

CRONACHE ERCOLANESI

Bollettino del Centro Internazionale per lo Studio dei Papiri Ercolanesi e del Parco Archeologico di Ercolano

54/2024

fondato da Marcello Gigante e Gaetano Macchiaroli

direzione Giovanni Indelli Giuliana Leone Francesca Longo Auricchio Mauro Tulli

Editore Centro Internazionale per lo Studio dei Papiri Ercolanesi 'Marcello Gigante'

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Editore Centro Internazionale per lo Studio dei Papiri Ercolanesi 'Marcello Gigante' CRONACHE ERCOLANESI - NUOVA SERIE QUESTA PUBBLICAZIONE SI AVVALE DI CONTRIBUTI DEL MINISTERO DELLA CULTURA, DELLA REGIONE CAMPANIA E DEL PARCO ARCHEOLOGICO DI ERCOLANO

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This paper analyzes the newly revealed portions of the carbonized papyrus roll *PHerc.Paris.* 4, which were virtually unwrapped as part of the Vesuvius Challenge international competition. The successfully recovered portions of sixteen columns from the final part of the roll, for which a transcription is provided, are part of an Epicurean philosophical treatise discussing perceptions and pleasure, with frequent references to food and music. The study also compares the initial images showing ink from inside the roll with the current images, demonstrating that despite the challenges of working with born-digital text, significant progress has been made in resolving ambiguities and enhancing readability.

Keywords: *PHerc.Paris*. 4, Virtual Unwrapping, Vesuvius Challenge, hidden text revealed, new Epicurean text

1. Introduction

1.1. The Newly Revealed Portion of *PHerc.Paris.* 4 and Some Features of the Papyrus

On February 5, 2024, the Vesuvius Challenge international competition announced the Grand Prize winners:¹ the team composed by Youssef Nader, Luke Farritor, and Julian Schilliger was able to recover portions of sixteen columns from the unopened roll *P.Herc.Paris.* 4 (Académie des Inscriptions et Belles Lettres, Institut de France).² Working on the same scan data, acquired in 2019 by EduceLab (University of Kentucky), from the same carbonized papyrus roll, Farritor and Nader had been able to recover some portions of never-before-

This paper is the result of close collaboration among the authors, who participated in all aspects of the research and discussed the Greek text together. As for the individual sections, the introduction was prepared by Federica Nicolardi, to whom coll. -16, -15, -10, and -5 were also assigned; coll. -14, -9, and -4 were first assigned to Robert Fowler; coll. -13, -12, and -11 to Gianluca Del Mastro; coll. -8, -7, and -6 to Daniel Delattre; and coll. -3, -2, and -1 to Richard Janko. However, the final text was a joint effort by all of us. The English translation was prepared by Robert Fowler, Richard Janko and Federica Nicolardi. Acknowledgements: we thank W. Brent Seales, Nat Friedman, Daniel Gross, Stephen Parsons, the EduceLab team, the Vesuvius Challenge team, and their partners and funders for their trust and support in allowing us to publish the text from PHerc. Paris. 4 as the 2023 Papyrology team. Our gratitude goes to all contestants who produced and shared results that allow us to read this text today, especially to the winning team, composed by Youssef Nader, Luke Farritor, and Julian Schilliger, and to the runners-up (Shao-Qian Mah; Elian Rafael Dal Prá, Sean Johnson, Leonardo Scabini, Raí Fernando Dal Prá, João Vitor Brentigani Torezan, Daniel Baldin Franceschini, Bruno Pereira Kellm, Marcelo Soccol Gris, and Odemir Martinez Bruno; Louis

Schlessinger and Arefeh Sherafati). Improving the ink detection will increasingly rely on a tightened collaboration between papyrology and machine learning, through which the ink predictions are refined based on papyrological interpretation before being used again as labeled training data in an iterative process. We are grateful to one of the contestants, Nicola Bodill, for sharing with us her preliminary labelling results, which we have consulted in accordance with the Vesuvius Challenge Data Agreement. Although her results have not yet been technically evaluated, they represent a promising first step towards improvement over the Grand Prize images, which served as the original basis of our work. Richard Janko is particularly grateful to her, since her readings often anticipated his own.

¹ On 2023 Grand Prize awarded, see https:// scrollprize.org/grandprize.

² For a brief history of *PHerc.Paris*. 4 and the imaging that is allowing its virtual unwrapping see F. NICOLARDI *ET ALII*, *Revealing Text from a Still-rolled Herculaneum Papyrus Scroll (PHerc.Paris. 4)*, «ZPE» 229/2024, 1-13 (available at https://www.habelt.de/ openaccess), esp. 6 f., and D. DELATTRE, *Cronistoria dei papiri ercolanesi conservati a Parigi (1802-2012)*, «CErc» 44/2014, 129-144.

