Beinecke MS 408

A Transcription Based on a Revised Version of Takeshi Takahashi's Transliteration

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1 Introduction

In Section 2, mainly to promote easier readability and comparability, a transcription of Beinecke MS 408 is currently being developed, based on a transliteration by Takahashi (1999). To achieve this, 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). 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 on a best guess basis. In total, I made changes in 685 places of Takahashi's transliteration. Changes to Takahashi's reading are highlighted in orange:

- Glyphs that I interpret in another way than Takahashi or that I add to the corpus are printed in orange, showing my interpretation.
- When a glyph has been deleted by me without replacement, this is indicated by \varkappa .
- Removed spaces are marked with \sim and added spaces are indicated by \sim .
- Added paragraphs are represented by ¶.

Especially the recognition of spaces in running text is, as Takahashi has already noted, sometimes very difficult. As is, in some cases, the distinction of some glyphs (e.g., a and o, a and o, or 7 and 2). Therefore, my adjustments in this—just as in any other—regard should be taken with a certain amount of caution.

Note that places where the writing is interrupted (e.g., by illustrations) are marked by em dashes (—). Each line of the transcription is preceded by a locator, assigning the line a number and informing about the element a line is part of (i.e., paragraph, title, line, label, or circle).

Additionally, in Section 3, some basic analyses are presented. First, in Section 3.1, glyph frequencies are counted. In Section 3.2, then, entropy is calculated.

Of course, this revision would not have been possible without Takeshi Takahashi's incredible work. Hence, I would like to stress that this is not meant as a criticism of his transliteration; I am merely adding a few carefully selected new interpretations. This work is not comparable to the effort he has put in.

¹ Hence, changes that Takahashi made to his transliteration in subsequent versions are not included. Further note that Schwerdtfeger (2004) builds on an online archive of Voynich transcriptions maintained by Jorge Stolfi (1998). For a general overview of transcription efforts, see Zandbergen (2023).

2 Transcription

Folio 1, Recto

```
01; Paragraph 1
         Tacos offag af affalld cook toog offices of 1607 toogso
         Cob Fasts Fasts 250 Fast Cripter Frall o Fo Fasts of of
         25 CIVISES SSUTTS OF OFFICE BODD CHILD FO OFFICE
         Gallo 90 Gilallo Gilas Fai<del>sllo</del> ellogo9 Soollo eoollo Gilos
05; Paragraph 1
         8a17-9 ccca? ctta110 ctta2 ctca110
06: Title 1
        98a7a1ct9
07; Paragraph 2
         y osa? ctog ctog ogsa? ct*~2 ctoa/v) ctosa?
        Soll for Use costs officer rooffe obox 6000 gard
         8011) 2005 ctog 2009
10; Title 2
         osost So Gibs
11: Paragraph 3
         Sagabootta otoota Walle oatta Saga Visata Visaga Y
        office floor offar Pro office offar Losard Scheog Sarry
         8 Proposition of the company of the contraction of 
        8aid only crop obanid crosand crop offand sad after food
         80110 detheo off cos cos cos los cag
         to crox todal lito lico sof crosail de licos
وحده الحدد حدالام الأحده الحمر عمد المراقع وحده الحدد المراقع المراقع والمراقع والم
         offo dog de Mosdeg cteagg saland sand offe
        Scraft allo by Scotta Control of allo by Scraft Scraft College Scotta
20; Paragraph 3 coll coop coco sand offices
21: Title 3
        Offor Barrid
22; Paragraph 4]
         cto darry dollarco and those of to to to to to to
        Forth cost fab (1/10) Fast fab gooth crop chast
         cco∛o Marid choarid offog sarid tar cottog sarid ctoogsar
gerceg olfag olfg sarry olfercy lolfarry offerog laserg sag
         Socio choso Mocheg etto office flee gos collo?
         co cros croll crollo crollog
28; Title 4
        gcra119
```

Folio 1, Verso

Folio 2, Recto

```
01; Paragraph 1
         Mosardo officas - officarión cheosos
807cco79 — cella? 2 — ceo? etto ette
         foliann - clean - color - co
         carles — cellos 89 — cto 8age — crollarry 8
         los live for as — cooler office in solution office in solution
         oths cost social — 8lox SoS — 916x89 — 8crox 8crox 8crox
 07; Paragraph 1
         cto? ctto sarry - crox sar
08; Label 1
        990argc*
09; Label 2
         Co***
         Mosard Larry too 2 Log Mosar - office oxcless sarraso
        822to log teco tolleg glosg 20 - tog glig sand sanneg
         tollo crosarry coop callo sarry - etters loop zarry zarry
οςταιλ δας στο δαςοθ εταλ δαλ — ος2αιλλ ετεςο επτοθ
olfox cro crop effect 907 al cral — \operatorname{Sann} creffy croffy \operatorname{Sagn} 15; \operatorname{Paragraph} 2
         to office occo sand octifica
```

Folio 2, Verso

- 01; Paragraph 1
 - Moorry acco facos offarry o sard acos sars allo
- - Par Par offor Succes toffor to to to saviv
- offerg coop of coop coop coop coop of sand
 - ځه حده حده۶ حده۱۱۷
- 05; Paragraph 2

- Us; Paragraph 2
 | Too Pot of Sanni Pot of Paragraph 2
 | So Pot of Pot of
- حده المركد حده؟ حدم حدم هموهه

Folio 3, Recto

```
01: Paragraph 1
  162002 total coop office saves
occor cor day follows cray
03; Paragraph 1
  octof foctoof crop 8a11) effeg
04; Paragraph 1
  Servey cray cray cray cro
  tollog crogogo 2 craf ettog
gootlarry ocor offer offax 8a8
  offceox toda IV ट्वा टेविश विष्ठ
  9826 090 x02 cos 080
  20 680229 € 6082022 € 608 02
10; Paragraph 1
  good cros after
11; Paragraph 2
  Pacos dos Zosz dos dos
```

ollasa W tollcrof tolcrosas octho tolicos toli deco tolioso tolideco eccoso 14; Paragraph 2 cco7 to8a17 offccg toffccg

Fofot — posto pos ossago fos fo foto pososti offcox crox 2 crcox clicto tollcox tollox $3a \cdot \sqrt{3}$ — 2 coxccx $\frac{17}{2}$ Paragraph 3805 208 osollot obootle 800llo 8000

18; Paragraph 4 Facossof acosally toffacol toffox offacox toffy — offoxof officeof og croof focof 8art follog focarro coof cttog 20; Paragraph 4 gazoo agann aga Sann ologo ag

Folio 3, Verso

8017 Ecay offcas

```
01; Paragraph 1
  Poarry ctool togo com collos togo
8a1189 tolleror olleror oller orgillor 809 8a7
03: Paragraph 1
  ollog crox cos secco cros crecollas ollar
04; Paragraph 1

to8a? cc2 cc9 ffcccog offag 80~? ccca? cc0

05; Paragraph 1
ocica? officias co? ca? cffc9
  802 CESOS Foll FOUR
07; Paragraph 2
  16co? officeas coo? offices ?
offcoof coof coffcoof offa
officeca? officos officosoaso coo? offico
octo? Barry tolletox Barry ctox ollarg
co coetto etto theo coodin coo
  S part for the solution of coolings
13; Paragraph 2 car calland tollow, off, offers callo
14; Paragraph 2
```

Folio 4, Recto

O1; Paragraph 1

If o δαρτιρ το θαθρ τισος ος τίσος ος τίσος στος στος στος στος τίσος τίσος τισος τισος τισος τίσος τίθιος τίθιος τισος τισος

Folio 4, Verso

```
01; Paragraph 1
Totoo \\ \) If to look of toog or of toog sof degree of the sof too or of the sof too or of the sof the or of the sof the or or of the sof the or or or of the sof the or or or of the sof the or or or of the sof the sof the sof the or of the sof t
```

Folio 5, Recto

- 01; Paragraph 1
- lfcto89 fcto9 ctlf09 oa110 oa20929 cto89 8lfct9 89 02; Paragraph 1
- occo ollo tolla vi de ottog etter occo olla vo? ottog
- toally offal ceg sall officed ceo effeg offices toffice sq. (14: Paragraph 1
 - offard foods that coops offar
- 05; Paragraph 2
- They wood to tollero dann wood to tollero dann wood to tollero dann wood to tollero dann wood to tollero do to
- - toffocco ficco acco ficco acoso

Folio 5, Verso

01; Paragraph 1

Nocecof coof offices those coope coodes of offices those coope coodes of offices of the office of offices of offices offices

Folio 6, Recto

Folio 6, Verso

```
01; Paragraph 1
        Poor 9 207 caller food coof catters 2 cacar car offers
occo crop croffe for for or croad obanno for or crop crop crop of crop
        toars ettes are occounted are lacod ettes ollos socros
9 chefts offices 202 9 dads deep des offods — 9ffods 05; Paragraph 1
        808208 ofto Follo 808 808000 offo 80808
06; Paragraph 2
        16000 coothog coothog 2
octo? cto? offctcg toffog
09; Paragraph 2
        S 802th 9020 Sas occo
 10; Paragraph 2
tollcool gocca? llcoog
207 cta7 offa8 cffco8 89
offcoo deg tollar effco
9089110 ctto 5 cco2 occ3 of
tollor cros ettos theasoso
        So Crocked So So Savo of
       ocio etta Patta Patta
 17; Paragraph 2
9 ccarro clicax clicosas 89
office cffcox ccc cffco?
        908 octogg Pcco2 ctg 807
20; Paragraph 2 scrop of of og sall
 21; Paragraph 2
        gocco? coo? octtag
```

Folio 7, Recto

Folio 7, Verso

```
O1; Paragraph 1
Togocho cheo flecoso toteo offero offero so dann flecososo
O2; Paragraph 1
crocco effero dann tollo creftero dann effecto effeto
O3; Paragraph 1
tolleco dolleco crifeco leto los flo flo do? cree og cree do
O4; Paragraph 1
crofleced occa? crocco dann effeto effeto dog deced dog
O5; Paragraph 1
decodann tolleco cree fleco

O6; Paragraph 2
leco? creed croco effeto odann effeto effeto dog dog do? tol
O7; Paragraph 2
offeto deced croco odann effeto effeto effeto dog dog do? ann
O8; Paragraph 2
tolleco effeto creed tolleco fleco effeto dann
O9; Paragraph 2
tolleco effeto creed tolleco fleco effeto dann
O9; Paragraph 2
tolleco effeto creed folleco fleco effeto dann
O9; Paragraph 2
tolleco effeto creed folleco fleco effeto e
```

