 13,314    |
| d            | රී                | 12,973    |
| i            | `\                | 11,660    |
| 1            | 9<br>1            | 10,518    |
| k            |                   | 9,996     |
| $\mathbf{r}$ | 5                 | $7,\!456$ |
| n            | Э                 | 6,141     |
| t            | 11                | 5,968     |
| q            | 1                 | $5,\!423$ |
| $\mathbf{S}$ | ተ<br>ሪ<br>የ       | 4,501     |
| $\mathbf{S}$ | S                 | 2,886     |
| p            | ₹                 | 1,406     |
| m            | В                 | 1,116     |
| ${ m T}$     | Ħ                 | 976       |
| K            | <del>ዘ</del><br>ተ | 938       |
| $\mathbf{f}$ |                   | 425       |
| P            | <b>₽</b>          | 224       |
| g            | ያ<br><del>ያ</del> | 96        |
| F            | <b>₽</b>          | 80        |
| I            | τ                 | 72        |
| X            | ᆽ                 | 35        |
| $\mathbf{v}$ | ٨                 | 9         |
| Z            | ъ                 | 2         |

Table 1: Letter frequencies in Takahashi's transliteration.

Determining what counts as *one* glyph, though, is in some cases an interpretative act. It seems straightforward, to assume that c and t are one glyph, i.e. c. Likewise, c and t could be interpreted as another glyph, i.e. c. Additionally, one *might* interpret instances of c (or c), or c as representing c (or c), on the one hand, and f, f, or f, on the other. Table 2 gives frequencies for those c combinations.

Furthermore, while there are instances of a single  $\iota$ , it is not clear whether instances like  $\iota\iota$  and  $\iota\iota\iota$  or combinations with  $\vartheta$  like  $\iota\vartheta$  or  $\iota\iota\vartheta$  represent separate glyphs. Table 3 gives frequencies for those  $\iota$  combinations.

| Glyph             | Count  |
|-------------------|--------|
| ದ                 | 11,008 |
| ಕ                 | 4,501  |
| c <del>ll</del> c | 950    |
| clfc              | 906    |
| c <del>t°</del> c | 216    |
| c <del>ľc</del>   | 74     |
| CO                | 9      |
| <b>c</b> 9        | 7      |

Table 2: Glyph frequencies in Takahashi's transliteration for  $\sigma$  combinations.

| Glyph | Count |
|-------|-------|
| \     |       |
| \\    |       |
| 111   |       |
| 7)    |       |
| 611   |       |

Table 3: Glyph frequencies in Takahashi's transliteration for  $\chi$  combinations.

## 3 Transcription

## Folio 1, Recto

```
Paccos offax ar affarry door doro offeres of 1602 doorso
     Cos Faths Faths are Fath Willam Fill o Fo Faths ofoos
     OS UNIBSOS SSOND OF OBLIVE BOD ON DILO FO OPLIND FINDOS
    Gallo 90 GIIA GIIAS SAISTO OPPOROS SOOMO COOMO GIIO
    8017-9 ccca? ctally ctall 6015
    980701259
    920 Fo.2 (1.08) office of the coeffice of the coeffice of the coefficient of the coeffici
    8011 202 ctog 2089
[T2, 10]
    psooft So Gras
[P3, 11]
    Sagabosta obos Proffe osts Sago Prosats Probe Y
    UNDER 629122 Crosoco Collo 20216 Cresto 6021 021/10
    tog effecy fosarid effect effects arise of said of
     Said only cros osand crosand cros offand sad after fos
    8a110 detheog too coop dog coop coop lot cag
    to cros todal lity licy sof crosall to lices
900 flower ochlard the $9898 offer 8aroffer
    Stepths Grasses grants established san etters
     8cca? &cotta 110 olla 117 ccco Pcco tollog ctros 8aoctla
    coll coop crop sand office
[T3, 21]
    GIII 2010
    os os es essent es essenta essentantes essentantes estas
    Feath 2022 Fab Unia Past Sab Rash Unab 2020 Unos
    coso farro coarro offog sarro far ctoog sarro ctoogsar
     gorceg ollag ollg sarry olloreg lollarry otorog llasorg sag
     Soco dos locas etto ollaro loco loco sas allo
    To Tox Toll Tollo Tollo
```

#### Folio 1, Verso

[P2, 5]
Totlog chos sand ctroas sad creg those offeann chocks

[P2, 6]
crolle cros ctros chos offas sosceres crose sos cres ctres

[P2, 7]
to os croced crees sos ctres elles sos sose elles so scrose

[P2, 8]
offes chos flos flectes cros flos cros ctres crose cros sann

[P2, 9]
chod offes cros sos flos sad chos scrod offes sad chose

[P2, 10]
flaod crofferes sas crose decode tos croses

The control of crose sas croses decode tos croses

The control of crose sas croses decode tos croses

#### Folio 2, Recto

[L1, 8] offoa\qc\* [L2, 9] \*\*\*av

## Folio 2, Verso

#### Folio 3, Recto

[P1, 1]

The cool to tax crox ethor sangle of the cool to tax crox ethor sangle of the cool to tax crox ethor of the cool to c