THE FINAL COLUMNS OF PHERC.PARIS. 4 REVEALED THROUGH VIRTUAL UNWRAPPING

FEDERICA NICOLARDI DANIEL DELATTRE GIANLUCA DEL MASTRO ROBERT FOWLER RICHARD JANKO



³ On the First Letters Prize results, see Nico-LARDI *ET ALII* 2024.

⁴ As we did in NICOLARDI *ET ALII* 2024, we have chosen to assign negative numbers to the columns, ranging from -16 to -1 (the last one), being confident that the preceding columns of the roll will soon be discovered.

⁵ We are very grateful to the Vesuvius Challenge technical team, and especially to Stephen Parsons and to Ben Kyles and David Josey from the Segmentation Team, for taking the measurements for us. As any measure is based on the scan data, it has to be considered that it refers to the crumpled and shrunken morphology of the unopened roll. Original measures, especially referring to the height of the roll, may be slightly bigger.

⁶ The presence of this feature in the First Letters Prize images, where the segmentation had not yet reached the upper edge of the roll, depended on a digital damage, as we stated in NI-COLARDI *ET ALII* 2024, 8. Wavy outlines in mechanically-unrolled Herculaneum papyri are extremely frequent and acknowledged as important material features for the reconstruction of papyrus rolls; see M.G. ASSANTE, *Osservazioni preliminari sull'anatomia del PHerc.* 1044 (Vita Philonidis), in A. ANTONI *ET ALII* (a c. di), *Miscellanea Papyrologica Herculanensia*, I (Pisa-Roma 2010), 231-245, esp. 235 f.

⁷ For parallels, see NICOLARDI ET ALII 2024, 7.

Fig. 1. Farritor's (blue contour) and Nader's (red contour) First Letters Prize images on top of the Grand Prize Image. © Vesuvius Challenge-Académie des Inscriptions et Belles Lettres, Institut de France, Paris

seen text back in October 2023, being awarded respectively the first and second place of the First Letters Prize.³ In fig. 1 the First Letters Prize images (FLP) are placed on top of the Grand Prize (GP) winning image to show the improvement in terms of quantity of virtually-unwrapped text.

The Grand Prize image shows portions of the last sixteen columns of the roll in a strip of around 1.2 m in length: of the first of the discovered columns (-16), only a few final letters of seven lines are visible, while the following fifteen columns (-15 to -1) are complete in their width.⁴ The segmentation of the roll has so far revealed up to eighteen consecutive lines per column, with a maximum height of 11.37 cm. The total height of the actual roll is 16.75 cm, which means that 5.38 cm remain to be revealed in the lower portion of the roll.⁵ If we assume that the lower not-yet-revealed portion of the roll does not include the lower margin, but rather exclusively text lines, we can estimate that the roll can still provide 8/9 lines. We are now able to state that the upper margin of the roll is lost, since the segmentation process has reached the upper edge of the papyrus. The evident wavy outline of the virtually unwrapped portion is to be attributed to material damage to the roll, which is taller on one side than on the other.⁶

The Greek script is datable between the 1st century BC and the 1st century AD.⁷ In the portion revealed so far, the layout of the text appears regular and organic, with columns measuring around 62 mm wide, separated by blank spaces of about 17 mm. The average column-to-column distance is 79 mm. The scribe uses punctuation marks, such as *paragraphos* and *diple*, as well as *asteriskos* used as a filler at the end of a line (fig. 2).



Fig. 2. From left to right: *paragraphos, diple, asteriskos*. (©Vesuvius Challenge-Académie des Inscriptions et Belles Lettres, Institut de France, Paris)

As far as orthography is concerned, notable is the alternation between $\gamma tv/\gamma \epsilon tv$ ($\gamma tvo\mu \epsilon v\eta v$, col. -12, 2; $\gamma tv\phi \epsilon c\phi \mu \epsilon v$, col. -12, 8; $\gamma tvo [\mu \epsilon] \gamma \eta v$, col. -11, 2; $\gamma \epsilon tv \epsilon c\phi \mu \epsilon |v] ov$, col. -9, 18 f.; $\gamma \epsilon tv \epsilon c\phi a t$, col. -8, 5). Adscript *iota* is generally used (δt , col. -10, 5; $\Xi]\epsilon |vo\phi \epsilon v t \omega t$, col. -8, 2 f.; $\epsilon t \epsilon \epsilon \rho \omega t$, col. -6, 10, -5, 9, and -2, 17; $tov t \omega t$, col. -5, 5; $\theta \alpha t \epsilon \rho \omega t$, col. -5, 6; ηt , col. -5, 17; $t\eta t$, col. -3, 13), sometimes omitted ($\pi \alpha |\rho \eta$, col. -7, 7 f.; $t\alpha \phi t \eta$, col. -5, 14; $tov t \omega t$, col. -2, 13; $\epsilon \lambda \lambda \omega$, col. -2, 16), and not rarely misused ($\epsilon t \eta \{t\}$, col. -8, 16; $\delta t t \omega \{t\}$, col. -7, 6; $\epsilon \lambda \epsilon t \tau \omega \{t\}$, col. -7, 17; $\pi \lambda \epsilon t \omega \{t\}$ col. -5, 3; $\epsilon \mu \phi \alpha v \epsilon t \eta \{t\}$, col. -1, 7).