Folio 8, Recto

```
01; Paragraph 1
                           Fox Feboration color — ctors coop of ctors
                         The fig of the case to - offer so see said as
                         cc 68 for 20 − cc 08a 11 € collect cc 08 69
                           follof coof coof coop — good coof coof on
                         offeco 80 P ceces 89 fg - Soco cello choall co flallo
                       Thora effects flog flog of the color of the 
colfo llaod cool 8a^{\circ}08; Title 1
                         8000 8a118
                       Theout to tacco taco — otaco staco too sallo too
                         80 x08 ossil o collection of the collection of t
\frac{2}{2} \frac{2}
toccosarry collolosy — croflog 13; Title 2
                         olollcross
 14: Paragraph 3
                           effice office coop as the coop of the coop
                         Secretary class cooperated and the secretary cooperated and secretary c
octo Perolleg etleg Pero — letared that are the safe
                         ccog 8ccg folla? ccg - avid cccad cfg ccal ccavid
                         Parenzers on Gon Vises — sall con Crista Fallo
                         Parl cos of top sa? — cos larry cos larry sarlag
of collects ace offax — cray ^{21;\,\,\mathrm{Title}\,\,3}
                         Scrox Sa15
```

Folio 8, Verso

```
01; Paragraph 1
             UNDS CIVES OF CONTROL ROLD ROLD ROS — ABOOC BOOTES
chilled Sar — coor chearns chor costicus offarro offa
             7089 \text{ creak } 29 - \text{crop} - \text{creak } 2000 \text{ crand } 2000
Scrop chop day crear effect cheaps barry craff of Paragraph 1 ^{1}
             crox crox 8a? — officea? office/ office 8a?
             Sairi ctral — others ecco flarry sair ar
 07; Paragraph 1
             to long — 8a? tog tha? tollar ?g
 08; Paragraph 1
             offerog let - crop crop crop ettanno sand
              dog ofag - allag acog attof auril
             806sta - carpa cocoso — carpars
             G1B90S
12; Paragraph 2
              Fra? ro ?og 8ag — tca? rroffaiid rag 8aiid
              Sallas essolto collos (100 millos) - collos (100 millos)
             Los collarios collarios con los cas effeco flors effects
             of Fow ellow Fow Crear Fow College Col
             VIDE on poson fons posto — Fear Fear For
 17; Paragraph 2
             8017 0000
```

Folio 9, Recto

01; Paragraph 1
flosgo cross ofteo? orcres 2 ctg osann 2 arg — ctor cffeg
02; Paragraph 1
oglices cross oftann olicross flocolly ollown sq — or cranno
03; Paragraph 1
flond cfteg totlos oftann cffeg ollor cres — cffeos ras
04; Paragraph 1
get g crollero crefteos ctor ctanno oftar sor — oftos sagity
05; Paragraph 1
sanno cffegann ollann cffeosoras ctar — ofteosoras ctar — ofteosoras cres
06; Paragraph 2
ficoand cffegann ollann cffeosoras ctar — or ctosar cres
07; Paragraph 2
or cross crefteos floros oftos totlos creftes
08; Paragraph 2
10; Title 1
10; Title 1
10; Title 1

Folio 9, Verso

Folio 10, Recto

```
01; Paragraph 1

Tocothe cooperation of collection of cooperation of the second cooperation of the second collection of t
```

06; Paragraph 2
got 20? effeg ceo? effeg in the following so — ceo ffgin degree of the ceo? effective of so — ceo ffgin degree of the ceo? effective of so degree of the ceo.

08; Paragraph 2
toffeco? ceo? offog ceo. ceo. ceo. ceo. dail da?

09; Paragraph 2
ogliceo? ceo? ceo? ceo. ffgin degree offog ceo.

10; Paragraph 2
offo? offo? effe effeo? offon offon offon degree of degree of degree of degree offon degree of degree of

Pollot pariot bries by

22

Folio 10, Verso

01; Paragraph 1

são offico foros ogfo coos so

04; Paragraph 2

tofficiallo 2011) sand tofficial control sand

Tollocy flow cooks can in the property of the

tolog cools cros crolls sand sond crothead

Folio 11, Recto

01; Paragraph 1

Theorem can care at 1980 No ca toto cros office sor offices croto sand crand sand sca ८८०४ ८८० हिट्ये ९० १८४१

05; Paragraph 2

There are the following the fo 089 88 9 01608 crand 916crof 8and cross office 8 8and

toffers offerox effers 89

Folio 11, Verso

10; Paragraph 1
Togdecodg cictes cooldg tothe — coop ctal dal g
02; Paragraph 1
ctog dg cictes cictes dalle dalle — glices dall deco
03; Paragraph 1
office decode decode dalle dalle — office dalle dalle

Folio 12

Folio 12 is missing from the manuscript.

Folio 13, Recto

Folio 13, Verso

```
[P1, 1]

floar? citlored offices offices offices offices

[P1, 2]

offices to floar crosses offices cities crosses

toffices to flos crosses offices cities

[P1, 4]

oge crosses offices offices

[P1, 5]

toffices darred
```

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 offano?

(P1, 6)

totto attention offano offano offano offano offanoo

Folio 15, Recto

```
[P1, 1]

The cor accomplete and according according
```

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 offe of the off of the off of the offe of the off of the off

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 enethers ettos enotion sax

[P1, 5]

offero enoting enor enox offero san

[P1, 6]

Zor entor other enterox sancy
```

Folio 17, Recto

```
[P1, 1]

**Theody da?as gda?ccos ofgdg gfod ccof office dodg ogdeffeg
[P1, 2]

gda.? ccolly ollety toda? effects do? office todeffeg od?

[P2, 4]

**Theos dog tollog to? oga... ofgdg — Zos gfecg gfa.s

[P2, 5]

gocelleg effeg co? do? effec? effects gdg — da.? effect tode

[P3, 7]

If do tollec tolleco? ccelleg

[P3, 8]

decey dogca? Zeca? gfect

gas ccelle o da? ccgfects

are dogcetto o da? ccgfects

gas ccea? decey da... ofgect

gas...

[P3, 10]

da? ccea? decey da... ofgect

gas...

gas...

gas...

gas ccea? decey da...

gas...

gas..
```

Folio 17, Verso

occes less ctodas olos obarro ollas 0,000 lloco? Pocos oftos osocios ollocos gcros cros 80scrccg Hcros 8a7 cHzg $_{[P1,\,6]}$ 8 6112th 90 6112th 90 90120 6112 So Fosso S110t posts Fos †oliccy licrat og 89 crog8a112 29 general feros erostanos os [P1, 10] ogto7 olco7 ola7 olog 80117a8 †ollaco †ollovi? attacog acog 00 ct09 loarry crefteg of ct07 9 1/co? cros cros ctos ctos cros cto? ctos oro ? officeox crosarry officer ffcro?9 . 90007 cthg accellg acco othor othogo [P1, 16] offercos cros offcos effcos offercosos toand Saf to sox to fearn cottoo Sus fo for cos gos ao follo 8ail ccco toail cttod ccox ccox 9/cc9 offcc9 cco7 ccox co 98a110 Jus Fossits of Eccept Fosos Fosos †016cc 8a7 ccc9 16cc07 cccc09 cffccc9 cffc9 80sllo 9as Fosllo posllo

Folio 18, Recto

```
[P1, 1]

**Total Para Poss of goal offices sal o of ceeling—oction sage [P1, 2]

offices total conditions and the same offices of sal offices total conditions and the same offices offices offices offices sal offices sal offices of
```

Folio 18, Verso

```
[P1, 1]

**Thogo coop office office of office offi
```

Folio 19, Recto

Folio 19, Verso

```
[P1, 1]
foca \\ \) cfto \ cottocolor ofcico fo loco foca \\ \) cfto \ cottocolor ofcico fo loco follow \\
[P1, 2]
follow flow 20\ follow \\
[P1, 3]
office coop sa\\\\ follow office sa\\\\\
[P1, 4]
office coeffe follow sa\\\\\
[P1, 5]
follow follow sa\\\\\\
[P1, 6]
occop loco\ coeffe coeffe \\
[P1, 7]
occo\ coeffe \\
[P1, 7]
```

Folio 20, Recto

[P1, 1]

Notice of the control of th

[P2, 5]

Throoffing molloanny off mechy offers docanny?

[P2, 6]

mocco offero? follog mechy sanny may monny sanny

per, 7]

omogened sanny molleog mog sog etog offanny

[P2, 8]

Comosany moc ? mecoso

[P3, 9]

Toodeco dody tottong tottong toothy orothogogo

[P3, 10]

ootoall oroof dody toodall orothogogo orothy dog too

[P3, 11]

dool tottondy offers tottong domall orogody

[P3, 12]

doll oroody offers offers they tottong dall dark

[P3, 13]

ootall oroof oroof orony they

Folio 20, Verso

Folio 21, Recto

[P1, 1]
Theor occoeffics objects offered to the code offered o

[P2, 4]

Toology dann offern offern forces for the force of the force

[P3, 8]

The older offor the operation of the objective of the objective ofform office office

Folio 21, Verso

[P1, 1]

Those of a color of the control of the con

Folio 22, Recto

[P1, 1]

Top open fecosy took offers offs offs offs sann offers 2 octos
[P1, 2]

or on the tollers sann offs tollers sann offs offs sand effects
[P1, 3]

tollog softs no lot tollers sann offs offs sand offs offs softs.

[P3, 7]

Moros dos socos ello cesoso offarro of — offero etas

Boros offo sarro theoso tollo confarro confero — sorro secos

Boros offo sarro effecos ofarro

[P4, 10]
| Kocog ceof dann officent decof cecof tollog do — ofceog ogdang
| P4, 11]
| donn officed tollog olf offogdo off dog of — deceg dann
| P4, 12]
| odceann office olf ceof decog dann — oddann
| P4, 13]
| decof dogdan tollog olf ogolfan

Folio 22, Verso

```
[P1, 1]

**ToZarrior office of
```

```
[P2, 6]

Thoo to the following the proof of the proof of
```

Folio 23, Recto

[P2. 4]

tollogog ollariz ollariz ollariz ollariz ollariz ollariz ollariz ollariz

getor tollariz ollariz ollariz ollariz ollariz ollariz

getor tollariz ollariz ollariz

[P3, 6]

Thereographically offs and offs series sand offers seas?

[P3, 7]

offar operar tanno tollerog sar tollerog santo r og sanno agg

[P3, 8]

tolleroge car sanno tolland ogog toand offers 2 — sing offers

[P3, 9]

offog off to tollog so — sog stee tolleres og ogo — sanno sag

[P3, 10]

toll offand elleroge - offers osag erag so — sar offand

[P3, 11]

offollo sagoro

Folio 23, Verso

Folio 24, Recto

[P1, 1]

107079 cco7 ofca7 &c cco9 8a110 o7 totally of obard offartheas offartheas offartheas 9 cttca? cttcax olfox tottar cttcg of cectleago ettea? coo? cecce 8a 1807 cro 7 crcg cttg cttc 1608 occco2 ctlco7 otlag toctlcog tollg *162 cc162 ccc02 cttog todog octo7 2 08 toca7 8a110 tollcog 08a110 clicar toda1 the soc dag 7. 07 cta? co? 2 a8 ccotla/10 89
[P1, 11]
[P1, 11]
[P1, 12]
[P1, 1 tollers tollers flog flos effes Socos of S coco coche Sas too ceces too cear offeas S 208 20 Sosso Sosostao ट्टंबर जीटबर ठवर ठवर ठवर ollo posto pato pollo estis ${\displaystyle \mathop{\mathsf{o}}_{\scriptscriptstyle{[P1,\,19]}}}^{}$ cros cros 8a11) cros 8 909 for crop tog offarteg Sagczoggo

Folio 24, Verso