[P2, 11]

\*\*Teccos & cos Cos & cos &

[P3, 15]

The coaron took of or or or or of of or of of or of of or of of of of of or o

[P4, 18]

Taccogoog acosann total total total and the control of t

#### Folio 3, Verso

[P2, 7]

There of other of the start of the start of other of the start of the star

#### Folio 4, Recto

```
[P1, 1]

Nosasce cotas chos chos of coco toto solve cor othos

[P1, 2]

Secor cos cos cos cotave cos cos

[P1, 3]

others cos cos cos cos cos

[P1, 4]

tothers cos cos of save othos

[P1, 4]
```

#### Folio 4, Verso

## Folio 5, Recto

[P1, 1]

Microso Teros erlos oarro ogro eroso slico so
[P1, 2]

oeros olios tollarro do etlos etles eros olia\*or otlos
[P1, 3]

toarro otlar ero sarro otles eros otles otles otles so
[P1, 4]

## Folio 5, Verso

[P1, 1]

Notice of the of the

#### Folio 6, Recto

```
[P1, 1]

Toar of chox cross core core collection offices of the collection of the co
```

#### Folio 6, Verso

```
[P1, 1]

Noa? 9 2a? accila? toa? co? attag 2 aca? aa? offag

[P1, 2]

occ2 aco? actteg toclaa? aca2 obarro laced aco? acar

toar? attag acos ooacoatteg aclasog attag offos ?gaco2

[P1, 4]

g detteg glacog 2o2 g babg bag bag offos globg

bar? da acobar bar offo? offg bogbor
```

[P2, 6] 1 cost coeffice coeffice 9000 90009 8a110 ctros 809 9000 000 01000 tolog occo 809 cto7 cto8 S 10 (cc. 20)

tollarod gazar lasg

[P2, 11]

gor arr offar after 89

[P2, 12] officeo2 ctg tollar cfftg 908a110 cttg 2 cto7 occ2 o7 tollof cros effeos floragoso coeffeg S oS crg Savo o? oceg cttar cttar cttar cttag 9 ccarro ctrag ctrosas 39 office officer and affect 000000 Per 20] gocco? coo? octtag

#### Folio 7, Recto

[P1, 1]
Toodarry the deg tool deeg caroog
[P1, 2]
Souce flood door door door flood deeg caroog
[P1, 3]
occeed accodarry deeg flood to tage
[P1, 4]
toffee ac gover darry gary flood odarry
[P1, 5]
oarry offerry

[P2, 6]

Mctogoctco toffocco collogog officer acoally

Betog affice acog officer day took acoffee

officer decede acoff toffae took flee acoff day

toffee ogacoll acog affee acomp fleed

[P2, 9]

toffee ogacoll acog affee acomp fleed

Catall acof dayl acoffee

#### Folio 7, Verso

[P1, 1]
Toggico cico fictoso totas officos so sann fictososo
[P1, 2]
crocro ctro sann tollo cretico sann ctros ctro ctros
[P1, 3]
tollos sollos critico licto lo so creco os crecos so
[P1, 4]
croffeced occar crocro sand cho licto chos secce sos
[P1, 5]
secosann tolloso creco ficeo

#### Folio 8, Recto

```
[P1, 1]
Those crop offices croff offices cross to offices crops
                    Ticillo de l'accaso de oblace de dans as
  10162 007 007 2003 8009 2003 001 001 808
                      Office of the only office of the constant of t
                      Took offerers flog 89 of toolfg occoss Sog
crotto Mcroad croos 8a17
                      8000 8a118
                    Theort to their party ofters steers tox-sarry too?
                      8ann cocolto postalo p
 coop a coosann sann so offeros a colf offerning offerning for the colf of the
 olollcross
                      etto etter dos cotos dos coros líces soso cosas
 Screg effect crop etc. flower crop effect crop effect
    . .
gozeg PoroPorg ceSeg Porg Screavid cttavora? ctteg 8a?
[P3, 16]
 coop being follow and excal effo exart exantly [P3, 17]
                      olla? Acarra con Poor Ca rain carrage
                      Zar? cocard officer sar took larry cook larry sarlag
 \overset{\circ}{\text{(T3, 20)}} croffc2c9 &co offax crax
                      Scrop Sars
```

#### Folio 8, Verso

```
[P1, 1]

cffcos Soocthe Sox Lox offox crox officianno offosanno Sanno
[P1, 2]

chefteax Sar cror Leanno Lor croplety offanno offos
[P1, 3]

toos creax Sy crory crear Lox cranno Lanno soxar
[P1, 4]

show Lox Lox sax crean officar Leany sanno
[P1, 5]

crox crox sar officar officar sanno
[P1, 6]

sanno officar officar coffanno
Lox leany sar Lox crox crox offanno
[P1, 7]

cho leany sar Lox crox crox offanno
[P1, 8]

officar let crox crox crox officarno
[P1, 9]

chox orex crofficar croffanno
[P1, 9]

chox orex crofficar crox crox officarno
[P1, 10]

Scrarco occos lecos ficar fra officaro
[P1, 11]

Sorano
```

