

The Digital Rosetta Stone Project

University of London, Senate House

The Digital Classicist Seminar

29 June 2018

Miriam Amin, Angelos Barmpoutis, Monica Berti,
Eleni Bozia, Josephine Hensel, Franziska Naether



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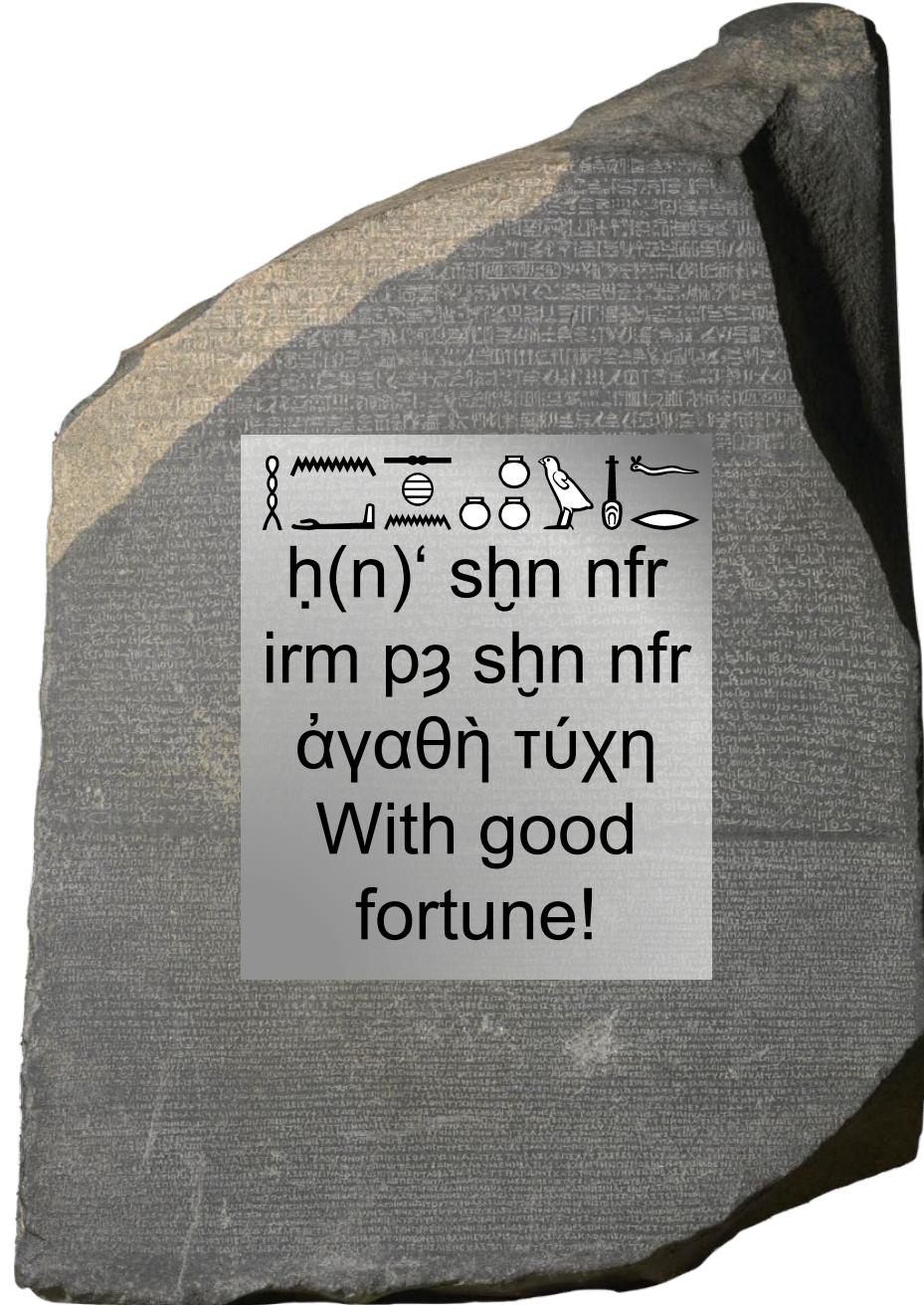


Collaborators and Donors

- Dr. Monica Berti (Digital Classicist), Digital Humanities, Leipzig
Dr. Franziska Naether (Egyptologist and Papyrologist), Ägyptologisches Institut, Leipzig
- Miriam Amin M.Eng. (Digital Humanist and Engineer)
- Josephine Hensel M.A. (Egyptologist, knows Greek)
- Digital Fragmenta Historicorum Graecorum (DFHG)
- Project of „LaborUNI“, 10/2017-10/2018 for Excellence in Teaching
- Seminars and Workshops in both Faculties (Math & IT and History, Arts & Oriental Studies)
- Collaborations with the British Museum (big exhibit 2022!) and the Humboldt University Berlin as well as with individual scholars
- DHEgypt15 – proceedings online: [Altertumswissenschaften in a Digital Age: Egyptology, Papyrology and beyond](#)

Agenda for today

- The Project Idea and its partners
- The Source
 - The Monument and its Texts
 - Deciphering the Egyptian languages
- Details about the Project
 - Alignment
 - Treebanking
- Scanning the Stone
- Further Perspectives: Learning Languages in the 21st century



Digital Fragmenta Historicorum Graecorum (DFHG)



FRAGMENTA
HISTORICORUM GRÆCORUM

HECATÆI	ANTIOCHI	CLITODEMI
CHARONIS	PHILISTI	PHANODEMI
XANTHI	TIMÆI	ANDROTIONIS
HELLANICI	EPHORI	DEMONIS
PHEREKYDIS	THEOPOMPI	PHILOCHORI
ACUSILAI	PHYLARCHI	ISTRÌ

A POLLODORI BIBLIOTHECA
CUM FRAGMENTIS.
AUXERUNT, NOTIS ET PROLEGOMENIS ILLUSTRARUNT,
INDICE PLENSISSIMO INSTRUXERUNT
CAR. ET THEOD. MULLERI.
¶ ACCEDUNT MARMORA PARIUM ET ROSETTANUM,
HOC CUM LETRONNI, ILLUD CUM C. MULLERI COMMENTARIIS.



PARISIIS,
EDITORE AMBROSIO FIRMIN DIDOT,
INSTITUTI REGII FRANCIE TYPOGRAPHO.
M DCCC XL.

INSCRIPTION GRECQUE
DE ROSETTE.

TEXTE ET TRADUCTION LITTÉRALE,
ACCOMPAGNÉE
D'UN COMMENTAIRE CRITIQUE, HISTORIQUE ET ARCHÉOLOGIQUE,
PAR M. LETRONNE,

MEMBRE DE L'INSTITUT ROYAL DE FRANCE; MEMBRE ÉTRANGER DES ACADEMIES DES SCIENCES DE BERLIN,
DE COPENHAGUE, DE MUNICH ET DE TURIN; MEMBRE HONORAIRE DE LA SOCIÉTÉ ROYALE DE LONDRES.

—
AVEC UN FAC-SIMILE DU TEXTE GREC, ET PLUSIEURS BESINS GRAVÉS SUR BOIS.



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- + CHARON
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- + HELLANICUS
- + PHERECYDES
- + ACUSILAUS
- + APOLLODORUS ATHENIENSIS
- + ANTIOCHUS
- + PHILISTUS
- + TIMAEUS
- + EPHORUS
- + THEOPOMPUS
- + PHYLARCHUS
- + CLIDEMUS
- + PHANODEMUS
- + ANDROTIO
- + DEMO
- + PHILOCHORUS
- + ISTER
- + APOLLODORUS
- APPENDIX
 - + MARMOR PARIUM
 - MARMOR ROSETTANUM
 - 1.
 - 2.
 - 3.

ant d'insister sur l'importance
om de pierre de Rosette. Tout le
ir les Français en 1799 et
l'Alexandrie, porte une
grecque, et en trois espèces de
els et grecs. Personne n'ignore
s de quarante ans, pour
trois textes, la connaissance de la
inne Égypte. Je me bornerai donc
nterprétation est l'unique objet

asin encyclopédique, contiennent
la version d'Ameilhon sur
s belles restitutions remplissent
des vingt-quatre dernières
ne un résumé exact de ce qui
echerches savantes qui
partie de leur utilité. Après tous
re pour l'intelligence complète
18-23, «qu'il s'y trouve plusieurs
entendu.» (Rech. pour servir à
uis, un examen attentif et l'étude
e des papyrus grecs rapportés

ut été communiquées par M.
seignements dont j'avais besoin
ver plusieurs des doutes qui
se soit trouvé, par ce puissant
urais probablement pas songé à
partie, si une occasion fortuite
e, dans le journal des Savants, de

MARMOR ROSETTANUM

de cet écrit. Ce texte, pris en lui-même et indépendamment de l'intérêt qu'il résulte de sa comparaison avec les deux autres, nous offre un document historique des plus curieux. Le décret qu'il nous a conservé, rendu en l'honneur de Ptolémée Épiphane par les prêtres d'Égypte rassemblés à Memphis pour la cérémonie de son couronnement, est une pièce jusqu'à présent unique; c'est encore la principale source d'où nous puissions tirer quelques lumières sur la fusion qui, par suite de la conquête d'Alexandre, s'était opérée dans les usages civils ou religieux des deux peuples; en même temps qu'elle complète et confirme plusieurs points importants de l'histoire de cette époque. Il n'existe en français qu'une seule traduction

d'Égypte, ont à mes yeux confirmé ce jugement. La traduction que je publie, sauf quelques corrections, celle que Champollion m'avait demandée vers 1824, pour servir de base à ses recherches persévérandes, et déjà si heureuses, sur les textes égyptiens de l'inscription de Rosette. Il l'avait désirée parfaitement littérale et aussi près du texte que possible. C'est, en effet, le caractère que je me suis efforcé de donner à cette version. Il devait me communiquer en retour, quand il aurait terminé son grand travail, l'indication de toutes les différences entre les textes égyptiens et le texte grec, ainsi que le sens des passages correspondants aux lacunes du dernier. Ce secours vient de m'arriver, au moment où je n'y comptais plus. Après la mort de cet illustre philologue, ma version s'est retrouvée dans ses papiers, mais son analyse des textes égyptiens avait disparu, ainsi que

qu'elle indique avec quelques-uns de ceux qu'il expose, et reconnu la confirmation éclatante qu'elle apporte à certains récits, dont on avait mis en doute la vérité. Il m'a paru alors qu'on pouvait considérer l'inscription comme une pièce justificative à l'appui de cette grande composition historique. M. Firmin Didot, qui ne néglige rien pour perfectionner cette belle collection, entreprise si honorable pour la France, se propose de compléter le recueil des fragments des historiens grecs, en imprimant à la

Digital Fragmenta Historicorum Graecorum (DFHG)

ΑΓΑΘΗ ΤΥΧΗ

INDEX MARMORIS ROSETTANI

TABLE DES MOTS GRECS, ET DES PRINCIPAUX FAITS EXPLIQUÉS

N.B. Les chiffres se rapportent aux notes.