Regarding consonant changes, in addition to common assimilations such as $\pi \rho \rho |\epsilon \mu \pi \hat{\pi} \tau \sigma \nu$ (col. -11, 6 f.), $\pi \alpha \rho \epsilon \mu |\pi \hat{\pi} \tau \sigma \nu c \alpha \nu$ (col. -10, 3 f.), $\dot{\epsilon} \mu \phi \alpha i |\nu \sigma \theta'$ (col. -1, 4 f.), and $\dot{\epsilon} \mu \phi \alpha \nu \epsilon \hat{\pi} \{\iota\}$ (col. -1, 7), we also note the occurrence of $\dot{\epsilon} \gamma \delta \dot{\epsilon}$ (col. -9, 4). In contrast, $\dot{\epsilon} \nu \chi \rho \rho \nu \iota c |\mu \delta \nu$ (col. -13, 5 f.) shows no assimilation.⁸

At least once (col. -4, 3) the scribe corrects the text, replacing a misplaced letter with the correct one, writing the latter *supra lineam*.⁹

1.2. The content

Given the significant attention this text has attracted in the scholarly community, and despite its intrinsic philosophical complexities and the preliminary nature of the images available to us, we have decided to submit the full transcription we have produced so far. We are aware that, after only a few months of work, much remains to be done. However, we believe it is valuable for interested scholars to see the current state of this text and reflect on it while awaiting further revelations.¹⁰ Considering the limited time available, we have preferred to focus on the transcription, setting aside for the moment any intention to provide even a partial commentary on the text. A short summary of the main topics we have identified may be of some help.

Since the first columns of *PHerc.Paris*. 4 were revealed in October 2023, the text has clearly shown that it perfectly fits the context it comes from, that of the library of the Villa dei Papiri at Herculaneum. It is evidently a philosophical text, specifically assignable to Epicurean philosophy. In this text dealing with the theory of perceptions and pleasure, a crucial contrast emerges between scarcity (likely associated with cheapness) and abundance (likely associated with expensiveness), $\tau \delta c \pi \alpha v \iota \delta \alpha v \iota \delta \epsilon$. This also fits perfectly with Epicurean ethics and inevitably brings to mind the contrast between frugality and opulence of food in Epicur., Ep. Men. §130 f. Similarly, in our text, many examples are explicitly drawn from the realm of food, including references to specific foods such as capers and barley bread. The choice of food as main example may be due to its proximity to everyday life and easier comprehensibility, as suggested by expressions like ἀλλ' ὡς καὶ | ἐπὶ τῶν βρωμάτων (col. -8, 9 f.), καθά[πε]ρ καὶ βρώμα $|\theta'(col. -7, 2 f.)$, ώςπερ $|\dot{\epsilon}\pi\dot{\iota}$ τών χυλών πολ $|\lambda$ άκις (col. -7, 14-16), καθάπερ έπὶ τῶν χυ λ ῶν (col. -4, 9 f.). However, food may not be the main focus. Several columns explicitly refer to music (coll. -15, -14, -8) and here the dichotomy between scanty and abundant extends to rare and ordinary: a sound that strikes or amazes us (τὸ | ἐκπληκτικὸν καὶ τὸ | θαυμάcιον κατὰ μου|cικήν, col. -15, 3-6), for instance, does so only until it becomes common (col. -14).¹¹ The mention of a certain Xenophantos (or Xenophantes) probably accords with this topic, as it may refer to a musician mentioned – among others – by Philodemus in his De *musica* IV.¹² The text also deals with sight (coll. -12, 11, -11).

⁸ Col. -4, 11 f. may show another case with no assimilation, if Delattre's $\dot{\xi}v\lambda\dot{\xi}(\pi\xi c|\theta)$ is accepted there.

⁹ A similar case may perhaps also occur in col. -3, 13 f., if Janko's or Nicolardi's reading is accepted.

¹⁰ On the 2024 Vesuvius Challenge ambitious goal, see https://scrollprize.org/2024_prizes.