[P2, 12]

Therefore the content of t

#### Folio 9, Recto

[P1, 1]

Tookso cross officer orcing 2 deg obann 2arg dor office officer conficer cross officer officers officer officers officers officers officers officers officers officers officers read the conficers officers officers

[P2, 6]
Theoand offician official forces of the series of

#### Folio 9, Verso

```
[P1, 1]
Tocco? otology off cool sand totogether totogether sand
[P1, 2]
Seco? toand elland ettor cooperor ettogether soft tology sand
glicy cool gland sand ettogether off occol sand
glicy tology the sand ettogether off off occol sand
glicy they there there off off off
```

[P2, 5]

Took offeely totok offee oxettoxy the at celly salling period offeely the at celly salling period offeely the attention of the attent

#### Folio 10, Recto

[P1, 1]

The coefficts of offices and colors for the second control of the second colors of t

[P2, 6]
gcc20? cffcg cco? cffca\\dagger\dagg

## Folio 10, Verso

[P1, 1]

Tand dand coo foces follo dand officer offodo cand
[P1, 2]

dand dand officer ocottor ocond foll ocodand officer dand
[P1, 3]

does office foces officer ocos do

[P2, 4]

totagtage con sand totage cottes of of sand

[P2, 5]

co office sand totage totage con sand totage

con office sand totage

con office sand totage

con office con con totage

## Folio 11, Recto

[P1, 1]

1 thicog 2 croag ctog ctog ctog ctog through choosing

[P1, 2]

2 octhoosy toso? 9 thicy sann offers offerolly through sann

[P1, 3]

totag crog ctog so? 9 those crotag sann crann sann ses

serog crog through so sann

[P2, 5]

There is the start of the start of

## Folio 11, Verso

## Folio 12

Folio 12 is missing from the manuscript.

#### Folio 13, Recto

## Folio 13, Verso

[P1, 1]
| Noar? cettorry offices office offices
| P1, 2]
| office to fore cettory offices offices offices cettory
| offices to food ces offices offices
| P1, 4]
| oge ces office oarry offices tooks
| P1, 5]
| tollos darry

[P2, 6]
Togdann ogcto cog do otlo cor totlod dand de [P2, 7]
Band otlag cog totlocoro deco totlo dand cod otlog dand choro otlagd do otlagd do otlagd do otlagd do otlagd do otlagd do tocto otlagd otlagd do tocto otlagd otlagd otlagd do tocto otlagd ot

#### Folio 14, Recto

## Folio 14, Verso

[P1, 1]

Toganon No offodan offodo of offano? Sann log offano?

oliano? Sang that only and attention offano?

oliano? Sang that only and attention offano?

open of offano offano offano?

offano offano offano?

offano offano?

offano offano offano offano offano

(P1, 6)

totto attention offano offano offano offano

(P1, 6)

optano offano offano offano offano offano

(P1, 7)

optano offano offano offano offano offano

optano offano offano offano offano

(P1, 8)

collano offano offano offano offano

sano offano

optano offano

sano off

#### Folio 15, Recto

[P1, 1]

The cor decy therasy etg ethose decy barry

p1, 2]

offeror tolleror osg ollor etg losg

[P1, 3]

tollarry tollerg those barry etg ethes

p1, 4]

Cercarry erosarry etg sarry etg offer

[P1, 6]

beeg lollarry etg sarry ollear

[P1, 6]

beeg lollarry etg sarry ollear

[P1, 8]

coeffer those larry etg sarry etges

coeffer those larry esg sarry etges

p1, 9]

offer of offer ollery etg sarry etges

[P1, 10]

gearry etges

per offer ollery etges

[P1, 11]

offer etges

[P1, 12]

tollor etges

for e

#### Folio 15, Verso

[P1, 1]
To Por orchy connot offer or so [P1, 2]
\*\*cor or oro or annothing than offer or so [P1, 3]
cftor sand tollor offer offer offand
[P1, 4]
sond collo con tollo tollor offer or offer or cor offer or cftor offer or cftor offer or cftor offer or cor offer or cftor offer or cor offer or cftor or offer or cor or offer or or or or offer or or or or offer or or or or offer or sand
[P1, 8]
offer or cor or or only off cor sand
[P1, 9]
offer or cor cor cor cor cor offand
[P1, 10]
Cor cor cftond cftor tolland
[P1, 11]
Corond cftor cor cor sand find
[P1, 12]
sand cftor cor cor cor

#### Folio 16, Recto

[P2, 5]

There of the continuous force of the figure of th

[P3, 10]

To Po P daggdag of the free of the off of ag [P3, 11]

Colleg to log the colleg of the off of the of

## Folio 16, Verso

```
[P1, 1]

Terranno offeror enterox entercy 2 teroetly

[P1, 2]

offeror of the enterox followether tory

p1, 3]

offero so enother of the end to the total

[P1, 4]

secox enteroso ettos enotox sax

[P1, 5]

offero enotor enor offero san

[P1, 6]

Zor entor offo enteror enor santon
```

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