ADDITION. — L. 3. On a déjà remarqué que les mots καθάπερ ὡς Ἡφαιστος, et ὡς Ἡφαιστος ἐδοκίμασεν se rapportent au culte d'Héphæstos ou de Phthas établi à Memphis. On doit, je pense, tirer la même conclusion de la triple mention de Ἡλιος faite au même endroit, καθάπερ ὡς Ἡλιος, puis ὡς Ἡλιος ἐδωκεν τὴν νίκην, et enfin υἱοῦ τοῦ Ἡλίου. Ces trois circonstances feraient présumer qu'il existait à Memphis un temple d'Hélios ou de Phré, quand même il ne résulterait pas de l'inscription de Busiris qu'en effet ce temple était un de ceux et peut-être le principal de ceux qui se trouvaient dans le voisinage des Pyramides (v. mes Recherches, p. 405).

Αγαθῇ τύχῃ

[Marmor Rosettanum note 75](#)

Ἀγεσθαι ἐօρτήν

[Marmor Rosettanum note 16](#)

Ἄδυτον

[Marmor Rosettanum note 17](#)

Ἀθλοφόρος

[Marmor Rosettanum note 13](#)

Αἰωνόβιος

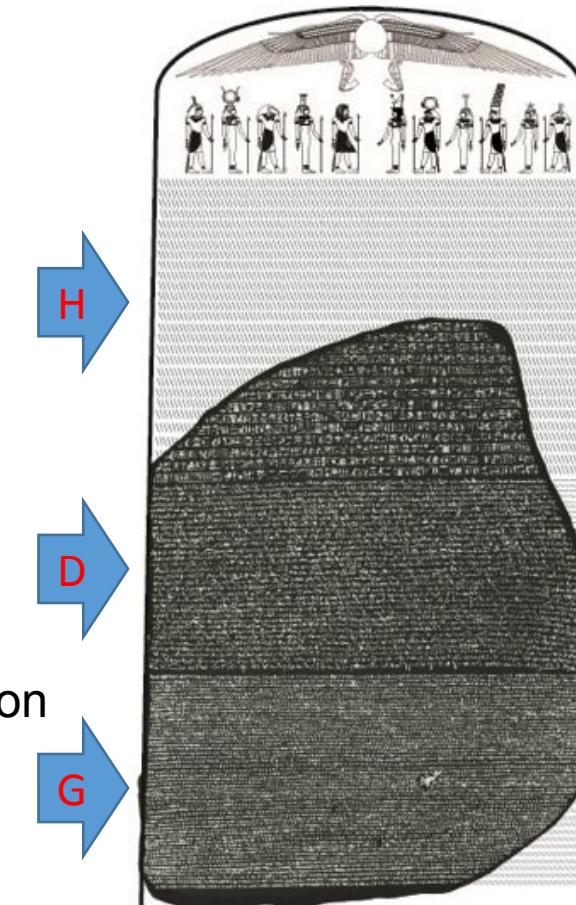
[Marmor Rosettanum note 7](#)

http://www.dfhg-project.org/DFHG/index_marmoris_rosettani_volumen_primum.php

The Monument

- Many people know it... but who knows what's written on it?
- Landmark of deciphering of Egyptian (Champollion 1822, iconic object of the British Museum)
- Content: Decree with decisions of a priestly synode, similar documents known from Ptolemaic Egypt
- Trilingual: Hieroglyphic, Demotic, Greek
- Rarely included in teaching
- Humboldt Universität Berlin: creation of a digital transliteration and translation (XML) with interlinear morphemic glossing (Leipzig Glossing Rules): the [Rosetta Stone Online](#)

114.4 × 72.3 × 27.93 cm
probably 1,50 m high



Captmondo under a
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Facts & Figures

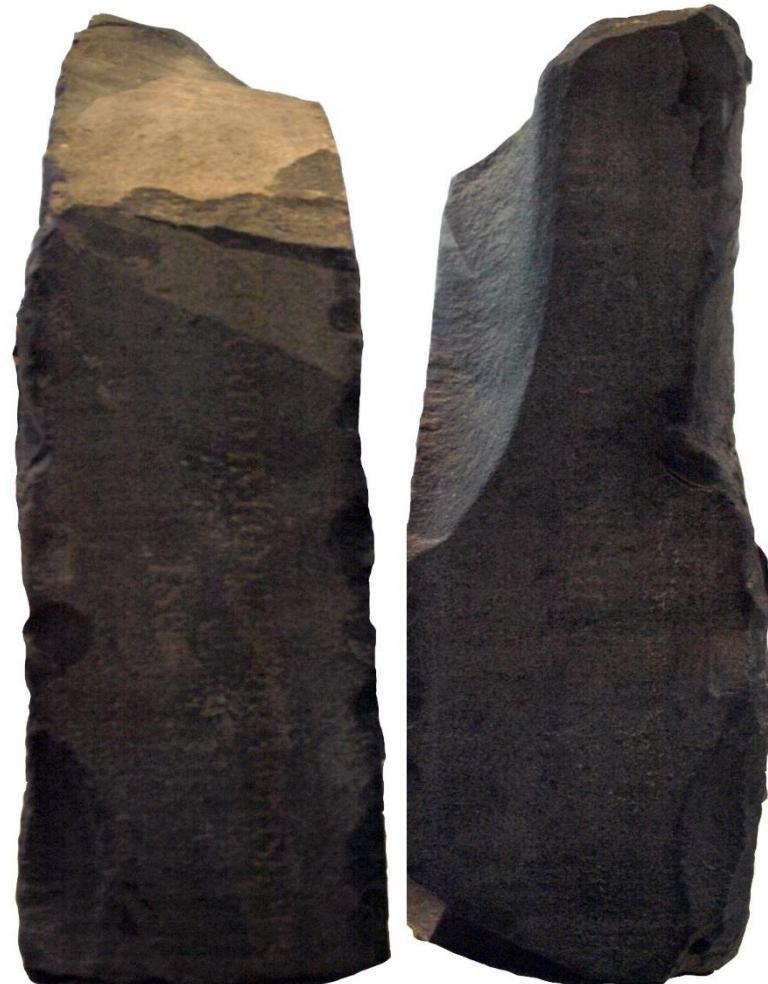
- Date: 196 BC
- Ruler: time of king Ptolemy V (in his first year of reign, 13 years old)
- Findspot: Rosette (town in the Nile Delta, Lower Egypt)
- Material: granodiorite
- Measurements today: $114.4 \times 72.3 \times 27.93$ cm (45 × 28.5 × 11 in), maybe ca. 150cm/59 high in total
- Other names: Rosettana, Marmor Rosettanum, The Memphis Decree
- BM EA 24, OGIS 1, 90, TM 8809



Students from Leipzig with plates (original size) from the edition of Lepsius of the Kanopos decree); photo: Naether

Provenance and Acquisition

- found: August 1799 by the French general Boussard
- erected in the fort
- kept 2 years in the private house of the governor in Alexandria
- 1799-1801/2: Egyptian campaign of Napoleon
- first facsimile in ink
- 1801: fell into the possession of the major general Turner (UK)
- since 1802 in the British Museum



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Deciphering the Hieroglyphs

z... 2... 2... (below)	c... <... 91... 91... 2411... 1000
g... 4	t... <... L... <
e... 12 (R)	r... 1... 2...
z... L (T)	f... 3... 3... 4... 4... next
c... 1... r... L (below)	x... 2
s...	y... 2 L... (wyn)
H... III... III... III... (a1,a2,a3)	w... (or) 7... 7... 7...
o... L	g... +... +... L... w
i... O... VI... VII...	q... 7... 7
k... 76... 76... 76...	b... 2... 2... 2
d... ✓... ✓	e...
u... 2... 0... 0	z... 5... 5... 5...
n... 2... 2... 2... 2... 2... next	o... 6... 6... <
z... 76... 01... 76 (KC)	t... 5
o... u... o... e... e	z... 1...
π... 2... 2... 1... fin.	ā... II... 4
p... /... /... /... /... -	ē... III... 6



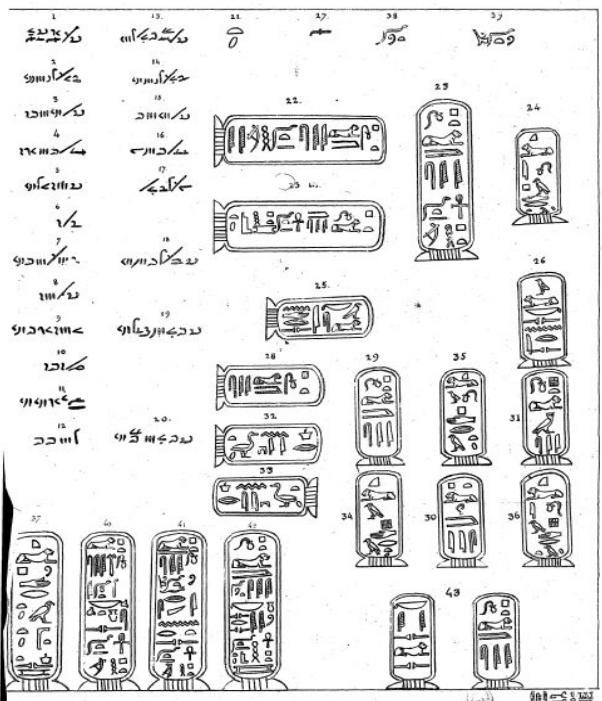
CC-BY-SA 2.0,
Eugene Birchall,
Kingston Lacy
Dorset,

J. D. Akerblad (DK), like Th. Young (UK)
mainly working on the Demotic version

Jean-François Champollion (1822); Lettre à M. Dacier

But: The main source was the Banks / Philae obelisk (with the name „Kleopatra“)

Champollion (1790-1832)



Source gallica.bnf.fr / Bibliothèque nationale de France



[Joconde database](#): entry
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Greek Epigraphy was much faster!

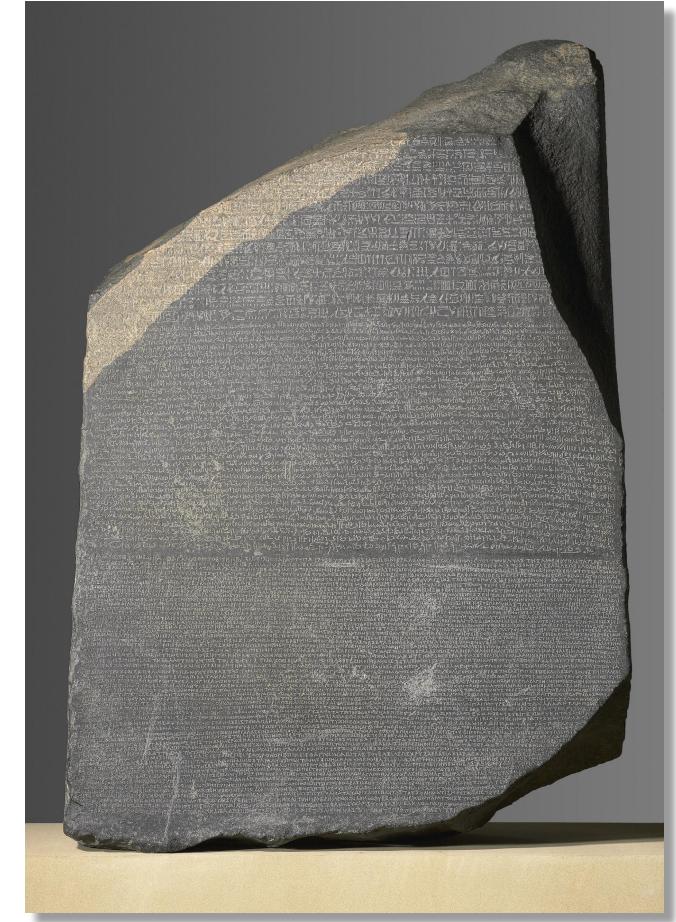
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First reconstruction of
the Greek version by R.
Porson (1803)