¹¹ See *e.g.* Phld., *Mus.* 4, col. 59, 3-9 DELAT-TRE 2007, where excessive loudness, as well as accelerated tones and rhythms, are said to be disturbing and frightening (τα|ράττουcιν καὶ παρέχουc[tv] | ἕκπληξιν), sometimes even shaking one's mind irrationally.

¹² See D. DELATTRE, *Philodème de Gadara, Sur la musique, Livre IV* (Paris 2007), 379 f. If we accept the reading of Damon's name in col. -3, 5, this may be another person connected to music.

Col. -10 is notable for showing a triple perspective: epistemological, physical, and ethical, discussing the impact on the sense organs and – most probably – atoms passing through the pores, as well as $\dot{\epsilon}\pi\kappa\rho(\epsilon)$ and $\kappa\rho\tau\eta\alpha$.¹³ Considerations about how we judge perceptions are important in the text, with prolonged use opposed to icτopíα and μετάβαcιc ἀπὸ ταύτηc (col. -13). Wrong judgments and the importance of comparison and analogy appear in col. -12, where the issue of truth is also raised. In this ethical context, references to what is considered dominant and provides more pleasure (see at least coll. -8 to -5) and the insistence on criteria and judging (coll. -3 and -1) may be understood.

The question about what this text is still remains unanswered, given that we can only read about two-thirds of fifteen columns out of approximately one hundred and sixty. It is possible that it is a text on perceptions, but we cannot rule out that it might be the final part of a book on music. Mentions of future content (col. -7, 5 f.) and the closing wish (col. -1) suggest that the author is referring to a subsequent book in the same work.

The text contains several instances of hiatus. However, at this stage, this feature cannot be used to determine or to exclude any specific author. Almost all occurrences fall within the exceptions accepted by Philodemus; two cases remain uncertain and will need to be reconsidered when more text is available to assess stylistic features.¹⁴

Near this revealed text, the end title of the work is probably hidden in an unsegmented area. On June 5, 2024, the Vesuvius Challenge team launched the first Title Prize on *PHerc.Paris*. 4, and we expect submissions in the coming months.

1.3. The images

Unlike the First Letters Prize, the Vesuvius Challenge Grand Prize produced several different images that, as adjudicator papyrology team, we had to evaluate after the initial technical team assessment. Some individual teams submitted multiple images. After comparing the twelve submissions based on criteria such as general readability and presence of noise, each of us produced an independent preliminary transcription to check readability and ensure that the Grand Prize target was met. Despite the first-ranked submission having much higher readability, we quickly recognized the potential benefits of comparing different images of the same papyrus strip, especially when we started reviewing our very first transcript and discussing it among ourselves. Working with a born-digital text presents significant challenges. First of all, examining the original under a microscope is not – and will never be – possible, and the AI-enabled images are the only way to look at the ink in this unopened carbonized papyrus roll. However, different algorithms may produce different levels of noise, resulting in varying degrees of readability and authenticity. Moreover, several lines in the revealed portion still need to be fine-tuned, as the script often appears too faint to be read, possibly due to imperfect identification of the surface of an individual papyrus sheet within the scan data (segmentation). As progress continues in virtually unwrapping this scroll and refining the technique, new results will emerge. Therefore, each transcription, at least at this stage, must be considered provisional, as are the current images, which will be gradually replaced, or at least complemented, by newer, more precise, and more complete

¹³ On the combination of different levels/fields in Epicurus' texts, with particular reference to *PHerc*. 1431, Epicur., *Nat.* XXXIV, see for example G. LEONE, *Epicuro, Della natura, Libro XXXIV (PHerc. 1431)*, «CErc» 32/2002, 7-35, esp. 36.

¹⁴ Extremely helpful systematization - with original reflections - of hiatus in Epicurean authors, with close attention to Philodemus, is in M. McOsker, Hiatus in Epicurean Authors, «CErc» 47/2017, 145-161. The hiatus that follows the relative pronoun in $\delta \delta \pi' \alpha \eta \tau \delta \gamma$ τούτων | ἐπαινετόν ἐςτιν (col. -9, 13-15) may perhaps be explained thanks to the fact that the expression is made up of grammatically closely connected words. It is probably noteworthy that in Phld., Rh. VII, PHerc. 1004, col. VI 5 f. SUDHAUS 1892, the sequence $\delta \delta \pi \eta \gamma \alpha \gamma \epsilon$ occurs. Another dubious case in PHerc.Paris. 4 occurs in a sentence whose meaning is still not completely clear (col. -8, 6 f., οὐδὲ παρ' έτέρωι | ἴδιον): we cannot rule out that a pause in pronunciation (perhaps - οὐδὲ παρ' ἑτέρωι -| (δ_{100}) would lessen the hiatus here.

versions. This became evident when comparing the regions reproduced in both the First Letters Prize and the Grand Prize images. When we published the text transcribed from the first images some months ago, we noticed certain areas where the AI suggested traces that were impossible or contrary to what one would expect with a high degree of certainty. Additionally, there were ambiguous cases where we were unsure if what appeared to be ink was actually ink, or merely noise amplified by the AI, resulting in hallucinations.¹⁵ It may be worthwhile to reconsider these in the light of the Grand Prize images.