```
Horosar crockes ofor those crokes of those of the solution of the second of the secon
 ossilo sossilo Sossil
 octtog oscocco occarco ollas coctto
 98ag & olfog olfarry 08arry 890S
                   090 900 110 Accas 090
  [P2, 6]
                  Mocros coo characo
 .
gczcog da\d da? ogog
[P2, 8]
                    Poclo cotto cos Savo
 9009 cros of crofos
offoco? cffcco8 cco9 ffcog
 98a110 ccco? todog oloda110 [P2, 12]
                   lico toa? etto do tolle ollege
 occes acor as odo? To do offorodag _{[P2, \ 14]}
 80117 ccco8a8 to to 89
offcog 08a118
```

Folio 25, Recto

[PI, 1]

Tooges cooks sand office toos sand occors ofters of conformation office toos of compassion office office

Folio 25, Verso

[P1, 1]

Toccarry follo do sarry folloco offeco folloco? CoC

[P1, 2]

Seco? effeo? ero? sarry 2 offecarry sarry effeco? Soc

[P1, 3]

oreco feco? erox sarry effeco? sarry secret sarry

folloring folloco dos sarry effecar effecox sarry effecar

[P1, 4]

folloring follocox secox sarry effecar effecox sarry sarry

sar eroffecox secox secret focox sox ero sarry sarry

follocox ocox follocox follorax — erox erary secarry 2

odo erfecy sarrox sarry deeth — orecarry

Folio 26, Recto

```
[P1, 1]

The colly obanged from the collection of the collection o
```

Folio 26, Verso

Folio 27, Recto

```
[P1, 1]

[P0, 2]

89 coard tog sard sare togard togs— tos care
[P1, 3]

cos tog theorem tog tog tog tog tog theog sare
[P1, 4]

†olleg too tog tog theory
[P1, 5]

80? telee theo tog theory
[P1, 6]

cos theory
[P1, 6]

cos theory
[P2, 7]

fletog tog theory
[P2, 8]

9fletog tog theory
go theory
go
```

Folio 27, Verso

```
[P1, 1]
Tocol col co do 2009 dos offico? ofco? fleoreo?
[P1, 2]
8cg colla? offico do sca sca? cosa officos do sca sca?
[P1, 3]
Ifaco fleo scollag scol sca? cosa officos do sca fleo soccos
[P1, 4]
offico co flecos cos cos flos — o offico soccos
[P1, 5]
tollo defico 2cosa? defos — coffico soccos
[P1, 6]
sho fleo to 2cosa? defos — cofficos
[P1, 7]
do do offico deso — sca cos — cofficos
[P1, 7]
do do offico deso — sca — collas
officos officos fleos
```

Folio 28, Recto

[P1, 1]
Toosar dos coctos ofcos sanno — officos costo segente officor officor

Folio 28, Verso

```
[P1, 1]

| ltdog toolly do? ttdolly detter tolly 89 do?9

[P1, 2]

olicogy tolly as 89 tolicog aco? ttag tolicos9 aco? o

[P1, 3]

co? acog acy acolly
```

[P2, 4]

11/2011 - The control of th

[P3, 7]

Toog ond ond the dand of the sand of the sand

Folio 29, Recto

```
[P1, 1]

To2a11 & call off and total off and total off according [P1, 2]

8 of graph of and off and according and for any form total off and for all off according and for all off according and form of according to for according to for according to for according to according to
```

Folio 29, Verso

Folio 30, Recto

```
offectop acq dotacq tacosq deq they act so deq per 29 offectoq acq affectoq theorem according act so decq offectoq act offettoq act off
```

```
[P2, 8]
of trop of circles decree decree of trage — series decree of trage of trage — series decree decree
```

Folio 30, Verso

[P1, 1]

cftc2cftcavd &co2avvd crocftce of or ctfce of decavvd

[P1, 2]

tottcoof ce of de tecof crof bloof of ce of davvd cftcoff

cooftcoof davvd cftcoff dove dovvd davvd crotfcoff dag cettorfte

[P1, 4]

oftce of davvd croff crocfte of tottcooff day cettorfte

[P1, 6]

tottcooff crotfoff cettoff

[P1, 7]

crotfce of crotfoff cettoff

[P1, 8]

ogde crotfoff cfcoavvd cftco

[P1, 8]

tottcooff croff croff davvd cftcoff

[P1, 10]

cooffce offce offce davvd

cooffce croffce davvd

[P1, 11]

Folio 31, Recto

offco? arrefteg

```
Probable to the South following the followin
         80000 January Collect S and collect total
tolleg ecco sand tolleg fant eccles sand seg
total ccg 8al so \leq al cccc llccox ccc80 tollcg [P1, 5]
         90010t 0800055 (111B
         Theolicoso tolicos tolicos ecctar ecoso ? and sag
per, 7]
glice da? Zarri cocofficos cocos folicos glicedo cocos gos
[P2, 8]
cocos folicos cocos cocos folicos cocos cocofficos
[P2, 9]
         80117 Ecco Ecttog offcog
[P3, 10]
        Those and offices tolless tolless tolless sar acording
oxéccox tollers dax ency decy lety lees offarrid splecy _{[P3,\ 12]}
†οαινθ 9σες ο Μεδο δες σες σεςδαινθ δα?
obsolo Gilbe obsos so Silos
octobar choog collo ollobar
```

Folio 31, Verso

[P1, 1]
Toda \ ? &ccess offices offices toffogetee 2 a ? a? offices offices age
[P1, 2]
officeo octives officeo eccoss offices focoss sand eccoss focoss
[P1, 3]
officeo sand &csos offices offices offices offices offices
[P1, 4]
san? effices toffoss offices eccoss offices ag octives offices
[P1, 5]
office eccoss a? and

P2, 6]

Toccoso tot occos occition of occitions of occit again of a theo offar

[P2, 7]

og ficeday occi occi ficeog occition offag offag offa occided offar

[P2, 8]

off and occided offaces occided offaces occided offag

[P2, 9]

officecog occided offaces and antificed occided occided offaces

[P2, 10]

sar occided offaces occided offaces offaces offaces offaces

[P2, 10]

sar occided offaces occided offaces offaces offaces offaces

[P2, 11]

Zand offaces occided offaces offaces offaces

Folio 32, Recto

```
[PI, I]

Toolid deglicos salvos salv — do too off too
             .2020 Potor Cocord clip sas — 8ctobar fothcos
   tollcrof crof ettrog crog sog — scrcosand sand
  toffers toffers sand
[P2, 6]

Laco Hace aces
   offor sox ox sar?
  †oa? 8a\\V 8a8
   8011cco2 8a29
[P2, 10]
8cto? cffco 8a\\\\
[P2, 11]

cto2 cccffcox \(\bar{V}\)

[P2, 12]
           ट्टें08a110 ट्रीं08
             office of sand sand cttog
 [P2, 14]

Cocco toll occo sand offer
 tollary tollog 80117 og [P2, 16]

Tollarog acco 2019
   [P2, 17]
  حدهالاده الادمال المراقع المر
los scros sas
```

Folio 32, Verso

```
[P1, 1]

| The cosann cos | The cos follows of the same of the sam
```

[P2, 7]

Ilito cto? to tecanno officeo dan — tetto 2 odal

[P2, 8]

officeo danno danno effeo danno toffano — officeo de tea

[P2, 9]

tofficeo effeo effeo effeo danno effeano — danno

[P2, 10]

to lleo ero? ero danno effeo effeo da — a?

[P2, 11]

og to ero

Folio 33, Recto

[P1, 1]

The sar also actes of the so of order of offered offered offered sand

[P1, 1]

offered to the action of a sand offered offered offered offered offered

sond of action of the so action offered offe

Folio 33, Verso

```
[P2, 7]

**Thicks of the solution of the solut
```

Folio 34, Recto

```
[P1, 1]

**Tercoefferg oga? gg — gfo3g offe803g et03 ogog3g 3a? gffeg
911a7 &cco89 08a8 — octtcc89 offc89 cc8a10 081c9 ffc9 ffc9
toticog crotig crosses — 8a7 cros oticog totig olicog 8089 obg llag _{\mathrm{[P1,4]}}
      9tc89 8a11 cc9 a11 — co cctto 9
      folicoso coso coso og — olico a2 — oglicoco olicos sag cocilio
offeds welled welled ors — weld — offeeds well offed offed of 0
tollodg dag codg — ogcog — gllcoxg — dann collg tad and agg
      Lotterg tollg — ogli — ercetteg — glicog tollerog 2 at ogoan
9/10089 108 — a7 — ccott — atto — 92a 17 a 17 cco8a7 flag
      obsecto flosago offarro sarso
      There of cells of market and cells of the same of the 
†olicco & lagoarro — ceclo ctesago oticeso cetto 2011
.

cca? a\\dolon olfo? a? Hog — folfa? ccolfcg cc8ag lfc8 folfa? a? 8a\\dd 8a\\
gho sof occo oso — ollaso flocoso tolloso coof af a1110 8aso _{[P3,15]}
\stackrel{\cdot}{\circ} of at 9 lat og ag off — cross to lag cross crefteds creft satas
      2a17 acla? aclfo chell — acosaceso tolleso of accosacetto
```

Folio 34, Verso

[P1, 1]
[Pacoso coso culturo deso totales desoso cuesares oftes cultus 2tanol [P1, 2]
Those tollows socies ollows cultus cultus custos cultus cultus could societ and order oftes cultus cultus

[P2, 6]
There da? Lea? to the day to the edge of the day of the da

Folio 35, Recto

```
[P1, 1]

cffroo? crops cffrs croffs cra? 39

[P1, 2]

tollicann crollann tollicas anno

scanno cffrcs tollicus flann cffro?