Published in Archaeologia 16 (1812)

Issues in Egyptology

- Why not making the Rosetta Stone a “poster boy” to show what DH can do by including all languages?
- collaboration with HU Berlin, exchange of data, workshops on “Leipzig Glossing Rules” and TEI/Epidoc (Issues: brackets, ideosyncratic approaches)
- Unicode: Hieroglyphs not yet fully available (thousands of signs missing; no Demotic, no Hieratic, issues in scaling the signs (application to the Unicode consortium pending))
- >>> so far, we work with transliteration of Egyptian
- Goals:
 - aligning the three versions of the text
 - annotating morphology and syntax (treebanking)
- next step: collaboration with the British Museum, high-res photos and 3D scans, aim to align the stone on the photo, collaboration with Florida University



http://www.britishmuseum.org/research/collection_online/collection_object_details.aspx?objectId=117631&partId=1



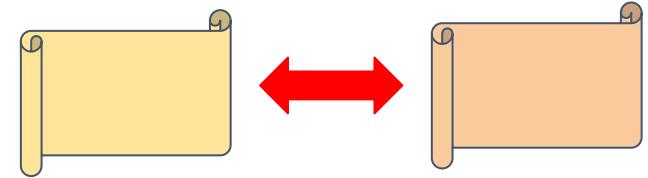
Textual Alignment



ALPHEIOS

What is *textual alignment*?

- digital supported comparison for
 - texts
 - languages
- digital tool for learning foreign languages
- study (ancient) texts
 - using original sources instead of translations



First steps: manual word alignment using Perseids



PERSEIDS
A COLLABORATIVE EDITING PLATFORM FOR SOURCE DOCUMENTS IN CLASSICS

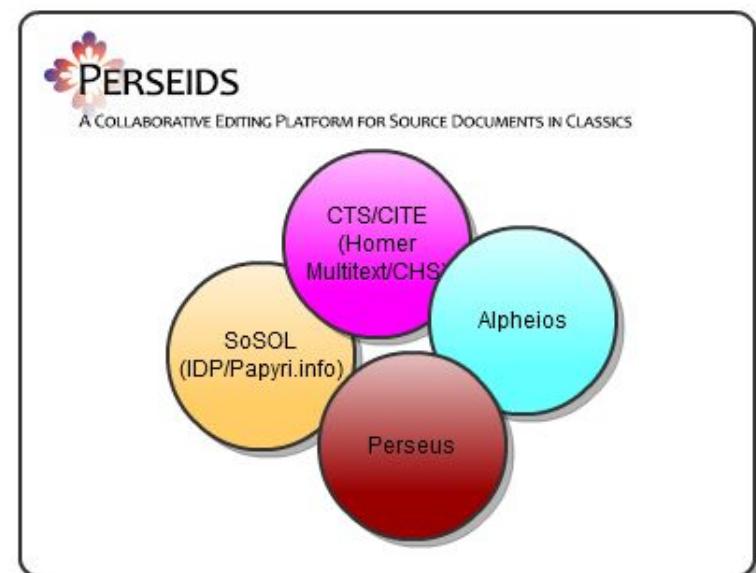
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The Perseids platform allows students and scholars to collaborate on digital editions and annotations in an integrated online environment. After successfully completing a first phase of development, Perseids is now poised to support the elaboration of a new undergraduate curriculum in the Humanities in the US and abroad. The cornerstone of this initiative is the integration of teaching and research in the Humanities classroom, emulating the way students participate in research teams in the natural sciences. In order to reach this objective, we plan to tackle four main areas:

- 1) Collaboration, sharing, and reuse
- 2) Assessment methods
- 3) Data ownership and quality control
- 4) Complex annotation and publication workflows

Read more here, or just [login](#) and try it out!

This project has received support from the Andrew W. Mellon Foundation, Tufts University, the National Endowment for the Humanities [grant HD-51548-12] and the Institute of Museum and Library Services.



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The Alignment editor

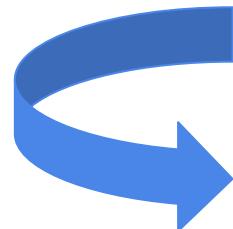


case study Rosettana H, line 7-8: German - English

1 ← 1 → 1 ↺ ↻ Go to sentence number Sentence list
Save sentence < Undo Redo > Add Comment Export XML Export Display Show interlinear text

Und man soll ein Kultbild des Königs von Ober - und Unterägypten Ptol [emaios ...] erschaffen [...] [und einen] prächtigen [Naos] aus Elektrum , mit jedem wahren Edelstein ausgelegt , in allen betreffenden Tempeln , der im heiligen Raum mit den Schreinen der Gaugötter ruht .

And they are to fashion a cult statue of the king of Upper and Lower Egypt Ptol [emy...] [...] [and an] august [shrine] in electrum , inlaid with every true precious stone , in all temples in question , to rest in the sacred room with the shrines of the nome gods .



... and Ancient Egyptian - English

1 ← 1 → 1 ↺ ↻ Go to sentence number Sentence list
Save sentence < Undo Redo > Add Comment Export XML Export Display Show interlinear text

mtw =tw ms (. t) shm n (. j) (n) sw - bjt | And they are to fashion a cult statue of the king of Upper and Lower Egypt Ptol [emy...]

one word could be aligned with another or several words
(a good command of the language is necessary!)

Translation Alignment Editor (ugarit.ialigner.com)

ugarit

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Users

Automatic Alignment (Giza++)
Paragraphs 20471 | # Translation Pairs 239661
Ελληνική English Latin

Marcel Mernitz
Paragraphs 227 | # Translation Pairs 6220
Ελληνική Deutsch English Latin

Samantha Strickland
Paragraphs 138 | # Translation Pairs 1928
Ελληνική Latin

Enter your search term

All Languages

Languages Pairs

Languages	30
Texts	22307
Translation Pairs	377986
Users	126

Ελληνική | English
Paragraphs 20561 | Pairs 257196

Ελληνική | Latin
Paragraphs 217 | Pairs 6873

Ελληνική | Português
Paragraphs 35 | Pairs 1713

εωραῖον | Deutsch
Paragraphs 66 | Pairs 953

Ελληνική | 中文 | English
Paragraphs 4 | Pairs 708

↓



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CTS urn

Fetch

choose the language of text 1

Ancient Egyptian

CTS urn

Fetch

choose the language of text 2

Ancient Egyptian

CTS urn

Fetch

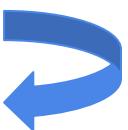
choose the language of text 3

Ancient Egyptian

insert text 1

insert text 2

insert text 3



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Text Group

Translator

URL

CTS urn

Language

Title

Visible

 Yes No

Description

CTS urn

Language

mtw-w sh p? wt n wyt (n) iny dry n sh mt-ntr (n) sh šc . t (n) sh Wynn mtw=w di . t e-šf=f n n? irpy . w mh-1 n? irpy . w mh-2 n? irpy . w mh-3 i . ir-dr . t p? twtw n p? ntr n Pr-š řnb d . t

Man soll das Dekret auf eine Stele aus hartem Stein schreiben in der Schrift der Gottesworte , der Briefschrift und der Schrift der Griechen , und man soll es aufstellen den Tempeln erster Ordnung , den Tempeln zweiter Ordnung und den Tempeln dritter Ordnung neben dem Bild des Gottes des ewiglebenden Königs .

Here you can insert some metadata of the text.

Textual Alignment
 1:1, 1:2, 1:n
 2:1, 2:2, 2:n
 n:1, n:2, n:n

Rosetta Stone - Alignment (single)

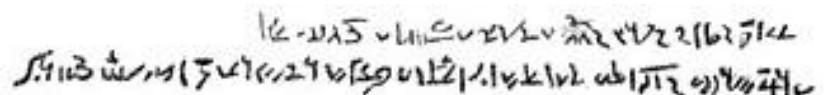
"As reward for these things the gods have granted him might, victory, strength, health, well-being and all other good things, his office of Pharaoh being established with him and his children forever."

(Quirke/Andrews, The Rosetta Stone, 1988, 20)



(45 / 55) 81%

|x+5 [...] isw nn **rdi** n=f **ntr** . w **ntr** . wt qnw nht **nh** **wd?** s (nb) hn^c h . t nb (. t) nfr (. t) **r?w=sn** r i?w . t=f wr . t dd . ti hr=f hn^c hrd . w=f d . t

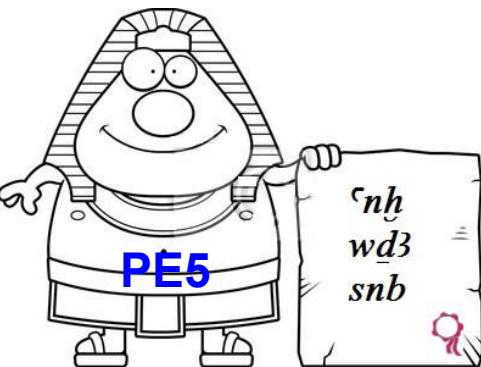


(56 / 67) 83%

di n=f **n² ntr** . w (n) t² sb . t (n) n²y p² dr² p² qny p² n^cš **p² wd?** |21 p² snby irm n² ky . w md . t-nfr . t . w dr=w (r) **t?i=f** i?w . t (n) Pr-? smn (. w) hr-r=f irm n²i=f hrd . w šc d . t

(25 / 31) 80%

άνθ' ὁν δεδώκασιν αύτῶι **οἱ θεοὶ** ύγίειαν , νίκην , κράτος καὶ ταῦλλ' ἀγαθ [ἡ πάντα] , |36 τῆς βασιλείας διαμενούσης αύτῶι καὶ **τοῖς τέκνοις** εἰς τὸν ἄπαντα χρόνον



(30 / 40) 75%

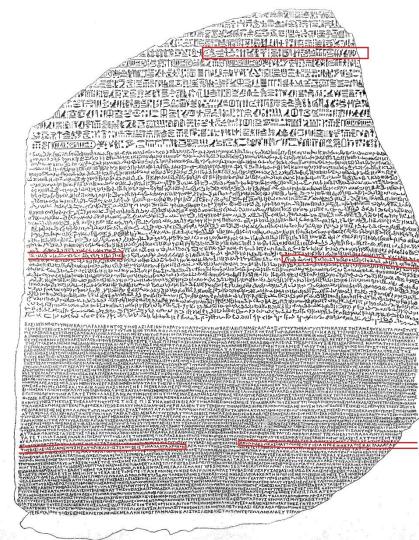
H |x+5 [Als] Lohn dafür haben ihm die Götter und Göttinnen Stärke , Kraft , Leben , Heil , Gesundheit und alle guten Dinge insgesamt gegeben , damit sein großes Amt dauert unter ihm und seinen Kindern ewiglich .

(34 / 45) 75%

D Die Götter gaben ihm (als) Ausgleich dafür die Kraft , die Stärke , den Sieg , das Heil , |21 die Gesundheit und all die anderen Wohltaten , (damit) sein Königsamt bei ihm und seinen Kindern bis in Ewigkeit andauert .