At col. -15, 5 (= l. 4 in the First Letters Prize image), we noticed that the reading of the word $\theta \alpha \omega \mu \dot{\alpha} \omega \omega$ disturbed by a sinusoidal stroke through the right part of the *my*. The new images are not yet decisive on this aspect, but comparing the First Letters Prize image with different Grand Prize submissions (fig. 3), starting from the most legible one and moving towards others that are less legible, one can observe that, while the defining features of *my* and the letters before and after it continue to be present even in less legible images, the sinusoidal stroke gets less recognizable, especially in its upper part. This could suggest that it is due to noise accentuation at that point by the AI.

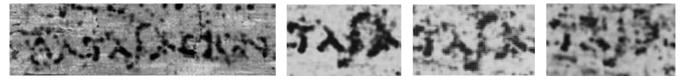


Fig. 3. Col. -15, 5: on the left FLP image; on the right, GP images

At col. -14, 5 (= 1. 4 in the First Letters Prize image), we wondered whether in the sequence $\kappa \alpha \tau \alpha$ the scribe corrected the text tracing the first *alpha* onto a rounded letter. However, we supposed that the rounded stroke was more likely a result of noise misinterpreted by the AI. Comparing the First Letters Prize image with the Grand Prize winning images (fig. 4), it is now evident that the rounded stroke is not present at all.

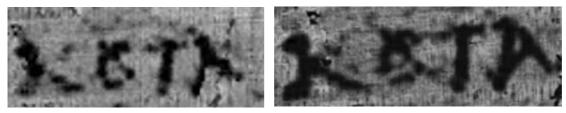


Fig. 4. Col. -14, 5: on the left FLP image; on the right, GP image

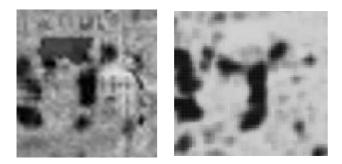


Fig. 5. Col. -14, 6: on the left FLP image; on the right, GP image

¹⁵ NICOLARDI *ET ALII* 2024, 8 f.

A *ypsilon* at col. -14, 6 (= 1. 5 in the First Letters Prize image) showed a small grey rectangle at the top left, which we deemed more likely to be a segmentation imperfection rather than a small hole in the papyrus. The new image shows a complete *ypsilon* (fig. 5 for comparison).

At col. -15, 4 (= 1. 3 in the First Letters Prize image), an oblique tick appeared before a kappa, which we were uncertain whether to interpret as a punctuation mark or an AI hallucination. The tick is not visible in the new images, which have also allowed us to reconstruct the complete word preceding the kappa, ending with a *ny*, and to confirm that there was no space for any punctuation mark (fig. 6 for comparison).

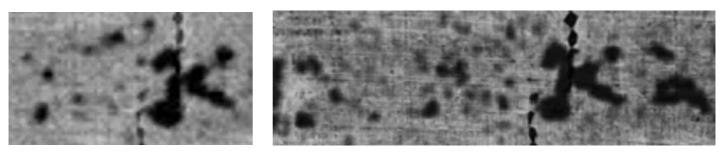


Fig. 6. Col. -15, 4: on the left FLP image; on the right, GP image

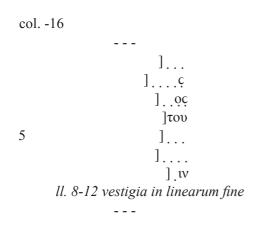
We have noticed a new dubious case between coll. -12 and -11, particularly from 1. 13 onwards, where the Grand Prize images appear to show something in an area of the papyrus that is not supposed to contain ink, as it reproduces an intercolumn. In particular, to the left of l. 17 the image could suggest a kappa (fig. 7). At this stage, we have decided not to include these traces in our transcription. While these could be part of a scribal correction or intervention - if not some other paratextual element - we cannot exclude the possibility that it is noise or that the segmentation inadvertently isolated a part of a previous circumference, as in a «virtual sottoposto». We are confident that future progress will help us clarify this point.