[P1, 4]

tollicus chilicus cffros crocs sanno sanno

[P1, 5]

offro? cho flacces crocs sanno sanno

[P1, 6]

cranno cra? crad sanno

[P1, 7]

chollicus flanno sanno

[P2, 9]

tanno cranno cffro cracs cracs sanno

[P2, 10]

o anno cranno cffro cracs cracs sanno

[P2, 11]

chaccanno cros cffranno scanno scan san san san asso o

[P2, 12]

oso? cra cranno cra flanno flanno flanno

[P2, 13]

tollono cranno tollicus offro? sanno cffranno

[P2, 14]

cffros cros anno tollicus offro? sanno chos tollanno

[P2, 15]

ocro? 2 crnno sanno offano? sanno chos tollanno

pre, 15]

ocro? 2 crnno sanno offano
```

Folio 35, Verso

fa? cco? ccocffcg ?oa\\dagger a? totlarg offaceg llaco? offa Boro For collo sally [P1, 4]
offce folice for offe Scroller croeffed creffed? Los flaces affecces actesive The golf os cos for Sarry 00110 Hero? to to the strong 8 9905 9aSon وعدماً †offceccann ceosann 8000110 80110 80110 809 8 . og cta? oð a? ctca? Mercan 29 Mar 3and olfog croog offerg ffer 98axid offcc9 8axid Barry gard cellago ceogo 8 000 Polices Possibot Pinas Scrolleg gloss cros sarry 80110 CO2 CO2

Folio 36, Recto

```
[P2, 4] To 3a \ \? cft 9 to 9 fcc 0 x \frac{2}{9} cc 9 sc 9 fcc 8 a ? [P2, 5] 3a \ \) to ? cc 9 cft 0 x 9 ? \frac{2}{9} cc 9 sc 9 fcc 8 a ? \frac{2}{9} cc 9 sc 9 \frac{2}{9} cc 9 sa \frac{2}{9} cc 9 sa \frac{2}{9} cc 9 fa \frac{2}{9} cc 9 fa
```

Folio 36, Verso

```
[P1, 1]
Tocalaly totology coannil therey exetting offannil efteal sannil
total engress sannil offannil totology offan octol exetty efteal son
[P1, 3]
sergificing offor 2 — offannil totology offan offerannil
[P1, 4]
totherol off to so — sannil efteal
```

```
[P2, 5]

Thereof effeon dann effecta?

[P2, 6]

Sann effeor sann sag sg2

[P2, 7]

Tolly leog offeror of ero can

[P2, 8]

offer goffer sog offes goff of goff of goffer goffer goff ero ero ero effect goff of ero effect gof
```

Folio 37, Recto

```
[P1, 1]

1 foctog cannot tollor of cor off coro sanno offos or [P1, 2]

9 flonn cftcor offanno tollor offos tolland co offanno foctog tolland cftcor offanno
```

[P2, 4]

Toollog sann oftog sar ong sann — 98

[P2, 5]

9/19 tollog tollog offog

[P2, 6]

ctor ctor tollog tollogos — song sann

[P2, 7]

207 ong 1/07 tollor sann

[P3, 8]

No.10 ccorosg tollarid ctorg offag — ctor ctcor sar

[P3, 9]

gliccosg tollarg gliarid ccg tollor—sg — office gog sarid

tollo ollacoccor sacor ccg ctg sarid — gaccg llog sarir

ollacor sarid cffcg sard sarid

Folio 37, Verso

```
[P1, 1]

| fictody toothey tothogogy croffsand cog [P1, 2]
| 80? crog ctro? o?cro cro? dann)
| folicrod cty crod dann dy decor defined decor decor dann)
| 8ctor defined decor dann
| P1, 6]
| golfor other offcand dann
| p1, 6]
| golfor other cannot offg
| p1, 7]
| tothcor dann
```

[P3, 14]

Thosand ctann ctropose

[P3, 15]

20110 ccollog sand sand

[P3, 16]

Tothor sand ccothand

[P3, 17]

201100 tothon dand sand osg

[P3, 18]

office sand sand osg

[P3, 19]

sand thond tothog sand

[P3, 20]

occothacy offor sand ctrope

[P3, 21]

occothacy offor sand ctrope

[P3, 22]

Tothog offord coothacy

[P3, 23]

Folio 38, Recto

```
[P1, 1]

Thoso? crocifics — olly crown ollicos ogg olly

[P1, 2]

ollicos crosso? — ofform offarm offarm offarm

tollo? ollarm — offarm tollicos crollollo?

[P1, 4]

garoll cros crotit — cro cello? osam dann ogg

[P1, 5]

ollo? cros llard — cro? offo sand offogs

[P1, 6]

garo coo llo? — sand ollog crocro? sand
```

Folio 38, Verso

```
[P1, 1]
  office of crop chotog offices offices of crop & and & and & [P1, 2]
  ctonn chotog fice cho on on offices and control offices for the crop offices fices and offices fices and offices fices and offices and offices and the control offices and the control offices and and and files fices fices fices and and and files for the control offices and and and files for the control offices and and and files for the control of the control o
```

Folio 39, Recto

[P1, 1]

The so are a cheer of as and each term of or and are than of other soft of the so

[P2, 6]

**Tecology of the state of the stat

[P3, 10]

**Tecolor decolor are anterested and anterested anterest

Folio 39, Verso

[P1, 1]

#8a\? cc89 #8911a\D o? a\? &c911a\\\D o#c09 11a? o? a\\D &ox 119 o&&9

[P1, 2]

20? &g 110? cc0x totto 11cc89 ox 119 80? cc89 of 1a? ox 11c8a\\D o&9 89

8a\\D cc0? of 1a\D of 1a\\T cc089 2a\\D o? a\\D to 1a\\D of 1a\\D of 168a\\D of 168

9 of 1cc9 cc089 ccc0? a\\D of 1689 cc08ax of 1c89 to 1c89 8ax o? a\\D &f 1689

of 1c89 110? o? &c19 11a\D of 1a? o? a\\D of 1a\\D of 1a\\D of 1689

x 11c89 of 1cc9 &o? \tag{10} 1a\ \D of 1689 cc0 cf 1689

x 11c89 of 1cc9 &c0? \tag{10} 1a\ \D of 1689 cc0 cf 1689

x 11c89 of 1cc9 &c0? \tag{10} 1a\ \D of 1689 cc0 cf 1689

x 11c89 of 1cc9 &c0? \tag{10} 1a\ \D of 1689 cc0 cf 1689

x 11c89 of 1cc9 &c0? \tag{10} 1a\ \D of 1689 cc0 cf 1689

x 11c89 of 1cc9 &c0? \tag{10} 1a\ \D of 1689 cc0 cf 1689

x 11c89 of 1cc9 &c0? \tag{10} 1a\ \D of 1689 cc0 cf 1689

x 11c89 of 1cc9 &c0? \tag{10} 100 \ta

Folio 40, Recto

```
[P1, 1]

Taco Ilcosar agsgsg — tollg ollag 289 oglicsg offace ar orsanni

tollar ollar ollar sar — glaco Ilanni ollor aces ollar aragor

[P1, 3]

29 tollag as gar — glar ollor and ollogar tollar ollar

[P1, 4]

or and acellos sar — tollog ollanni ollar ollg ollogsg og

[P1, 5]

gollar tollar ollar — ollog og aces tollar ar ar or sag

[P1, 6]

Thor or ar and ollor of — ogaces tollar area Ilar oranni

gand acelland ollg — gaces
```

[P2, 8]

| face | face & are are marked of and are face & are face

Folio 40, Verso

```
[P1, 1]

Tocosand occtanno ogso
[P1, 2]

Thosa? tolland og aras
[P1, 3]

Z anr and olland otlas

[P1, 4]

Tharand olland occtar

[P1, 5]

Zogand ollar ogg occtar
[P1, 6]

tocos and og occso sand
[P1, 7]

chosy tollog occso ar
[P1, 7]

chosy tollog occso ar
[P1, 8]

chosy tollog occso ollag
[P1, 9]

Thocosand occlar ollar og
[P1, 10]

Thocosand focso folland
[P1, 11]

Zoccso tollog occso sagor antico
[P1, 12]

goccclicco sand olland

[P2, 13]
```

Folio 41, Recto

```
[P1, 1]

Taco licoarco olico acilica — otaco otaco talalicos polico araco olico technologia polico araco olico licoarco — otaco otaco otaco araco olico ilcoarco otaco o
```

[P2, 6]

checked formed folices melicos office — milimos offices for checks

[P2, 7]

farmes firmes offices folicos — offices milimos offices folices

farmes firmes offices folicos — offices milimos folices meets

and milimos folices melicos melicos — folicos melicos melicos folicos offices melicos melicos melicos melicos melicos melicos melicos melicos folicos folicos folicos folicos folicos folicos melicos melicos melicos melicos melicos melicos folicos folicos folicos melicos me

Folio 41, Verso

```
[TI, 1]
| Mcc2odag
| [PI, 2]
| Taccodo totaccito otado atechado — otacedo acetacito adacedo totas da?
| [PI, 3]
| Sacedo taceo 2 and acetaco otado otago — sand otago oficeo oficeo sas
| [PI, 4]
| totado otago totacodo oraceo electro otago — eleccodo totaceo otago acede
| [PI, 5]
| oaceo oraceo sand or aced otago oraceo oraceo oraceo oraceo otago otago oraceo otago otago
```

```
Folio 42, Recto
 Costa to otalia patracetto offices forca?
 Osymbarry Cells offcarry carres
Tocto celleta ceollar cears &ag
 Fire Fab Siallow Fallow Fois
toldar croctly crotlor toldar
 807a17 cca?
 र्रिट० ८९ १८४० १० २०१४ १० ५००
octog crec2 ettog cto7 ctog ettog cra79
+ offceo? offceog cffco fceo8al cellceo?9
colfs dog lícico efferd offog efferg crog — crog da \sqrt{0} [P2, 11]
. Screeg crop chor crollann croelly scffg — sand sage _{[P2,\ 13]}
to like colf colary crosarry barry — 8ag _{[T2, \, 15]}
 Tocoso offices sosarry
```

Folio 42, Verso