(29 / 34) 85%

G Dafür gabten ihm die Götter Gesundheit , Sieg und Stärke und alles andere Gute , für die Dauer |36 der Königsherrschaft sowohl für ihn als auch für seine Kinder bis in alle Zeit .



Rosetta Stone - Alignment (*synoptic*)

H

[. . .]

[. . .]

D

(21 / 54) 38%

p² šr n P²-R⁹ (Ptlwmys) | fnh d . t mr Pth p² ntr pri nti n²-n
t²i=f md . t-nfr . t

der Sohn des Re (Ptolemaios) | , ewig lebend geliebt von Ptah ,
der erscheinende Gott (= Epiphanes) , dessen Wohltaten schön
sind ,

G

(17 / 29) 58%

vioū τοῦ Ἡλίου , Πτολεμαίου | 4 αιωνοβίου , ἡγαπημένου ὑπὸ τοῦ
Φθᾶ

Sohn des Helios (= Re) , Ptolemaios , | 4 ewiglebend , geliebt von
Ptah ,

*“Son of Re / Helios Ptolemy living forever, beloved of Ptah, the God who appears,
whose goodness is perfect.”* (Quirke/Andrews 1988: 16)

(59 / 64) 92%

dr-ntt psd hm=f im=f m Hw . t-k²-Pth

m-h̄t ir (. w) n=f ir . w nb n bs-nsw r hw . t-ntr h̄ft šsp . n=f i²w
. t=f wr . t

denn Seine Majestät glänzte damit in Hut-ka-Ptah ,

nachdem man ihm jede Zeremonie der Einführung des Königs in den
Tempel ausführte , als er sein großes Amt übernahm .

(55 / 83) 66%

ḥpr mtw=f r ḥ² Pr-² n-im=f (n) ḥ . t-ntr (n) Mn-nfr

iw=w ir n=f n n² nti n hp n ir=w (n) p² šsp (n) t? i²w . t (n)
Hri

Sie ist es (nämlich) , mit der der König (im) Tempel (von)
Memphis erschien ,

als man für ihn das tat , was rechtens zu tun ist (bei) der
Übernahme der Herrscherwürde .

(44 / 53) 83%

ἡν περιθέμενος εἰσῆλθεν εἰς τὸ ἐν Μέμφι εἱρόν ,

ὅπως ἐν αὐτῷ [συν] - | 45 τελεσθῇ τὰ νομιζόμενα τῆι παραλήψει
τῆι βασιλείας

die er trug , als er in das Heiligtum in Memphis eingetreten ist ,

als er in ihm | 45 die Gesetzmäßigkeiten zur Übernahme der
Königsherrschaft durchgeführt hat .

“(…) because Pharaoh made his appearance in it in the temple at Memphis when there were performed for him the customary ceremonies which are performed at the assumption of the supreme office.” (Quirke/Andrews 1988: 21)



Treebanking



What is *treebanking*?

1° Sentence

- structure (main or subordinate clause)
- sentence type (e.g. interrogative, declarative, circumstantial, etc.)
- phrases (e.g. subject, attribute, object, etc.)

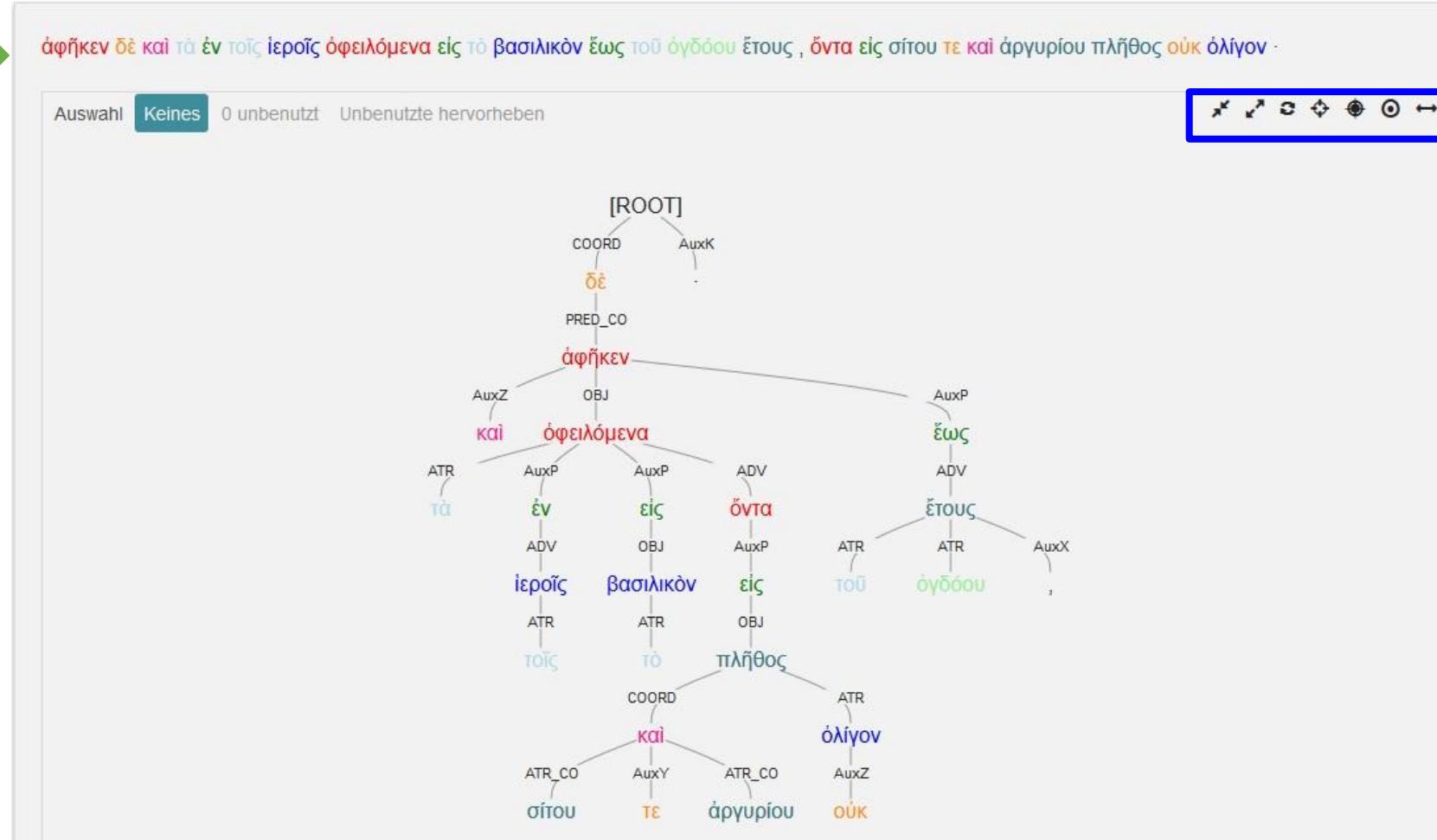
2° Words

- morphology
- syntax
- semantics

 ***Leipzig Glossing Rules***

(<https://www.eva.mpg.de/lingua/resources/glossing-rules.php>)

How to use *Arethusa*? An annotation example (Rosettana, 10th sentence)

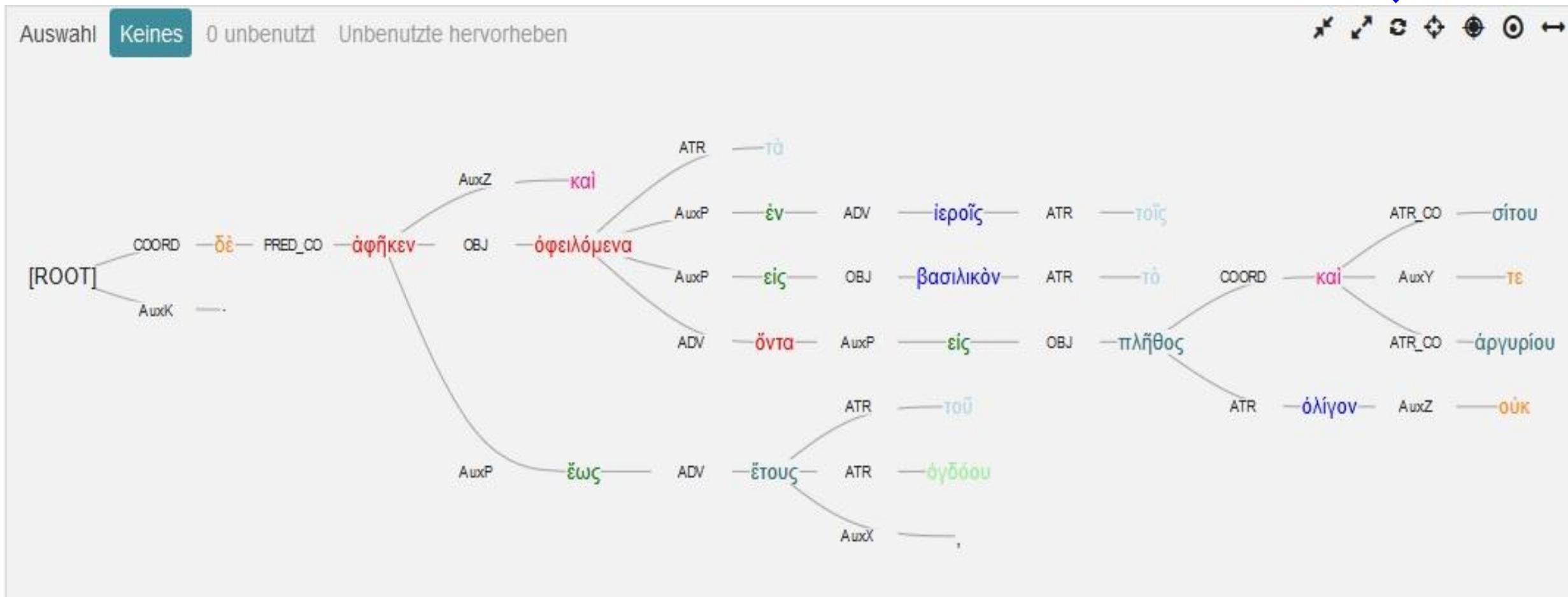


Here you can choose between different views of the tree.