Fig. 7. Apparent traces or noise in the intercolumn between coll. -12 and -11

Even if some questions clearly remain to be answered, the comparison between past and present images shows that we were able to identify some imperfections or hallucinations in the first image revealing text from this roll, and that further progress has already resolved most of the ambiguities we had noticed. We believe that the approach provided by the technical team has been crucial in enabling this gradual and safe progress, which promises increasing accuracy for the future of ink prediction. Notably, none of the submissions we evaluated were based on any algorithm trained to find or detect letterforms. This has been a valuable guarantee of authenticity and objectivity. By relying on the inspection of tiny 3D regions of micro-CT data for signals indicating the presence of ink, the AI has issued verdicts on the presence of ink in regions too small to contain a complete letter and then made ink strokes visible by aggregating multiple regions.

2. The text¹⁶



col. -15

- - -

¹⁶ In the apparatus to the edition, we have decided not to attribute individual readings and supplements if accepted by everyone; the authorship of a reading or a supplement is mentioned, on the contrary, in the case of a disagreement or of a highly conjectural hypothesis. «... regarding us. Stupid likewise (*sc.* are) also those who praise what is astounding and what is wonderful in music ... For what is astounding will become customary and be relinquished (*sc.* when it has been used over a long period of time?) ...».

col. -14 - - - $[\ldots \ldots] . \alpha v \ldots [\ldots .]$ _____ουςιν εἰς ἡδονή[ν] – ού μην προχείρως γε τοῦτ' ἐργάζεται, καθά-5 περ άλλο τι τῶν κατὰ μουςικήν – η τρίτον ύποτιθέναι τινεv......οι πολλοί του 10νον [±14]... - - -

2 λείπουςιν proposuit RJ 6 η̈ – τρίτον – interpunxit DD 7 sq. τιν' ἐμπει|ρίαν γενέςθαι DD, τὸν ἔμπει|ρον γείνεςθαι proposuit RJ 8 sq. η̈ διὰ ταύ|την ποιεῖ θάμβη DD 9 αιοι vel voi, θ[ε]ιν οἱ RJ fin. lin. προ fortasse 10 init. lin.ιςτ vel του 11 init. lin. τι ήδονὴν DD

«... (they) ... with a view to pleasure – yet this does not produce an effect readily, like another of the things that pertain to music, – or to posit as third ... many ...».

col. -13

παρατιτ[.....]..τεν, κενὸν κα[ὶ] μάταιον ποιήςεται τὸν ἔπαινον. τὸ μὲν οὖν

5 κατὰ τὸν ἐνχρονιςμὸν τάχ' ἂν γίνοιτ,' ἐπί τινων, τὸ δὲ κατὰ τὴν ἱςτορίαν καὶ τὴν ἀπὸ ταύτης μετάβα-

CRONACHE ERCOLANESI 16

10 <u>civ τ vπ ερ</u> .ων.....τον .ν....υ. .[±7].....

1 sq. παρά τι τ[οιοῦτ' ἔπρ]ατ|τεν e.g. RJ 10 τῷν fortasse πα[θῶν] post τῷν coniecit DD υδ vel τα ante ερ 10 sq. τῷν πάλαι, οὐδ' ἔρ|γων proposuit RJ

«... (it?) will render the praise empty and vain. Anyway, the one might perhaps come about in some cases according to prolonged use, but the other according to investigation and inference from/alteration by the latter ...».

col. -12

	μ[] παραβολή
	γινομένην, καὶ παρα-
	δεικνύοντας ἡμῖν ἐ-
	πί τε πορφύρας καὶ
5	τῶν ὁμοίων ὅτι κρά-
	τιςθ' ὑπολαβόντες, ὅ-
	ταν παραθῶμεν, *
	καὶ γινώςκομεν ὡς
	ούκ ήληθεύομεν πρό-
10	τερον. πρώτον μέν
	γὰρ αὐτῆς τῆς ὄψεως
	ςκευα ιν
	[] []

1 παραβολή[v] longius 12
 ςκευα fortasse GDM, RF, RJ, FN, ἐπειδ. DD τινες fortasse DD, GDM, RF, FN, γίνες
θαι ὡς RJ ἐβαλ- post τινες DD

«... that arises by comparison, and showing us, in the case of a purple cloak (?) and similar things, that, by understanding (them) best when we compare (them), we also recognize that we were not speaking truly before. For in the first place ... of sight itself ...».

col. -11

[.]..ο..[±10] τὴν νῦν γινο[μέ]ỵην ἀπ,' ἀὐτοῦ κίνηcιν, διὰ τὸ μὴ πάντως κρείτ-

- - -

5 τω ταύτην είναι τῆς τότε δη κρατίςτης, προεμπîπτον διαφθείρειν προ τ.ε....α.... την ύπεροχήν 10 .ως ληψε..... .ητω διαφορ έκάτερον κινη 15 καςτος θεωρείται τον ήμας ο ...ρ....τι γὰρ η ... - - -