```
8chcg flowg g llowg colleg ctg 8al - 8al offog 8all
                  cio حماله وعلام من عمور من والم عماله وهواره وهماله من المرادة من المرادة من المرادة المرادة المرادة المرادة ا
 †offceg celloeg 2a2 8g — o8arrs — glloeg ollog 83
 collector cocy collar - of - of - of - or - of - of - or - of - or - of - or 
 offcollear creotlerar — 29 — Zarri ctrar 8ag
colf decolled less 8 — are less \frac{1}{[P1,\,8]}
                  GIIDS RDBOS
                 Total of the state of the state
                  \mathcal{S} cos offers \mathcal{S} of \mathcal{S} or \mathcal{S} or \mathcal{S} or \mathcal{S} or \mathcal{S}
to all tolless less energy offcos -8 — they feall 8 _{[P2,\ 12]}
 coffeecy cox ox early officered — either flaxly 9 _{\rm [P2,\ 13]}^{\rm [P2,\ 13]}
to acq floof they accounting savid — acolling savid
 tother and the after the consideration of the cons
                  حزهاادع حرمع ماادع
                  02280 Follo
```

Folio 43, Recto

[P1, 1]

The rose in the rose of the restrict of the restrict of the rose of t

Folio 43, Verso

[P1, 1]

**T82a\?9 &ax11cocc9 &a x9 ccc11 o? a?osx x11co ? a?a\\\) ottcs9 o toxs9

[P1, 2]

**Ccc89 octto ottcs9 ccc89 &a? ccc2 to ottcs9 ott9 ottax89 toxs9 otta?

[P1, 3]

**Toss9 toxs9 tott coctto cclf0 ott9 ccs9 ottcs9 ottax\\)

**Toss9 ottos9 ccc2 a\\\)

**Ccc11 o? a?osy x11cocs9 ottos9 ottax\\

**Ccc11 o? a?osy x11cocs9 ottos9 ottax\\

**Ccc11 o? a?osy ottos9 ccc11cocs9 ottos9 ottax\\

**Toss9 ottos9 ottos9 ccc11cocs9

**Toss9 ottos9 ottos9 ccc11cocs9

**Toss9 ottos9 ottos9 ottos9 cct11cocs9

**Toss9 ottos9 ottos9 ottos9

**Toss9 ottos9 ottos9 ottos9

**Toss9 ottos9 ottos9

**Toss9 ottos9 ottos9

**Toss9 ottos9 ottos9

**Toss9 ottos9

**Toss

[P2, 6]
Thoselicido olicoso tolicosos cicoso olicosos cicoso ticos os ticos os olicosos olicosos cicosos olicosos cicosos cicos cicosos cicosos cicosos cicosos cicosos cicos cicos

[P3, 10]

That coop at assat cos sassat colf offices coffees forces office offices off

Folio 44, Recto

[P2, 5]

100 dopto toticog cood cacello decog offeg 8a\\0\
[P2, 6]

8dood offerog deg o ocacello toticog offer 8a\\0\
[P2, 7]

totlood ot8 deg totloog ooffg coog

[P3, 8]

They offers to free offers to free offers offers for offers offers offers follows of december of the follows to free follows as follows of the offers offers offers offers offers offers offers offers offers offers

Folio 44, Verso

[P1, 1]

There to the control of the

[P2, 4]
golfagos canno cor coroso cello co offico oficos ofo
[P2, 5]
oand cog ctto ctanno officor officor officor ctand
[P2, 6]
flog sand offano sog officand offolicos officor offano sog
[P2, 7]
offo ficanno cttos so coop

[P3, 8]

The coop effect of ode to the coop effo — of ode — og [P3, 9]

8 ho of effect of ode the coop effo effect of ode of [P3, 10]

get o follow the often of offer o

Folio 45, Recto

[P1, 1]

Tollosas cartes offs cas tot car ofcas ofcar ofcar

[P1, 2]

cor offs tollos tollarry cas cos slarry sar of

[P1, 3]

to cattes lacos sarry toarry offs carry slarry

gor of larry slarry

gor of larry slarry

gor of larry slarry

Folio 45, Verso

```
[P1, 1]

Notato culto Nox accop theory to the of offers so of the offers of the offers and offers a
```

Folio 46, Recto

[P1, 1]

Toccofteg totless octly so octloss of octloss ocanno dece totless sand dece so sags
[P1, 2]

Posanno decess took decotloss ocethes sanno decilident decs xor and decethes
sanno deor star octloss ocethes
sanno deor star octloss ocethes
totless density decilis dec

[P2, 6]

The soft of the soft

Folio 46, Verso

Folio 47, Recto

[P2, 6]

Tog? acg 20 acg cog and cog and cog asg agg agg

[P2, 7]

2acc2g Maco? attand acg acg acg acg acg attag

[P2, 8]

colleg ag Maco8 acg ac attag acg attag

[P2, 9]

Tollo Mo? and ollag acg sand ollag acg

[P2, 10]

ag ollag acg sand sag

[P2, 11]

sto atg sand sand

Folio 47, Verso

```
[P1, 1]

The coll accor acordo at tag 2ag — 2arg

[P1, 2]

8th cop at a offico offico offico of acord — 8arro

[P1, 3]

Atop arar officos 8or officos at tag — 8arro

[P1, 4]

tothor according at tag — 6th officos at tag — 6th officos according at tag — 6th officos according at the first officos according acco
```

Folio 48, Recto

[P1, 1]

The dann of the good of good

Folio 48, Verso

```
[P1, 1]

The coders deceds the edge of and streets and streets the edge of the
```

[P2, 7]

Tools are considered to the state of the state o

Folio 49. Recto

² There is a curlicue above $\uparrow \circ$ as used in \mathcal{L} .

³ There is a curlicue above the first c as used in \mathcal{A} .

⁴ There is a curlicue above to as used in &.

⁵ There is a curlicue above a_{λ} as used in \mathcal{A} .

⁶ There is a curlicue above $\uparrow \circ$ as used in \mathcal{A} .

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Folio 49. Verso
```

```
[P1, 2]
                   Proposition of the sock of the second
†olíceg †olíceo8 cto c<del>lí</del>eg<sup>7</sup>
                  \frac{1}{2} collars are the collars are the collars are the collars.
                  ollood to tollook 8a89
                   Log Losally toffca? 10
 toffer croffer croffs ^{11} _{\scriptscriptstyle{[P1,\,8]}}
                  ट्याटि ट्याटिक ट्याटिक
1016cc2 ccco 8a110 80g
                  octo? Lcco8 16cco84
 80000 ctrog 80110 ccollo
 octolices effecs sarry sarr ecollos
                  tollog collicoso offor lacol crox sall
  [P2, 15]
                     fallow — oSws 2080229 o gowll 2020 Foward
                  or of the state of
                 The office of the same of the 
                   chos ost (1/20 csots
 toffero encos enos 2 ero enefferos servos — enofferos \frac{1}{[P3, 20]}
                  colloo do aco? aco! lacel aco? 8 acol 89 — 8acol tollo
 to tean coor cooling tercor band — to band the same form that the same form that the same form that the same form to be same 
                  مالاعدين حدو الإكامة المراجعة المراجعة من الأمراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة المراجعة
                  S of the post for the property on follow bridge
 toffercog ency enor enollagy enor day — enavived [P3, 26]
 _{\mathrm{[P3,\,27]}}^{\mathrm{-}} coof cucl cultaging collectly — cultofal
                  officials of coco sally
                 This line is preceded by a 1.
                This line is preceded by a 2.
                     This line is preceded by a 3.
  10 This line is preceded by a 4.
```

11 This line is preceded by a 5.

12 There is a curlicue above $\uparrow \circ$ as used in \mathcal{A} .

Folio 50, Recto

[P1, 1]

The cor of tax of the cost of the

Folio 50, Verso

They so asa? collects tollects offeres tollog coop of a tarsay theosan occes offan tarsay theosan occes offan to coop offan tollects o

¹³ There is a curlicue above \circ as used in \mathcal{A} .

Folio 51, Recto

```
[P1, 1]
 Sccoolarry efficacy efficacy coop
9 800089 cttc9 off9 cttc08a7 tolf9
 8a117 office office occopy office occopy
 Thecoog tosann effecy toether flann
90008a110 008a110 9800-8a110 98a8
90002a7 crotteg loco tolorg totag
octos osavvi effeco effecoso tolles offoso
 Thos garry focogas gas togo toctlas
9/1000 807 cc09 tollcog loccy cog ollar
 flocosarry ctcoso tollor off. osarry floroflas
gocc2 effeccy flog ecceas offco7 foethers ferodas
00117 ctros 916cos otrocos ctroosa117 9160989
tollox ccco? offcax 2 of axes — offax
```

Folio 51, Verso

```
[P1, 1]
Tocoog to losa? cosann totay — scarce cands greet, 2]
scross attack totay to los sofann as — to log sann attack
[P1, 3]
Theroso attack to a other tos others — sann attack
[P1, 4]
offann tosay offax accosa? coso — offer sann attack
[P1, 5]
Thosann offos to tosay to and and accos and and accos and and accos offann attack
[P1, 6]
offor attack tosay to attack to to log to to and offann accos and and profess accos to a cos — others accos and and profess accos to log accos and and attack tosay to an accos of accos of a cos and and accos and and accos and and accos accos and and accos accos and and accos accos and and accos accos and
```

Folio 52, Recto

```
[P1, 1]

The forcetty getting offer? Lar to to be and offered and
```

Folio 52, Verso

```
[P1, 1]

Theorem cate of the control of the control
```

[P2, 7]

foccos cosonno cttos anno
[P2, 8]

flodanno cttos tollocos os
[P2, 9]

danno cttos cos tollos danno
[P2, 10]

gollocos tollodo cos dosd anno
[P2, 11]

danno cttos todanno cttos das
[P2, 12]

toclar cttos ollocos cttos
[P2, 13]

ollor ollanno cttocos danno
[P2, 14]

odar coollor cttocos

Folio 53, Recto

```
[P1, 1]

floods coothoos offo
[P1, 2]

dog dand coote offo
[P1, 3]

ctocc? collad obg
[P1, 4]

officodanni offo offod
[P1, 5]

olfe offog offeodog offod tolfod offod
[P1, 6]

officodar offor offe obor cand follod offod cocc dag
[P1, 7]

Codar offod foo offe odor cand follod offod follog

tolficog dar offod foo offeo offeo coco olfod officod

tolficog dar follo coffe odor cand offod officod

offog coop officec offor officod

offog coop officec of orog cood follog

offog coop officec of orog cood follog
```

Folio 53, Verso

[P1, 1]

There deep toolettes ette oftee oftees of and total total [P1, 2]

offees dand decelles deof deof deof oftees of so [P1, 3]

goann ette of the oftees oftees oftees offees offe

Folio 54, Recto

Folio 54, Verso

```
[PI, I]

Teccosa? cetas osovi effeco sa? tolleco effeccav » Zas
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8a7 cro7 crcllg crox olla/1) cro8g crox 8g
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 Thos cross crocted togarry florogo
  Sand choose of and tolley
  Barro Barg tollarro offcas offas og
98a110 tocker todas offas offas 89
  log clarry colleg tollag dag toctleg
[P1, 11]
 oally foether tollar
100 ccos c11cos 2
9000 ollas 9011009
 Mad ctco May assay
[P1, 15]

07 agang offag 80g aro80g89
  8a11) ccox 0x8a11)
```

Folio 55, Recto

[P2, 7]

Therefore accosites a cross it to the state of t

Folio 55, Verso

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[P1, 1]

Mcccobacobo ocolar 20 acetta — ottog — ottog occolor offices offices to the color offices offices offices to the color offices office
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[P2, 7]

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floor ecolog tollann offat tos — offat! eco effect thasour offaty

[P2, 9]