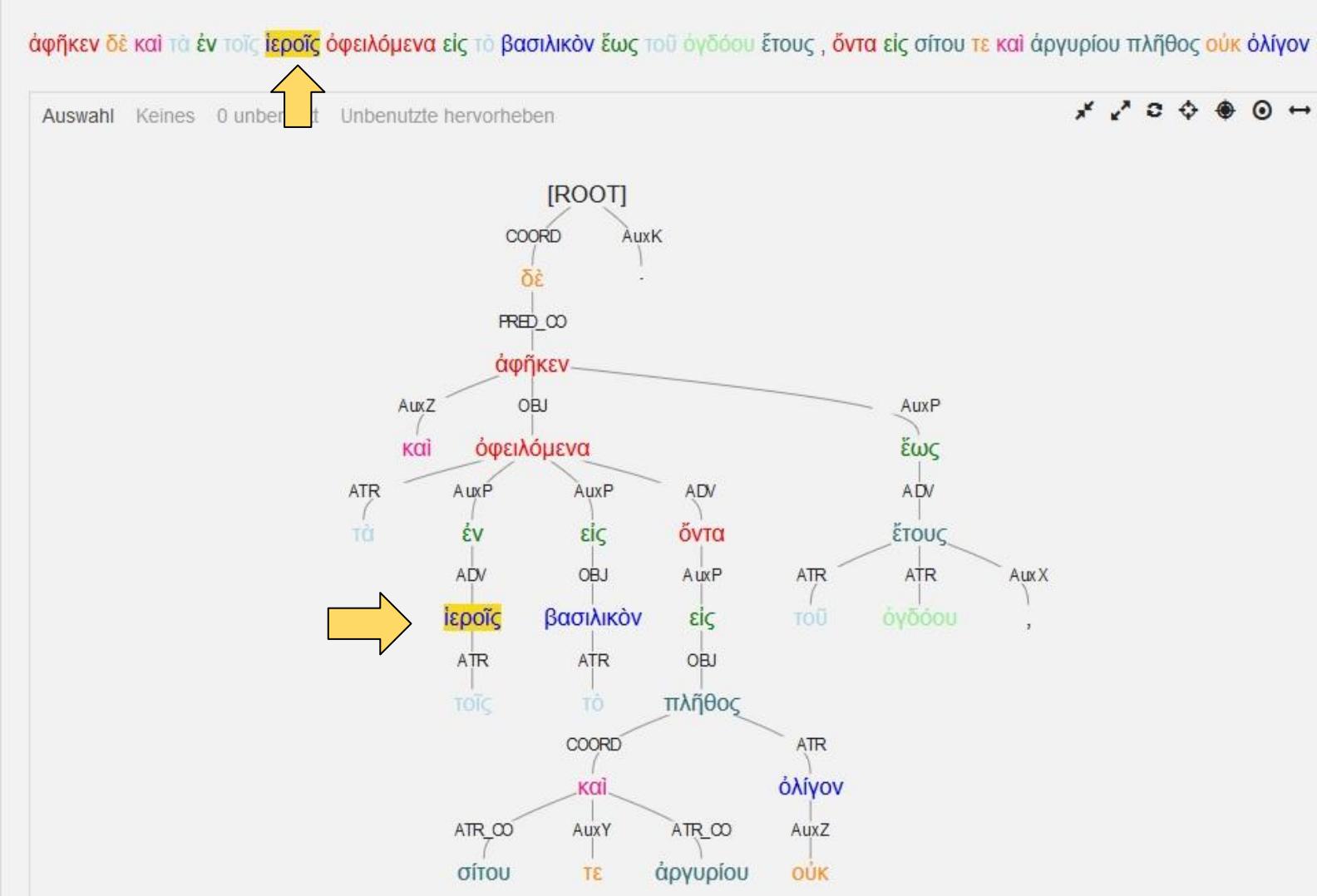
Translation of the Greek:
“and whereas he remitted what was due to the crown in the temples up to his eighth year, being no small amount of corn and money (...).” (C. Andrews, The Rosetta Stone, 2003, 26)

<http://www.perseids.org/tools/arethusa/app/#/perseids?chunk=1&doc=26671>

Another view of the morpho-graph



What do we learn from the tree?



iεροῖς 10-7

Lemma-Übersetzung
temple

	iερός	a-p---nd-	document
<input checked="" type="checkbox"/>	iερός	a-p---nd-	document
<input type="checkbox"/>	iερόν	n-p---nd-	bsp/morpheus
<input type="checkbox"/>	iερός	a-p---nd-	bsp/morpheus
<input type="checkbox"/>	iερός	a-p---md-	bsp/morpheus
<input type="checkbox"/>	iερός	a-p---fd-	bsp/morpheus

Some statistics about the Ancient Greek text (source: Alpheios)

- 29 sentences
- 1681 token
- 1514 words
- 52.28 words per sentence (\emptyset)



digitalepigraphy.org
**The Digital Epigraphy and
Archaeology project**

Scanning the Stone



Digital Epigraphy and Archaeology project

www.digitalepigraphy.org *

The screenshot shows the Digital Epigraphy Toolbox (v2.5 beta) interface. On the left, a large image of a paper cast of a Greek inscription from Column IG I3 475 is displayed. Below the image, descriptive text includes: "Greek Column IG I3 475", "Description: Paper cast from the collection of the University of California Berkeley", "Material: Paper pulp", "Present location: University of California Berkeley", and "IG Number: I3 475". A toolbar below the image contains icons for rotation, zoom, and other functions. On the right, a sidebar titled "Aleshire" lists several collections: "Digital Epigraphy and Archaeology database" (selected), "Epidaurica" (a collection of inscriptions from Epidaurus), "Tampa Museum of Art" (which contains archaeological exhibits from the Tampa Museum of Art), "The National Archives" (digitized exhibits from The National Archives [UK]), and "Monumentum Ancyranum" (a collection of fragments from the Res Gestae Divi Augusti inscription from Monumentum Ancyranum). The sidebar also features a search bar, user profile, and settings icons.

* Made possible with initial funding from the National Endowment for the Humanities, Grant HD-51214-11

Scanning Setup

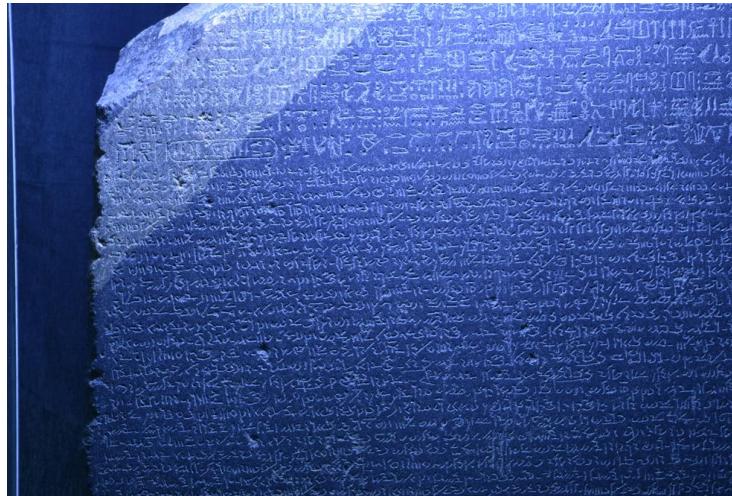


Photo credit: Gianluca Cumani

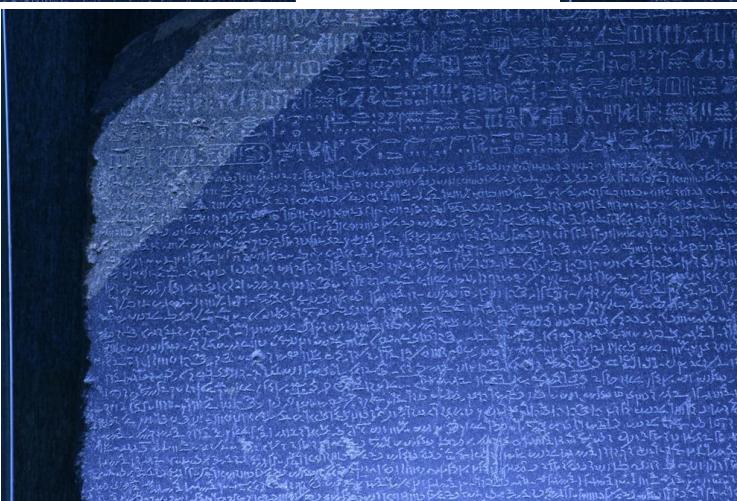
Shape from Shading (SFS)