1]ποιη[fortasse 8 πρώτον RJ 11 λήψεται coniecit DD 12 ρητων RJ 14 . ἀνεγεινως κ.... vel πὰν ἐγεινως κ.... fortasse 17 sq. {ι} τὸν ἡμῶς ὀλοῦντα | βίον proposuit RJ

«... (that) the emotional effect that now arises from it,¹⁷ on account of the fact that this (emotional effect) is not absolutely stronger than the one that was strongest at that time, since it was previously impinging upon (it, *sc.* the eye?), destroys ... dominance ... each is observed ... us ...».

col. -10 - - -.[±9]....[.] τη [...]...ουτο άθροίςματος παρεμπίπτους αν είς τοῦτο 5 τὸ αἰςθητήριον, ὧι τὰς έπικρίςεις τοῦ τοιούτου ποιούμεθα, την μετα [] ςιν έργάςεςθαι τῶν πόρων μη τ. ποιε δόξαις ταῖς πρό-10 τερον άπὸ τοῦ μένου, κρατοῦςαν δὲ καθ' à τηο...c κριτήρια. κα-15 θαιροιμεν γάρ άν αὐτὰ μᾶλλον, οὐχ ὅτι προςιοίμεθα, εἴπερ ἡμᾶς .[±9]...[....] - - -

¹⁷ *Sc.* that which impinges on the eye? See below, ll. 6 f.

1 π]όρρω κ[proposuit RJ 2 τὴν [δ' ἐ]κ τούτου τοῦ proposuit FN (acc. RJ) 8 μετάθ[ε]ςιν DD (acc. RJ), μετάβ[α]ςιν C. Vergara per litt. (acc. GDM, FN) 9 ὥς γε fortasse 11 ποιεῖν fortasse 12 sq. κινου|μένου proposuit RJ 14 καθ' ἂ potius quam καθὰ, καθ' ἀφὴν coniecit DD fin. lin. κος vel ρως fortasse, εὐτόνως coniecit DD 15 init. lin. κινεῖν τὰ DD 17 sq. προς|ιομεθ' ἂ<v> RF 18 ἡμεῖς fortasse DD

«... (that) the (image?) resulting from this aggregate, falling into the organ of sense with which we make the judgements of this (aggregate), will produce the (change/passage?) of the pores ... the previous opinions from the ..., but prevailing (*sc.* the image?) according to the criteria by which For we might rather reduce/destroy them, not because we would be pleased, if ... us ...».

col. -9

[...]...[±8].. των άcaφη[...]ην.. τοιοῦτον εὐ λαβείν τὸν νοῦν, ἐγ δὲ τῶν 5 λο`ι'πῶν οὐδ' ὑντινοῦν. ούτωςυτ... παντάπαςιν η τους.....ς 10 των άγωνι τὰ λεγόμενα ταῦτα, διότι ὃ ὑπ' αὐτῶν τούτων 15 έπαινετόν έςτιν πολλάκις, αὐτὸ πολλάκις και ύπο πάντων γεινωςκόμε-

6 ἀποκηρύττει post οὕτως fortasse DD, οὖν ἐκ RJ 7 spatium vacuum ante η fortasse videtur ἡμεῖς fortasse DD 10 διχοςτατοῦςιν fortasse DD, ... ἐχουςιν FN 11 ἀγωνιζόμεθα proposuit DD 16 αὐτὸ GDM, RF, RJ, FN 17 sq. πάν|των vel πολ|λῶν 19 -[v]ων fortasse DD

«... obscure ... that such a person [cannot?] grasp the meaning well, and as a result of those remaining nobody at all (can). ... wholly ... these things that are said because what is often to be praised by these very people, (is) also often recognized by everybody ...».

col. -8 [.....] ἴδιο[ν] [.....] μεν τοῦ ἐ[ν Ξ]ενοφάντωι τοιούτου, ὃ καὶ ὑπ' ἄλλων δοκεῖ 5 γείνεςθαι, παραπληςίως δ' οὐδὲ παρ' ἑτέρωι ίδιον τοῦ δοκοῦντος είναι καὶ παρὰ πλείοςιν ήδιον, άλλ' ὡς καὶ 10 έπὶ τῶν βρωμάτων ούκ ήδη τὰ cπάνια πάντως καὶ ἡδίω τῶν δαψιλῶν εἶναι νομίζομεν. ού γάρ 15 λος είη {ι}, και κάππαρις δαψιλές έκείνοις, ὅτι ҫπανι-- - -