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offatly tolled offas eco of — or ann offann offatly

offatly offat offat os

[P2, 10]

oann os ann offann offat os

[P2, 11]

offann ecoar ecolog oso — ann offat osfed or or or or or offan

sann or ecolog osfeces of — ar ann offat

Folio 56, Recto

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offcag accello offo c2c80 ac oacoacte accello offo c3c80 ac oacoacte accello offo c2c80 ac oacoacte accello offo c2c80 accello
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   osercy crolleros ercy lecy tollers erolles erolles \frac{1}{|P1,4|}
   t offeror crop cropor cropo
   حدمحده؟ حده حدههم هماري)
   9/1/cco 89 8ccc9 /1/cc9 8a11) 9
خت الحدود والحدوك حدوالع هود
[1]، 8]
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                     The off the story the story the story
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                        Follow For 20th (1/108 cospil 6)
                        à a la follolla
                      olico crollecco lecas
                      Scrop croffox toffcro
                        The offerog cros offer
   101/crg crosg cffcor crcg 1/crar 8
                        collect following Screet Barry 89
                     For collection of the collecti
                        Olles soll possilo
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Folio 56, Verso

```
[P1, 1]

[P1, 2]

Cod! cog cog tollow cog tollow cog tollow cog cogo?

[P1, 3]

Occep cog cog tollow dann collect dag

[P1, 4]

Cog flow dann decay follow dann collect dag

[P1, 5]

tollow cog cog choc dann

[P1, 6]

collow cog cog choc
```

Folio 57, Recto

[P1, 1]

Tocco cttcg osand accost accos accttcg so accit accosg gosan
[P1, 2]

Sant and acting accost accos

The codag of any extress of easy soction of easy of losan of orang [P2, 7]

Sance decedy to be cody each of easy each of each of each each of each of

Folio 57, Verso

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[T1, 1]
8a\20g
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[R1, 2]

A 2a & g 20c02 A2 a7 office2 o 8 20c feece2 & g 202 office 8cto to 9 fficeas & ct offog 2a7 88ag offog 2 o 8a112 office 8ct 80 8ffag2 offog feece a 7 offa110 8ag ffa7080 A7 office 8a7ag toffa7 offag offag 8 o g ctlcag 808a2 o ff ctc? 2a110 0 g 8 7 A x ff g t * ff ? * * g c * o g 8 7 A x ff g t * ff ? * * g c * o g 8 7 A x ff g t * ff ? * * g c * o g 8 7 A x ff g t * ff ? * * g c * o g 8 7 A x ff g t * ff ? * * g c * o g 8 7 A x ff g t * ff ? * * g c * o g 8 7 A x ff g t * ff ? * * g c * o g 8 7 A x ff g t * ff ? * * g c * o g 8 7 A x ff g t * ff ? * * g c * g 8 7 A x ff g t * ff ? * ff ? ff & ff
```

¹⁴ Apparently, R2 repeats the sequence "o g & ? A x If & If ? * * 9 c *" four times.

Folio 58. Recto

[P2, 16]
The true of and and effects of true of the same of the same of the potential of the potential of the same of the same

Posar tolly officea ofasard officegarry offsarry office offo crapital as checeffing that as creat creat coop at any osospilo osasas osas cos 3 av2 collas osasso ollasoso osaga? crco? Sa? agog sago crcog cro? a? agsag crag crcag Soso office at agon tollagor cross sair cross cross offogers offagos ostatos flavido polagos coos oscilas offascos coos llas tollas otoffago tollarid ceffagos tollo sar as coostfago tollagos Scroctfires 8agogs tollagos croof ocllooss tollags tolla? 89 92 Lcox crolles saxox collagox tollago llags, offartog 8 solo follo fagos gottos cosas anno coottoas Pharry color colleg tollo cettes officed collar ofosilico? oscroctes etcos cosos cosos cella VI) osteras polleoffe Girallo Gira Sa Folle collo Sosso capllo Sossocs offictor offiar ollar orox ctoox toother tollars carox earas 92090000 afarfagg 40089 1102agg agog2 glagg 11a7 afag Scrop crollag Zarry sag ollagZagcrcg

Folio 58, Verso

Tox collago starry offarry crotago star offar offarsoffarroll ofliso soza sa sinter ososilo bilas osogatot o siali bilas so sias Tiobag totland to theceg tolleg olleg tollagerag bagg at any of allo offalo offag tollar tollar offago offago offago tarro otazaz totlarro 2009 totlarro 9totlagg otlag totlagg otlagg tollars of agg ctos sarry cross sag sllarry off tcccs ollags olls 9 8arry tolles follar secres tollagor choose office arry explicit Marrie Chros Baggo tollars agas offag arro offarro offarro offago Bag Zagag togalld coorfices ffocogg tollalld tollalldo ofocces ogagg Theogetog for tollaroof of ollarid collario coolarid ofices of the following of the same of the tocca? aglica \ V offag coo offag cooffeg flag cficto flag Eaf a 17 agos crog occar co pollag crog lagar Tal a? ofag totolin ollar arak 2 and toar tlarcood ollar coo otlar 8ar $g\dot{R}_{a} \times 0$ tolla θ ollago tollag crago crocotteg ogago tlaggad ag 8a11) agag 8ag toll11? offag cro80g tollcag crc0g cro2 ollccag Tarry cras cras tocttog sar arry octtrog tollog toarry aras ollar collag chooses follor oglag choose 8ar cholloco ollagoro Thosa V a? office offas cros offas a? crefts cellaga? os oparo Posaso Gallo Sulla Collas Gallo Occaso esollozo coozo Follox

[P2, 23]

Tocolo costo costo cotagocos costo costo costo a salla asalla tollas asalla tollas asalla tollas asalla tollas costo costo costo allas tollas asallas asallas asallas tollas dalla tollas costo tollas of tollas tollas tollas of tollas of tollas tollas tollas tollas tollas tollas asallas tollas asallas tollas asallas tollas asallas tollas asallas allas allas tollas asallas allas allas tollas asallas allas allas allas of tollas of tolla

[P4, 34]

Thoseco lico! ar totecos sar articos oferas ecotico oliaso
[P4, 35]

Sarri offari oliari ecos olicos tolicos osar eco soso saspece
[P4, 36]

The coso olicor octico tolias olias ecolico tolicos sasar
[P4, 37]

osilicos oliar ar ecolis oliari olios ecolico ecclis sasar
[P4, 38]

oficoso toliar tolis licos tolios olior ecolis 2989
[P4, 39]

oecor toliari oliar ecar ecr zarosz

Folios 59-64

Folios 59–64 are missing from the manuscript.

Folio 65, Recto

[L1, 1]
offarg—8ag agag

Folio 65, Verso

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[P1, 1] cto facates so — sactand acting to to for atsometric solution of the content of the con
```

[P2, 4]

**Thocoso offor toso — office toso tolloce office office

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Folio 66, Recto
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2a29
[L2, 2]
    SapS
[L3, 3]
<del>1</del>07
   8079
[L5, 5]
9. ICOR
2ag9
   Past
   1ª29
[L9, 9]
CSoffot
[L10, 10]
9 lago
[L11, 11]
8 x 099
[L12, 12]
ζαννθ
[E13, 13]
   tollag
[L14, 14]
25 of
[L15, 15]
   PaPag
```

[P1, 17]

#\$a\\\\ offices offices caff action 280, office according offices according offices according offices according to the object of offices off

[P2, 24]

Thockcocy dog horody tohody tohody tohology tohody

P2, 25]

Show dann dag hy they tohy tohan tohy dan offer they they ghody

P2, 26]

Toccolly tothy dagage tody tohody tohody

Tocolly tothy dagage tody tohody

P2, 27]

ton toodage togdy tohody

Tollogy

[P3, 30]

**Timot" & coxtor & annotation of the core of the cost of the core of the core

[P4, 34]

**Tcco89 ctcox cotox ollco89 tollox89 olla?089 cce89 cce89 dar?

[P4, 35]

2ar? ox darro darro dar dox cce89 dare axo darrax doxae cce9 do?

[P4, 36]

**Tocco tollax89 ollo ox liccollo tollo dare oxo

[P5, 37]

Thoseccy through the synthesis of the synthesis

[L16, 49]

officeo 8a\\\ \omega \ccloss office Coee8

Folio 66, Verso

P1, 1]
offcosof accord of ofter sax softeeth offoso saxscas
[P1, 2]
floosax flaces steep offees offces saccelly saxsy toffax to
[P1, 3]
offcot to offees offees offees sax offax accords accelly
[P1, 4]
atolicate sax to offees accelly sox action sax floosax accellax sax
[P1, 5]
atolicate to sax to offees accellax sax

[P2, 6]

There is a cost of the cost of th

[P3, 9]
Todo cheodo cutada? cheeo tadao cheeo ch

Folio 67, Recto 1

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[P1, 1]

The cool of the cool
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[RI, 5]

Coarros & & grollcoso glicesas os oficosarros conficeso ofi cultollarro conficeso offor effer cultivity ar decedo seeds coeffect offers grant offer coeffes offered cultivity ar decede seeds coeffect offered sar are offered grant offered sare and sare coeffes of sare as a coeffect offered sare as a coeffect offered sare are offered offered sare are offered offered

Folio 67, Recto 2

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[P1, 4]

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ccocco ?aç
[P1, 5]
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[L1, 6]
                9280110
  [T2, 7]
 [12, 7]
    offctop? apag
    offosctox 2and arso
[P2, 9]
    Cocco sonn orse
809cc 2089
               9asollot
   9/1ccco 085 cc5089
              Q Gralloo Sootto Grirago
 [P3, 14] office of 20! Parrs 89
 [P3, 15]

totaco dann dag

[L4, 16]
                920000
   [T4, 17]
                905 60S
  98ccoS avy a7 a89
 (P4, 19)

ccoctes Sarage

[P4, 20]

Cannot of or
  [L5, 21]
olfag
   [L6, 22]
                9Sag8ag
 coto?ccg 2g/lo?

[P5, 24]

coto?ccg 2ag2o√xv

[P5, 25]
             Sosas ofos as
  [P5, 26]
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[L7, 27]
                2080110
   [T6, 28]
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[L9, 32]
             for sall
 [T7, 33]
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[P7, 34]

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[P7, 35]

octor ogog

[L10, 36]
            0100989
 [L11, 37]
             089afto
Sofar 08ar ave akovvo
 [P8, 40] 80 May oca? osag
 ota? ocog8av
 [L13, 42]
             ccogazg
  [T9, 43]
           حثالحهم
911000899
 [T10, 48]
 9/a2 9/a29
[P10, 49]
 offox802 octtogc
[P10, 50]
2007 ccc8a110 89
Seatoo
 [T11, 53]
 glity of the property of the p
officeoface achoso
[P11, 55]
Cocco acoc oches
8a\\V a\\V oS 926
             9110110
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[12, 59]
  οςτοδο c2 οδαννν
[P12, 61]
              02a50 S22920
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[L18, 62]
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[L19, 63]
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[R1, 64]

Cafo FaSo estates 8000 Socotion Society Society Society Society States

8a? ag8a\\0 98a\\0 †llog 98a\\0 †ota\? 9ta\? 9lloa\\0 980g9 9tagcco2 0g9 ollog [P13, 66] 2cco 29ccc2 toglicog 9llocog 9llocog 0a\\0 olloga? 0g 9000 tolloco80 ccco2 occo2 toctes coo anno olloco80 tolloanno osan xo a? on 200