Left



Top

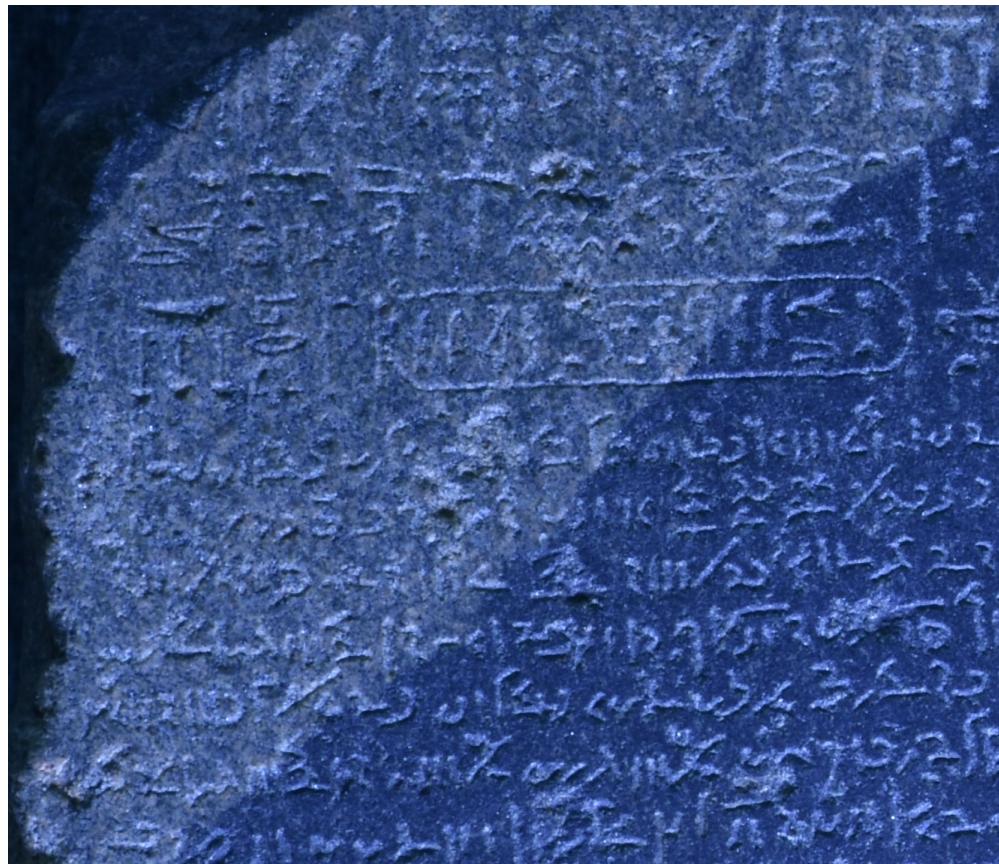


Bottom

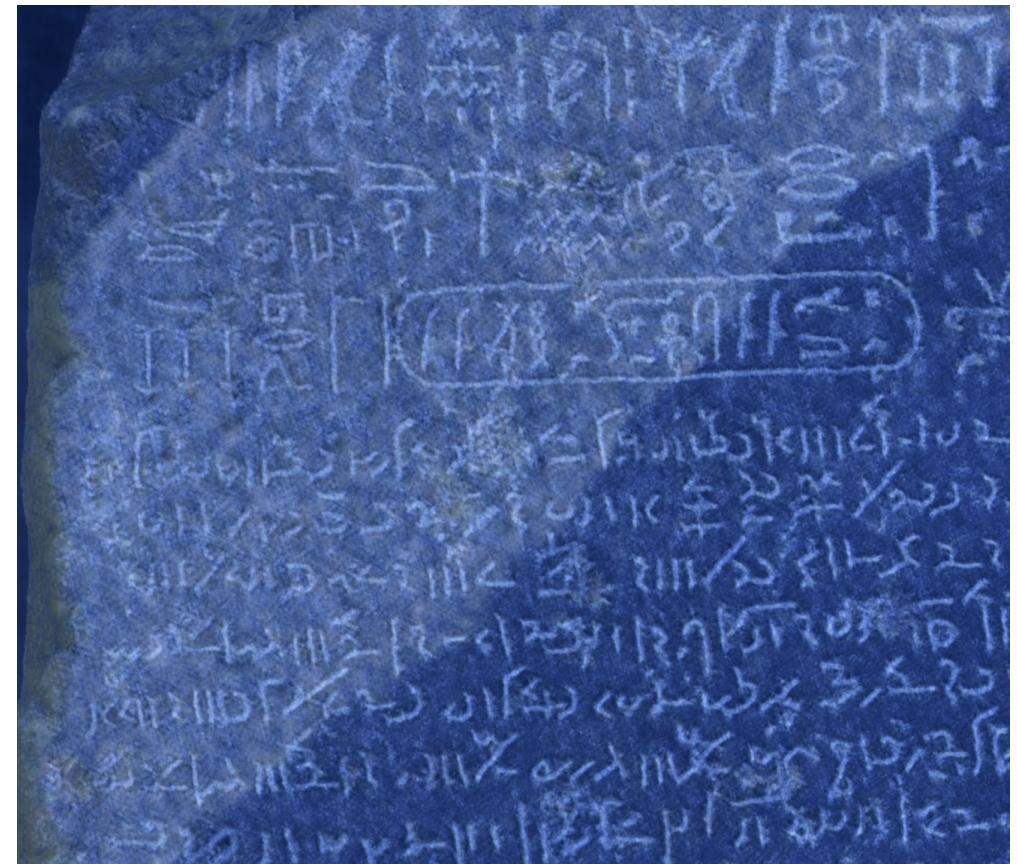
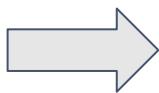


Right

Quadri-directional Lighting



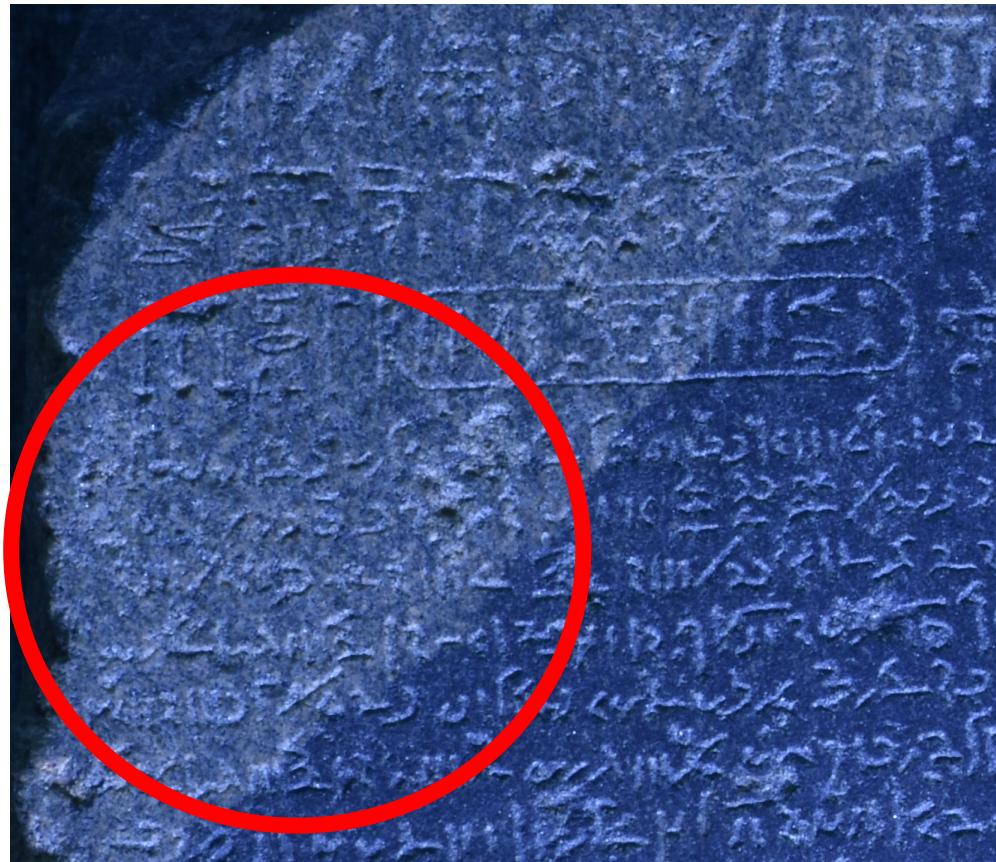
Raw Photograph



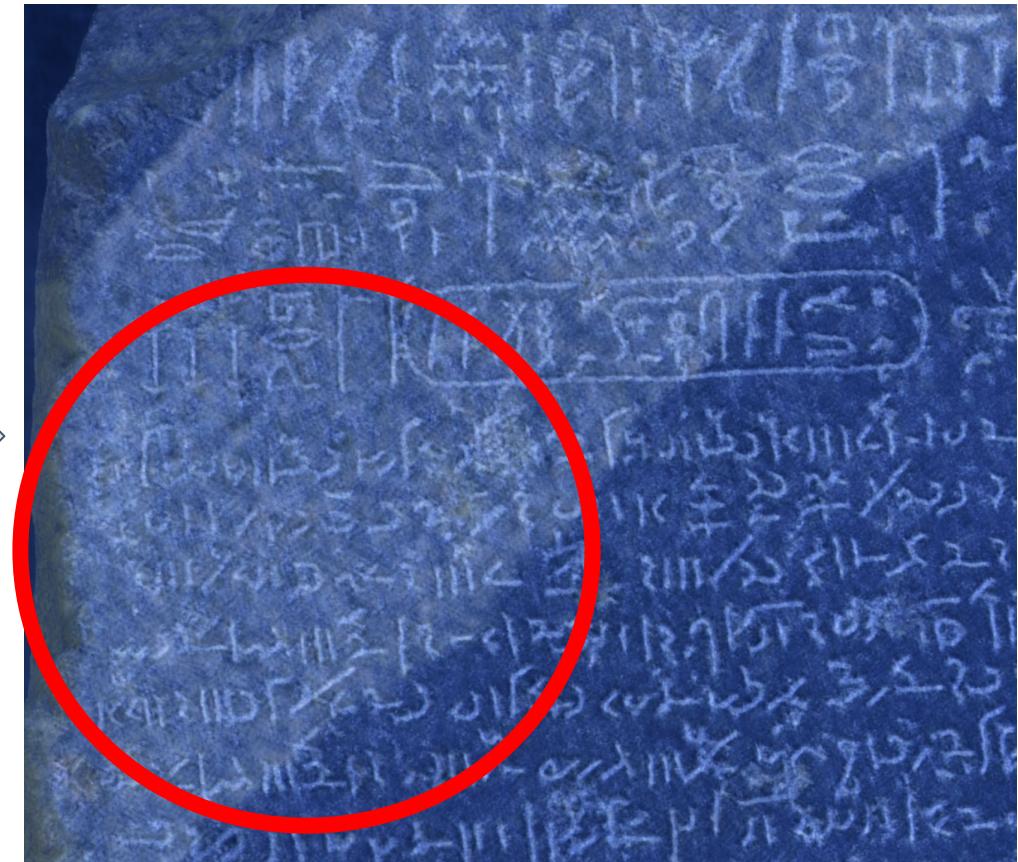
Quadri-directional lighting Shape-From-Shading*

* A. Barmpoutis, E. Bozia, and R. Wagman (2010) "A novel framework for 3D reconstruction and analysis of ancient inscriptions", *Journal of Machine Vision and Applications* 21(6), pp. 989-998. <https://doi.org/10.1007/s00138-009-0198-7>