```
Folio 67, Verso 2
```

```
[L1, 1]
offa7a7a\v
[L2, 2]
offcco2a8
   ಂ11 ರಾಗಿ
Thos of and an othogo caxon
   9010 90 61128301 61128
[P2, 6]
offccg ffcog xZagag
   800 280 280 80 20 80 Pollo
[P3, 8]
floag sarg Zalla? sag
[P3, 9]
   Sogar Ctco Sogag 8ago
offcog crog at offag-8a8
   Moarry of as of ofagarry oas
[L4, 12]
\underset{[L5,\ 13]}{\text{olfccc9}} \ \text{oclfcc89}
ocosa sc2 a12a2

oa2 glasg cca2
   offafaget ogfao
[L8, 16]
olf98<del>2</del>08 oatoa89
occ-clav2 ollogavg
Borce Possis
\mathop{\log_{\text{L13, 20]}}}_{\text{[L13, 21]}}^{\text{[L12, 20]}} - \operatorname{degag}
  2070 — cFoS
```

Folio 67, Verso 1

```
[01, Label 1]
8ccc29[cc9
[02, Label 2]
91co8a7
[03, Label 3]
80000 100 p. [04, Label 4]
octcoSa8
   ps facial of
0822209
[13, Paragraph 1]
   Toosan? offer ochecoso
[14, Paragraph 2]
   80000 to 111100 000000
[15, Paragraph 3]
  glicco coco sarri gitacs offg
[16, Paragraph 4]
   ೦೩೩೩೩೩ ೦೦೩ ೦೦೩ ೦೦೩೩೩೩೩
[17, Paragraph 5]
   9 fccc9 toffccg ccoffcca?
[18, Paragraph 6]
   Sappage Cost
[19, Paragraph 7]
   olla? Les folleco? 8a111?
[20, Paragraph 8]
   62210 622210 S2220
[21, Paragraph 9]
   208/208 Sins Suras
[22, Paragraph 10]
   2090 PO 0800059110
```

[23, Paragraph 11]
oga? a?olfg

[24, Paragraph 12]
offo? Ifcog o? cccg &a?g

[25, Paragraph 13]
olfcccg ccco&g ccclfg

[26, Paragraph 14]
offccco&o? o&cccg

[27, Paragraph 15]
ccocffcg cccocffcg

[28, Paragraph 16]
offcccg lfccoccg &a\? oclfcg

[29, Paragraph 17]

10289 co 10889

Folio 68, Recto 1

```
[01, Paragraph 1]
                    Los contros contros con for contros co
   [02, Paragraph 1]
                   8000 possolos folios possolos pos possolos pos possolos pos possolos possolos possolos possolos possolos possol
[03, Paragraph 1]

office accept cooling — office *0? coffice &a?a?

[04, Paragraph 1]
                    8000 9010 NO
  [05, Label 1]
  9 1 9
[06, Label 1]
  8a79
[07, Label 1]
                    حدااحروااوه
  [08, Label 2]
                   {\rm olfodasg}^{15}
 08ccccffc9
                    والمردوع
 [11, Label 5]
                   oloazo
  [12, Label 6]
                    ದ್ಧುಕ್ಕ
  [13, Label 7]
                 021609
  [14, Label 8]
 offcc089
[15, Label 9]
                    0162.09
[16, Label 10]
off 989
[17, Label 11]
 olco?
[18, Label 12]
                   ctoctto
 offolice 2
                    Sello
  [21, Label 15]
  0,407
[22, Label 16]
 ocfc9
[23, Label 17]
                    9055576
  [24, Label 18]
                 off<del>c</del> ർം
  [25, Label 19]
                    offog
 [26, Label 20]
   [27, Label 21]
 0110a9
[28, Label 22]
                    080010
   [29, Label 23]
  ၇ါင္ 89
[30, Label 24]
  10cco8c1fc9
[31, Label 25]
  oc†c9
[32, Label 26]
 olicco8a9
[33, Label 27]
                    903910
```

¹⁵ Here, from L2 to L27, the order of labels has been rearranged so that they can be read (roughly) from left to right and from top to bottom.

Folio 68, Recto 2

```
[01, Paragraph 1]
             The coop of the party of the pa
              809 officery 80000 officed a Roccolar college crop of at
[03, Paragraph 1]

Thereof offerolly offerog offog eccool crossery toffersal
cτον 
              Parly officed and officed and officed
[06, Label 1]
              olico olia? olio oliono oliaczo tolioog caco toliog
[07, Label 2]
              offogcecoffcg
[08, Label 3]
              ccco!20g
 [09, Label 4]
08a\\\\
[10, Label 5]_
 осто
[11, Label 6]
ქვ. Label 7]
              SCLOS
 [13, Label 8]
             168a7a1189
 [14, Label 9]
ogcccccog
[15, Label 10]
offcco?
[16, Label 11]
              offcook
[17, Label 12]
098CC9
[18, Label 13]
CCO207
              offcccoso
 [20, Label 15]
              8000989
 [21, Label 16]
              90000
 [22, Label 17]
              offocco
 [23, Label 18]
              0802220
            [25, Label 20]
             2022-61080
[26, Label 21]
             90<del>1</del>00
 [27. Label 22]
              offoctog
 [28, Label 23]
              50802
င်ငင် ၄
[30, Label 25]
              9050509
 [31, Label 26]
              ollog offoarry offog offo occoo ? offcog offccog occo o forry
```

Folio 68, Recto 3

```
[01; Ring 1]
                  205 208000 Prison Court color composition of the contract contract
                  ccooling country of the country of the color of the color
                  forcetters once offices of solutions of the state of the 
                  offcoscics offcos tollos collo sos sascicos offcos 15
 [02; Line 1]
                  8ccc9 tollcc9 8cccc9 8a11 offceage
                 flocid office to flog city to flower
                Moccos cocto tollass
                  Scroller 3a117 croll octrosa?
                  tollog-ascrop tollog arollog ollars
Scroffero des offeo offeo offoces
                 fco89 †ollco9 8co9 8c9 ∕ollβo989
 [09; Line 8]
                  leading offices sand secress offices
[10; Label 1]
                 90050
[11; Label 2]
OQÇCCCOÇ
[12; Label 3] 8ccox 8a9
 [13; Label 4]
                  0909
  [14; Label 5]
                 Sollo
 [15; Label 6]
                 ollogeeg
 [16; Label 7]
 [17; Label 8]
CC89 9 9 19 [18; Label 9]
                  807088
  [19; Label 10
0 cffc 98
[20; Label 11]
olcco89
[21; Label 12]
                  01983
[22; Ring 2]
                  offerody crollery allog croop da? or floor doga \illog olfog odg
```

Folio 68, Verso 3

```
[01; Paragraph 1]
               flaces actag sarres governments and flaces acceptances acressed acceptances ac
 offco tooffo 2ccc9
                 20209! locoog doug tello decog offerog onag decog sann decoso tollog and ono
                  offo offosso
 [03; Paragraph 1]
                 80!5 somflesson soft early — Cireisas Cires colleg Sarra For Fos Fallon
                 Secus forthers ceoss
 [05; Ring 1]
                 Girallossof Sias oso Fab gosto Girallo Go!S obosto Stoss Stoss Solo ollo
                 offercy day exclip office forces of office Society of office of the society of th
                 20110 20 205000110 e20000110 GIVES Soor CBOOCH FEB FEBOIL COMPONING PER 
                  os2co flos accos olícco acollado olíco follado socos adell
 [06: Line 1]
                 gocco log tollag ollog
                 tollcoso ollco acillas acillas ollagoso aciso
                 toclica! & tollo ollogoro ollogoas
 [09; Line 4]
                 offcox accosa toxifices oacifis cooss offats offo offos
                  Pag cesarg Scellog offcoso
 [11; Line 6]
                 occos tocco losos acollo ollas acoso so offices
                 980118 08 000 010008
 [13; Line 8]
                 91125 occop colleg officers socials grantered
 [14; Ring 2]
                 execulty example for the figure example collections and example example examples of the example 
                 980008
 [15; Label 1]
                  offodog
[16; Label 2]
                 ρβγοσοΐο
 [17; Paragraph 2]
                 soal ollos salos saso
   [18; Paragraph 2]
                  2080119 cffced oxcless 80
 [19; Paragraph 2]
                 9lcog ctcctcog 3a?
```

Folio 68, Verso 2

```
[01; Paragraph 1]
                            The cos defle gifted the cos decited of the cos decided of the cos dec
                                Scrarry to the screen to lice to lice sage of the files sages
                                focces delles elles agences effect to the following the
office, the office of the off
                              88 Japan Gazas Costo — 680 Japan Gatto Sasas
```

[06; Ring 1]

possilo p8:pollo! Sootlo plass Sollo Sosses poolo!ps p85s p8000llo Viraboollo olloos crelles eggine office offices offices carried by the collection offices are the collection of t offices for solling to follow the following safe and or solling to follow the solling to the contract of the solling to the contract of the solling to the contract of the con

```
[07; Line 1]
ccoffcc9 8a70
[08; Line 2]
  9! Daga! P
[09; Line 3]
   05 Sp SoS
   Coct 1 Thous
[11; Line 5]
offco89 cccffc9
[12; Line 6]
   officeos agazeco
[13; Line 7]
a8a\?!cc89 a\\0
[14; Line 8]
   Beccedag Bally
```

[15; Label 1] 9! Pccctog - 9! Pccg 10510S — 6250llo [17; Label 3] ezaSa90 — Seosto [18; Label 4] offce89 — cellag

Folio 68, Verso 1

costicos of costic

[03; Line 1]
8a \ 7 cfcc!flo 89
[04; Line 2]
2a \ 7 a Pog Za Z!
[05; Line 3]
offcco 2 a Pago
[06; Line 4]
offcco 3a Pago
[07; Line 5]
offog ccc offago
[08; Line 6]
offcco cc cff cccfco
[09; Line 7]
8a P cc ccoffco
[10; Line 8]

Folio 69, Recto

Pollo cto tollar

obootto Fabootto

[36; Line 16]

```
[01; Paragraph 1]
  The cool dog offairs and follows the start of the cast
  8aii to offait of the case offe offaith billo case
  Palloss esselle es sallo estroca se !!!!! Crisisos
  9! to 2!allo bland offer of glas cos
[05; Title 1]
259 cell!a12!9
off!ocfca?
911co ccosa8
[08; Title 4]
  2855 625 625 685
[09; Title 5]
  912 So 91210
[10; Title 6]
50 S office 7]
  cectta? a? agg
  8ag? ag 089
[13; Title 9]
8ag 8a117 offoga8
  9011.080222 Po
[15; Title 11]
  ollepto teos Sosto
  af osard cellago
[17; Title 13]
  offo saf afcros
[18; Title 14]
  olicco czco 89
[19; Title 15]
  80010009
  offax ar? ax
[21; Line 1]
  office!octfcg offa? a?
[22; Line 2]
  ccc8 a? theo!? a?9
[23; Line 3] Zan? caclleg 8an?a8
  offcco dag offa!? a!?
[25; Line 5]
20g a117 offc9!ffa8
  820 Sp Soollo
[27; Line 7]
  Socreco Boss Sas
[28; Line 8]
  उट्याटिक द्रीटिव्हिक ag
[29; Line 9]
  στος αν όδος
[30; Line 10]
  08216 08010 20 910S
[31; Line 11]
  905 cecoso ceollo
[32; Line 12]
  osollo sosloss
[33; Line 13]
  810czg c#c089 89
[34; Line 14]
  antifor a collag
[35; Line 15]
```

```
[37; Line 17]
    officeo ag 8a\? 8a?
[38; Line 18]
    officeo ag offo
[39; Line 19]
    8ogo 8ag 8a? ceoffo
[40; Line 20]
    officeo folfog 8ago
[41; Line 21]
    officeco89 offa?
[41; Line 22]
    8a? 19 8a? agogo

[42; Ring 1]
    offo! cc2c 8a\V! lfc9 occ2 ccco? officeo o! lfccco 8a? cco officeo2 ag a\vV
[43; Ring 2]
    8 o g 2 c8! 9
```

Folio 69, Verso

[01; Ring 1]

8a\7 cccollo offa89 — Za?!a!? ccolla? offa\? & a? cccfloso offcco2 o!ffco off!offaceo offccoso offcco solv? offcco o caa off!a offcso ac2so offcos!o so coa allo offa? coop ccc2c offo osa\? offo offaco sa? o co ffcoso saco? ca?

[02; Ring 2]

offao coop offa? — sap offaso colleco? cccoop ccop offcase ccc0 oa?a8 ocfto &cco
allo salla? cccoso cccop ocfo ccop offcos ccop solved ccop offa? op offacoso occop offa? ccoso occop offa? ccoso cccop occop offa? occop offa? op offacoso cccop occop offa? ccof occop o

80!a\P offax8ax — 8a\P o! cc89 offoaP aP o! cc9 foffa\P cc08 ccoffa\P a\P offa\P offax8ax offcax offoxo offoxo offoxo offoxo offoxo offcoaPaP ccoffa\P ccoffa\P offax\P ccoffax\P ccoffax\

[04; Label 1] 98669 [05; Label 2] offafo [06; Label 3] occSa [07; Label 4] 916089 [08; Label 5] ollo89 [09; Label 6] 01089 [10; Label 7] ollcog [11; Label 8] രീറേർ [12; Label 9] Spoots [13; Label 10] offcog [14; Label 11] 9 (15; Label 12) ollcos [16; Label 13] SaP!ag [17; Label 14] Za\\? [18: Label 15] Speolo [19; Label 16] 91co89 [20; Label 17] 28989 [21; Label 18] offccg [22; Label 19] olcc 9 89 [23; Label 20] olfc9 8 [24; Label 21] ollcos [25; Label 22] olloscro [26; Label 23] olico89 [27; Label 24] olfccc9 2 [28; Label 25] Seza 920 [29; Label 26] offers Sas [30; Label 27] 08 00110 [31; Label 28]

وحدمهاإ

3 Analysis

3.1 Frequencies

In the following, we take a look at the frequencies of glyphs and words from different perspectives. First, we try to simply count both for the whole manuscript.

3.1.1 Overall Glyph Frequencies and Word Count

Based on a transliteration by Takahashi (see Section 1), a first basic analysis of frequencies can be performed, by simply counting each Latin letter of the transliteration. This results in Table 1, listing all letters that are used (also see Figure 1).

Letter	Representation	Count	
	-	Takahashi	Takahashi/Bauer
0	0	25,468	
е	С	20,070	
h	5	17,856	
У	9	$17,\!655$	
a	а	14,281	
С	C	13,314	
d	8	12,973	
i	\	11,660	
1	9	10,518	
k	ľ	9,996	
r	5	$7,\!456$	
n	จ	$6{,}141$	
t	11	5,968	
q	†	$5,\!423$	
S	₹ 2 **	$4,\!501$	
s	S	2,886	
р	₹	1,406	
m	В	1,116	
T	Ħ	976	
K	ff	938	
f	₽*	425	
P	挈	224	
g	දී	96	
F	4	80	
I	Τ	72	
x	χ	35	
V	٨	9	
z	М	2	
		234,956	

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 c are one glyph (i.e., cc). Likewise, c and c could be interpreted as another glyph (i.e., cc). Additionally, one might interpret instances of effe, effe, of c, or c as representing c (or c), on the one hand, and c, c, or c, on the other. Concerning those "gallows" characters, as they have come to be called, it is not clear whether c and c or c and c are variations of the same glyphs, only diverging in one small loop (as Tiltman 1967 seems to have interpreted them). In the following, the four gallows will be treated as distinct glyphs, as has become customary.

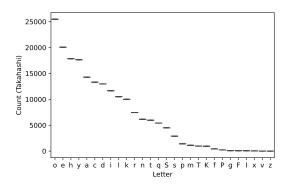


Figure 1: Letter frequencies in Takahashi's transliteration.

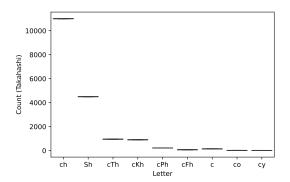


Figure 2: Frequencies in Takahashi's transliteration for several σ combinations.

Accordingly, Table 2 gives frequencies for several σ combinations, taking into account four forms of "pedestalled gallows" (also see Figure 2). The table also includes three instances that bear some resemblance to Latin abbreviations (also see D'Imperio 1978, p. 95).

Letter(s)	Representation	Count	
		Takahashi	Takahashi/Bauer
ch	cc	11,008	
Sh	ત્ત	$4,\!501$	
cTh	c ll c	950	
cKh	clfc	906	
cPh	c t tc	216	
cFh	ctc	74	
С	c	143	
со	ರಂ	9	
су	cd	7	
		17,814	

Table 2: Frequencies in Takahashi's transliteration for several σ combinations.

Furthermore, while there are instances of a single \vee , it is not clear whether instances like \vee and \vee or combinations with ϑ like $\vee \vartheta$ or $\vee \vee \vartheta$ represent separate glyphs. Table 3 gives frequencies for several of those \vee combinations (also see Figure 3). Assuming there are three glyphs \vee , $\vee \vartheta$, and $\vee \vee \vartheta$, it is of course difficult to determine when there actually is a $\vee \vartheta$ or a $\vee \vee \vartheta$.

This being said, I tentatively stipulate a set of 22 glyphs. Table 4 gives frequencies for those glyphs (also see Figure 4). They are counted according to the following rules:

Letter(s)	Representation	Count	
		Takahashi	Takahashi/Bauer
i	\	590	
ii	\\	195	
iii	111	10	
n	Э	148	
in	رى	1,752	
iin	(1)	4,076	
iiin	1119	154	
iiiin	6,,,,	2	
		6,927	

Table 3: Frequencies in Takahashi's transliteration for several χ combinations.

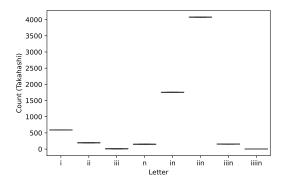


Figure 3: Frequencies in Takahashi's transliteration for several χ combinations.

- The glyph \mathcal{Z} is counted every time \mathcal{Z} and \mathfrak{c} appear consecutively.
- The glyph σc is counted every time σ and c appear consecutively, as well as in cases where there is #, #, #, or # between them.
- The glyph \P is counted every time \P or \P appears.
- The glyph If is counted every time If, If, or If appears.
- The glyph f is counted every time f or f appears.
- The glyph f is counted every time f or f appears.
- The glyph $\sqrt{3}$ is counted every time $\sqrt{3}$ appear consecutively without there being a preceding second $\sqrt{3}$.
- The glyph $\$ is counted every time $\$, $\$, and $\$ appear consecutively.
- The glyph ι is counted every time it is not part of $\iota \Im$ or $\iota \iota \Im$ as well as in instances of τ .

Letter(s)	Glyph	Count (Percent)		
		Takahashi		Takahashi/Bauer
0	0	25,468	(15.636)	
е	С	20,070	(12.322)	
У	9	$17,\!655$	(10.839)	
a	α	$14,\!281$	(8.768)	
ch	cc	$13,\!154$	(8.076)	
d	රී	12,973	(7.965)	
k	ľ	10,934	(6.713)	
1	9	10,518	(6.458)	
r	5	$7,\!456$	(4.578)	
t	11	6,944	(4.263)	
q	†	$5,\!423$	(3.329)	
Sh	ત્ત	4,501	(2.763)	
iin	110	4,232	(2.598)	
s	S	$2,\!886$	(1.772)	
in	61	1,752	(1.076)	
р	#	1,630	(1.001)	
i	\	1,240	(0.761)	
m	В	1,116	(0.685)	
f	₽*	505	(0.310)	
g	ද්	96	(0.059)	
x	ᆽ	35	(0.021)	
V	٨	9	(<0.001)	
		162,878		

Table 4: Glyph frequencies in Takahashi's transliteration

3.1.2 Glyph and Word Frequencies for Currier Languages

3.1.3 Glyph and Word Frequencies for Hands

3.2 Entropy

Next, let's take a look at the manuscript's entropy. To this end, I utilize the conceptualization of information entropy by Shannon (1948), basically measuring the variability of glyphs in the manuscript. Entropy H can be defined as shown in (1), where p_z denotes the probability of z, with z being an element of the alphabet Z.

$$H = -\sum_{z \in Z} p_z \log_2 p_z \tag{1}$$

To calculate the entropy, I suppose the above stipulated glyphs to form alphabet Z (see Table 4). Accordingly, changes to the corpus are made so that each stipulated glyph has a single corresponding character in the transliteration. Changes are made according to the following rules:

- The glyph & is represented by Sh in EVA. For calculating the entropy, every time S and h appear consecutively, they are replaced by 1

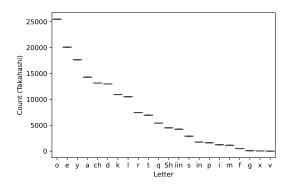


Figure 4: Glyph frequencies in Takahashi's transliteration.

- The glyph of, represented by z in EVA, is counted as If, represented by k in EVA. Hence, every z is replaced by k.
- The glyph wo is represented by iin in EVA. Every time i, i, and n appear consecutively, they are replaced by 3.
- The glyph $\sqrt{3}$ is represented by in in EVA. Every time i and n appear consecutively, they are replaced by 4.
- Lastly, the glyph τ , represented by I in EVA, is counted as ι , represented by i in EVA. Hence, every I is replaced by i.

Calculating the entropy for this converted corpus results in H=3.866. As comparisons, Table 5 also offers the entropy values for the unconverted transliteration as well as for a randomly generated text consisting of 22 different characters and being 234,956 characters long (just as the converted transliteration).

Corpus	H
Takahashi	4.021
Takahashi (converted)	3.866
Takahashi/Bauer	
Takahashi/Bauer (converted)	
Random text	4.459

Table 5: Entropy (H) for different transliterations.

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