Quadri-directional Lighting



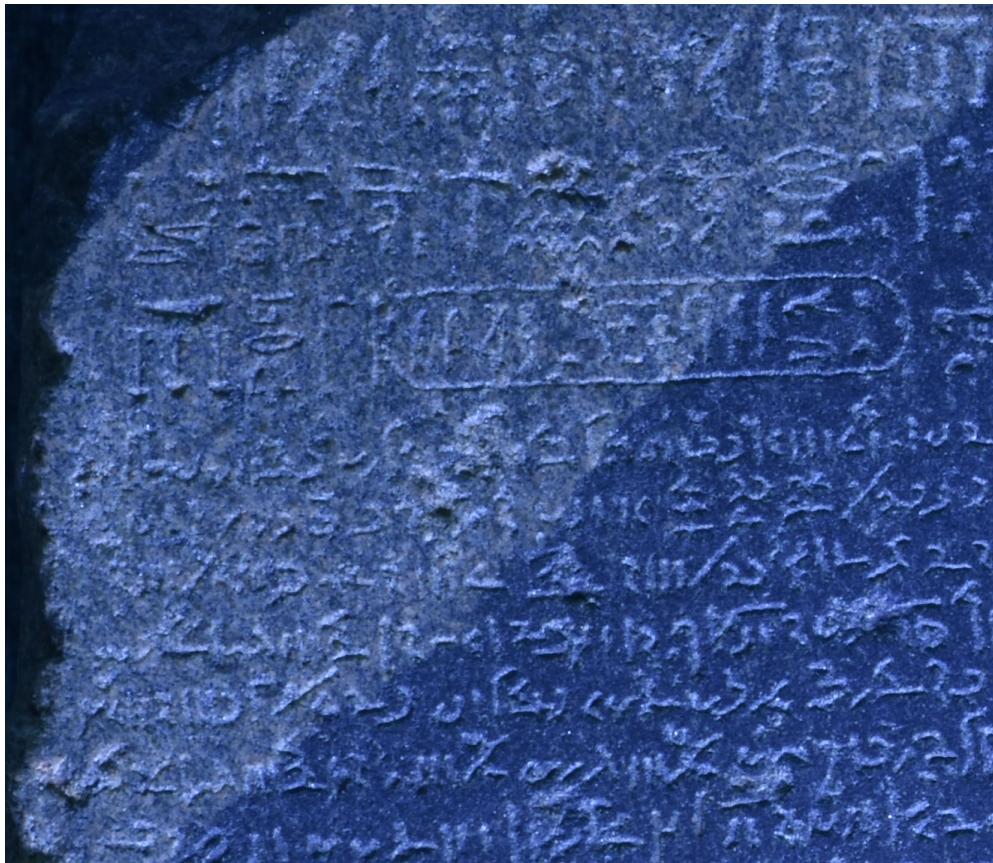
Raw Photograph



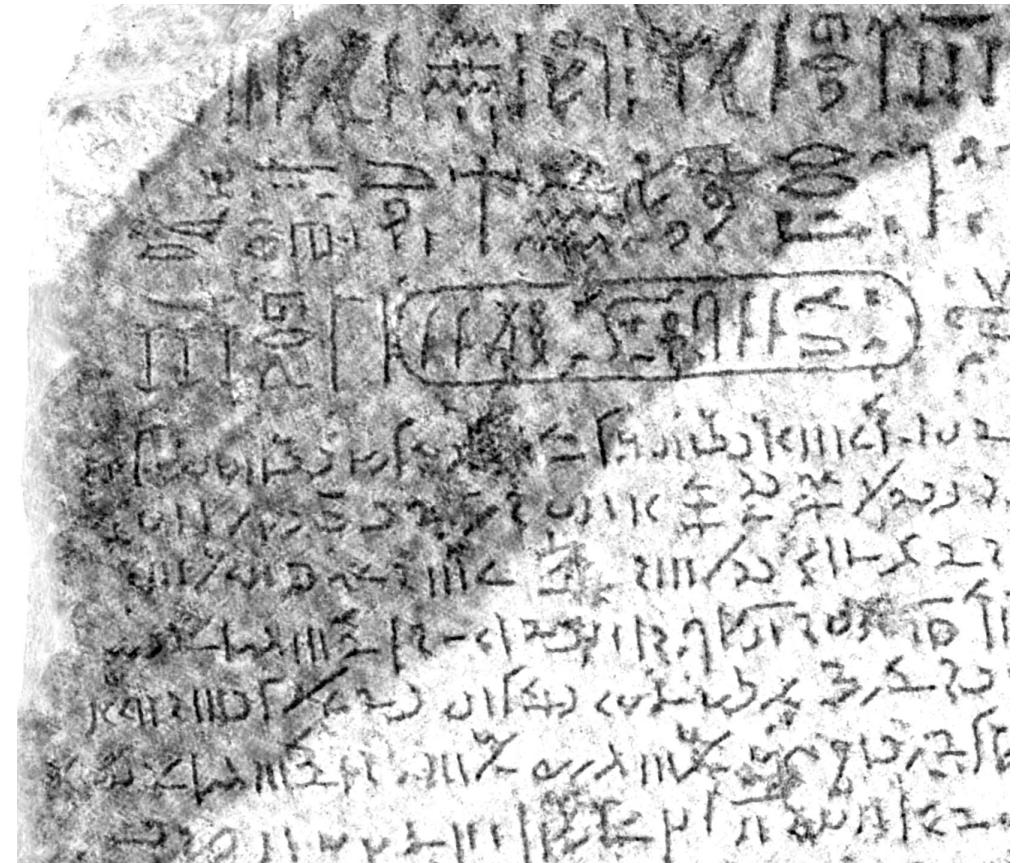
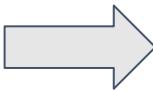
Quadri-directional lighting Shape-From-Shading*

* A. Barmpoutis, E. Bozia, and R. Wagman (2010) "A novel framework for 3D reconstruction and analysis of ancient inscriptions", *Journal of Machine Vision and Applications* 21(6), pp. 989-998. <https://doi.org/10.1007/s00138-009-0198-7>

Depth Reconstruction



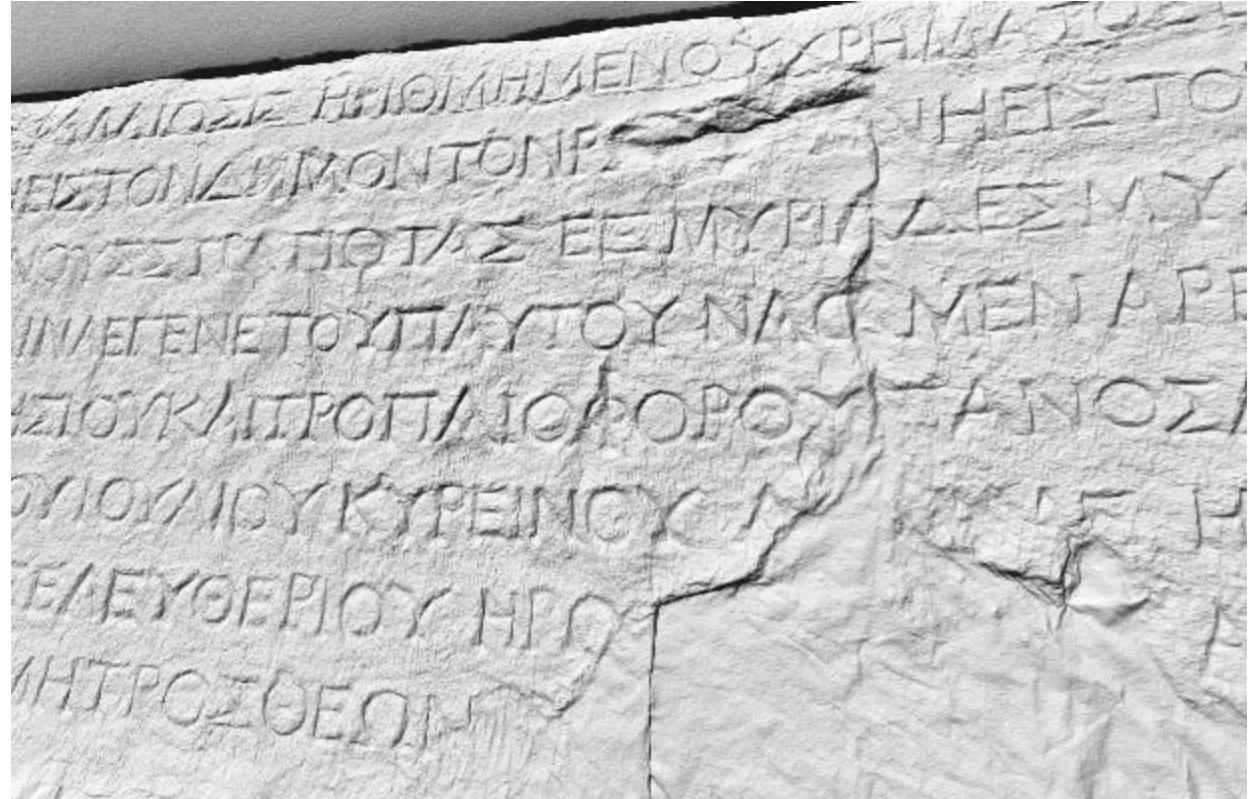
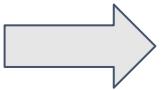
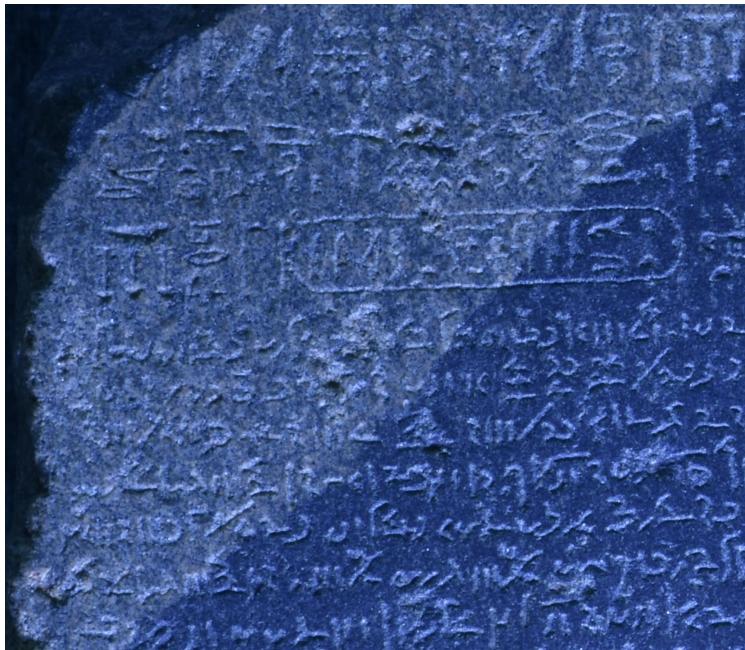
Raw Photograph



Reconstructed Depth Trace*

* R. Gallen, D. Eastop, E. Bozia, and A. Barmpoutis (2015) "Digital imaging: the application of shape-from-shading to lace, seals and metal objects" *Journal of the Institute of Conservation* 38(1), pp. 41-53. <https://doi.org/10.1080/19455224.2014.999004>

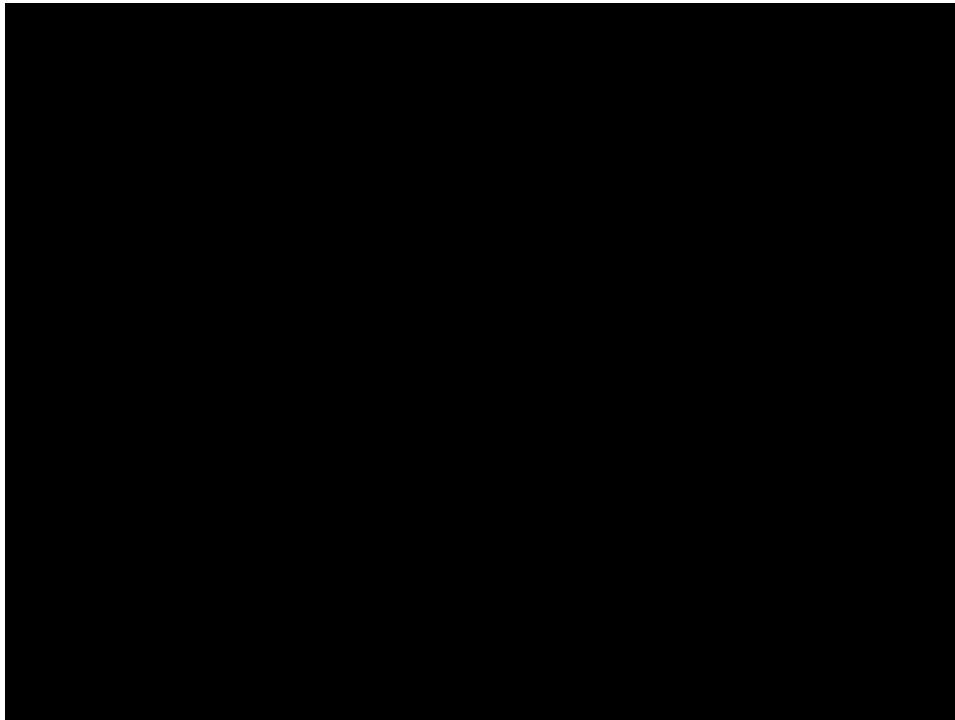
3D Reconstruction



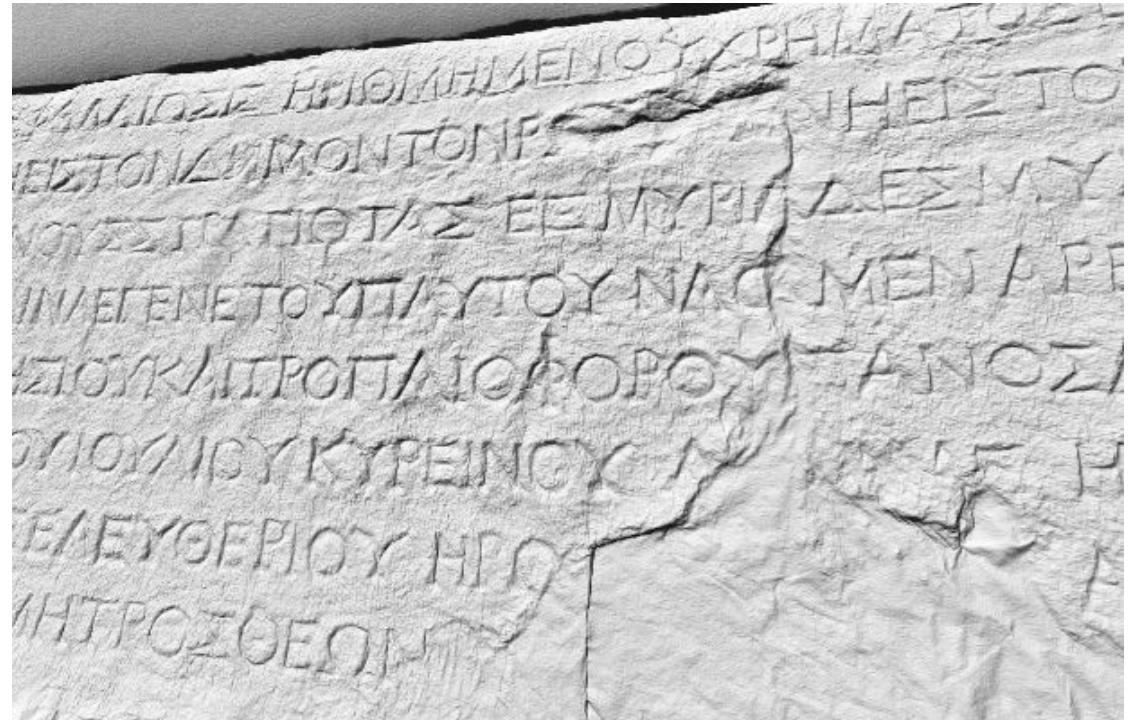
Example of 3D Reconstruction from Res Gestae*

* Monumentum Ancyranum 3D Collection, *Digital Epigraphy and Archaeology Project*, www.digitalepigraphy.org

3D Reconstruction



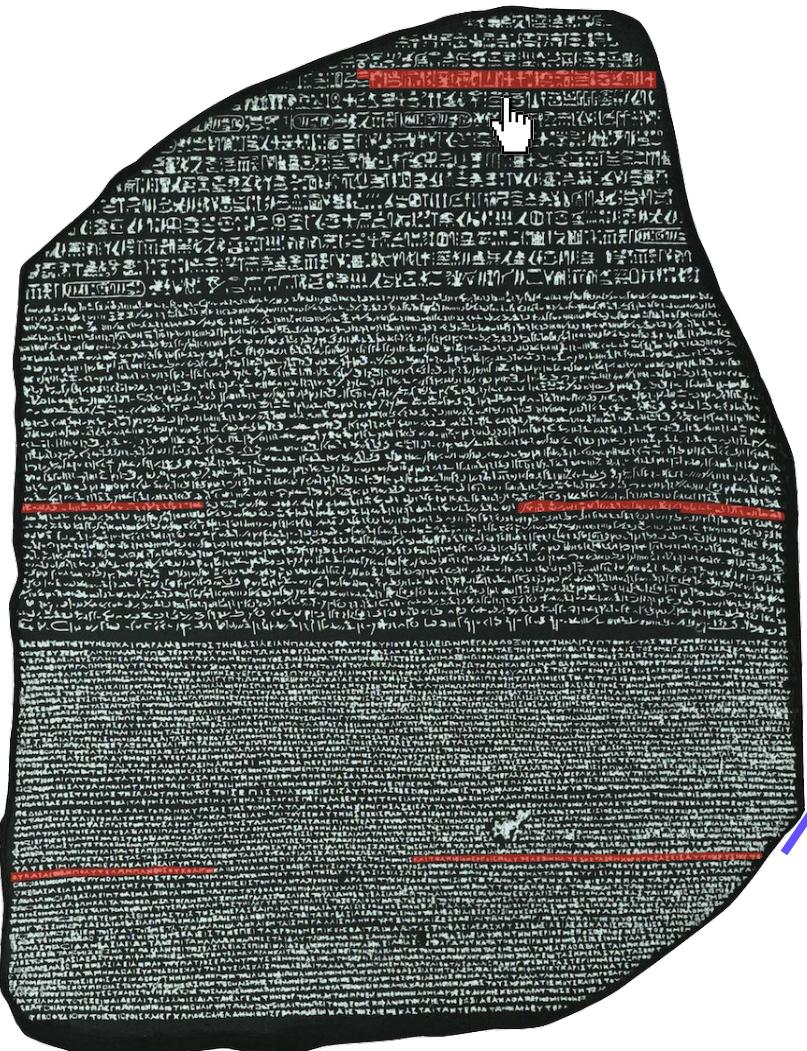
Object Reconstruction with IR depth sensor*



Fine Surface Reconstruction

* A. Bampoutis, E. Bozia, and D. Fortuna (2015) "Interactive 3D digitization, retrieval, and analysis of ancient sculptures, using infrared depth sensors for mobile devices", *Lecture Notes in Computer Science* 9178(Part IV), pp. 3-11. https://doi.org/10.1007/978-3-319-20687-5_1

Visualization



```
<sentence sentenceID="sen_28">
  <language lang="demotic">
    <transcription>
      <line nr="19">di=f nb hd pr.t ḫš'y irm k.t-h.t nkt wb? t? s.t Hp di=f mnq=w t?
      <line nr="20">(r) n?-n=s m-ss</line>
    </transcription>
    <translation trans-lang="ger">
      <line nr="19">Er gab viel Gold, Silber, Getreide und andere Dinge für das Apiei
      <line nr="20">(von) übermäßiger Schönheit (wörtl.: sie ist sehr schön).</line>
    </translation>
    <coordinates coordID="dem_028a">43,547,236,545,236,552,41,557</coordinates>
    <coordinates coordID="dem_028b">857,565,857,557,824,551,798,548,771,546,750,545,718
  </language>
  <language lang="ancient_greek">
    <transcription>
      <line nr="33">καὶ τὸ Ἀπιεῖον ἔργοις πολυτελέσιν κατεσκεύασεν χορηγήσας εἰς αὐτὸ χρ
      <line nr="34">ου καὶ λίθων πολυτελῶν πλῆθος οὐκ ὀλίγον</line>
    </transcription>
    <translation trans-lang="ger">
      <line nr="33">Und er hat den Apis-Tempel mit kostbaren Arbeiten ausgestattet, i
      <line nr="34">und kostbaren Steinen versah;</line>
    </translation>
    <coordinates coordID="grc_033">460,920,514,919,564,918,604,918,634,918,666,918,684,
    <coordinates coordID="grc_034">247,938,247,932,224,932,205,931,185,931,172,933,161,
  </language>
</sentence>
```

Visualization – structure of information

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE rosettastone SYSTEM "/Users/miriamamin/Documents/Digital
<rosettastone>
  <sentence sentenceID="sen_001">
    <language lang="demotic">
      <transcription>
        <line nr="1">[h?.t-sp 9.t Qsntqs sw 4] nti ir ibd
      </transcription>
      <translation trans-lang="ger">
        <line nr="1">[Regierungsjahr 9, (Monat) Xandikos,
      </translation>
      <coordinates coordID="dem_001a">43,547,236,545,236,552
      <coordinates coordID="dem_001b">857,565,857,557,824,55
      </language>
    <language lang="ancient_greek">
      <transcription>
        <line nr="4">... ἔτους ἑνάτου ...
      </transcription>
      <translation trans-lang="ger">
        <line nr="4">im neunten Regierungsjahr, ...
      </translation>
      <coordinates coordID="grc_001a">460,920,514,919,564,93
      <coordinates coordID="grc_001b">247,938,247,932,224,93
      </language>
    </sentence>
```

The Rosetta Stone

one unit of meaning

- independant from it's representation)

Demotic

Hieroglyphs

**Ancient
Greek**

Transcription

Translation

Coordinates

Transcription

Translation Coor.

Teaching

- o Learning ancient languages by alignment
- o Deeper understanding of grammar
- o Classes combining texts and material culture (and reception)
- o Alignments in Ugarit are part of the assignments for the students

Du studierst Ägyptologie und möchtest noch etwas Digital Humanities lernen?
Du studierst Digital Humanities und interessierst Dich für Hieroglyphen & Co?

NEU: Im Wintersemester 2017-18 und im Sommersemester 2018 kannst Du das vertiefen!

Das Projekt „Digital Rosetta Stone“ bietet vielfältige Lehrveranstaltungen in beiden Fächern – ausgehend vom Stein von Rosette. Du kannst einzelne oder alle Kurse besuchen. Sie werden alle auf Dein Studium angerechnet. Die Erkenntnisse und Umsetzungen aus der Forschung kommen Dir direkt im Unterricht zugute und Du kannst ein Teil davon sein!



**Öffentliche Präsentation für alle Interessierten und Vorbesprechung der Lehrveranstaltungen:
Donnerstag, 05.10.2017, 16-17:00 Uhr im Hörsaal 8**

Wintersemester 2017-18
- Sprachkurs „Demotisch I“ (Einführung) bei Dr. Marc Brose, Dienstag 9:15-10:45 Uhr
- Vorlesung + Seminar „Digitale Philologie“ bei Dr. Monica Berti, Dienstag 9:15-10:45 und 11:15-12:45
- Kolloquium „Leipzig eHumanities Seminar“, Projektpräsentation „Digital Rosetta Stone“ am 18.10.2017, 15:15-16:45 Uhr
- E-Learning-Kurs „Verarbeitung digitaler Daten in der Ägyptologie“ Teil 1, ab 23.10.2017, Details über Kontakt
- Blockseminar in Halle „Historiographie in ägyptischen Texten der Ptolemäerzeit: Gemeinsame Ansätze aus der Ägyptologie und der Alten Geschichte“, bei Prof. Stefan Pfeiffer und Dr. Daniel von Recklinghausen, Hörsaal im Robertinum, Fr. 13.10. 10:00-12:00 Uhr, Fr. 24.11., Sa. 25.11.2017, Fr. 12.01., Sa. 13.01.2018 jeweils 10:00-18:00 Uhr

Sommersemester 2018
- Sprachkurs „Demotisch II“ (Einführung) bei Dr. Franziska Naether
- Seminar „Der Stein von Rosette - analog und digital“ bei Dr. Franziska Naether
- Modul „Einführung in die digitale Philologie“ bei Dr. Monica Berti
- Online Modul „Digitale Altertumswissenschaft“ bei Dr. Monica Berti
- E-Learning-Kurs „Verarbeitung digitaler Daten in der Ägyptologie“ Teil 2
- E-Learning-Kurs „Synoikisis Digital Classics“
- Workshops „Annotation von Sprachen durch das Leipzig Glossing System“ und „Kodierung antiker Sprachen nach TEI/Epidoc“ mit Dr. Eliese-Sophia Lincke und Dr. Daniel Werning (Berlin) am 14. und 15.06. 2018, präsentiert von der Sächsischen Akademie der Wissenschaften zu Leipzig

Projektteam: Monica Berti, Franziska Naether, Josephine Hensel, Miriam Amin
Kontakt: naether@uni-leipzig.de

Perspectives

- o Trying everything Digital Humanities has to offer with one inscription (short but multilingual text, formal language)
- o Unicode for Demotic and Hieroglyphic
- o Advance in Treebanking in Egyptology, using the Leipzig Glossing Rules
- o Output in Epidoc (GitHub page follows soon)
- o <https://rosetta-stone.dh.uni-leipzig.de>
- o New project with more decrees, magical papyri?
- o Multilingualism as a phenomenon in social, cultural, ... practices

Thank you!

Email: rosetta.stone@dh.uni-leipzig.de

Website (in progress):
www.rosetta-stone.dh.uni-leipzig.de