1 sq. [οὐ γὰρ ἂν] (vel [οὐκ ἂν]) ἴῷιο[v εἶναι | λέγο]ιμεν e.g. 2 τοῦ ἐ[v (vel ἐ[πὶ DD) potius quam τοὺς [ἐν e.g., sed τοὺς [παρὰ longius, nec τοιούτου[c] legi potest 7 ἴδιον GDM, RF, RJ, FN, ἥδιον DD 15 [ɛ]ἰ ςπạινίοις proposuit RJ 16 λοc GDM, RF, RJ, FN, μὴ DD 17 δαψιλέςιỵ θάλλει DD, δαψιλέςιỵ ἔλαχεν RJ, δαψιλὲς ἀκαλλὲς dubitanter FN 18 ἐκείνοις GDM, RF, RJ, FN, ςχοίνοις DD

«... a particularity of such a thing [in] Xenophantos, which seems to come about by the agency of others too, and in a similar way, neither is it a particularity of what seems to be more pleasant in the presence of another thing, also to seem more pleasant in the presence of several things, but, as also in the case of foods, we do not right away believe those which are scanty to be in general also more pleasant than those that are abundant. For ... would not be ..., and a caper ... abundant ... to those ..., because scanty ...».

col. -7

...[±7]....[...], καθά[πε]ρ καὶ βρώμαθ' ὑπεροχὴν ὄντως ἔχει παρὰ τὰ δαψιλῆ·

- - -

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- 5 θεωρηθήςεται δὲ τὰ τοιαῦθ' οὕτω {ι} πολλάκις, πότερον, ὅταν παρῆ τὸ δαψιλέςτερον, ἡ φύςις ἥδιον ἀπαλλάτ-10 τει τούτου, καὶ πάλιν
- 10 τει τούτου, καὶ πάλιỵ εἰ τοῦτο πολλάκις προςαγόμενου ἀποδίδωcίν τιν' ἡδονήν. οὐ μὴν θάτερον, ὥςπερ
- 15 ἐπὶ τῶν χυλῶν πολλάκις ὁ κρίθινος ἄρτος οὐθὲν ἐλάττω {ι} τέρψιν καθ' ἑαυτὸν

10 sq. πάλιν | εἰ GDM, RF, RJ, FN, πάλιν δέ; | ἢ DD 11 εἰ GDM, RF, RJ, FN, ἢ DD 13 ἡδονήν; interpunxit DD post 18 [παρέχει e.g.

«..., just as foods too really possess dominance because of their abundance. Such things will often be considered in this way, whether, when what is more abundant is to hand, our nature does without it more agreeably, and again whether this, if often taken up, provides a certain pleasure. Nor indeed (does) the other, just as, in the case of flavours, barley bread often [provides] no less pleasure in itself ...».

col. -6

- - -

- 5 ὑπεροχὴν ἔχοντος, ὥcπερ οἱ πολλοί. cuμβαίνει γὰρ ἐνίοτ' ἐκ τοῦ κινηθῆναι δι' ἀὐτὸ τὸ cπάνιον ἤδῃ τινὰc εὐ-
- 10 ήθεις [ἐ]πὶ τῶι αὐτὸ τὸ πρâγμα ὑπεροχὴν ἔχειν καὶ ἡδονὴν νομίζειν, ἐπιςπâҫθαι πρòc αὐτό. ἔςτιν
- 15 γὰρ ὅτ' ἐπεςπάςθη-

μεν, τοῦ μὲν ὄντος ςπανίου καὶ εὐτελεςτέρου, τοῦ δὲ δִαψι-[λοῦς]]

2 τοις ὑπ[οθ]ξωρεῖν vel ὑπ[ο]χωρεῖν potius quam τοι cυν[εκ]χωρεῖν vel τοις ὑπ[εκ]χωρεῖν (quae longiora videntur) 10 [ἐ]πὶ τῶι FN, [κ]α[ὶ] τῶι DD 19 καὶ πολυτελοῦc] e.g. DD

«... observe[/avoid?] ..., so that we will not be misled by that which is scarce, as most people are, into thinking that it is dominant. For it sometimes happens that, as a result of being affected on account of scarcity itself, some fools, because they think the thing itself is dominant and constitutes pleasure, are attracted to it. For sometimes we were attracted when the one kind is scarce and cheaper while the other is abundant [and expensive?] ...».

col. -5

5 ροῦμεν τούτωι μαλλον ἢ θατέρωι. διόπερ χρὴ μὴ καταγινώςκειν καἰ τῶι ποιεῖν ὑπεροχὴν

- 10 καν..... τὸ ὅ' ἔτι μάλλον τοῦὅε τιν τ τ ματ' ἐκ τοῦ cπαγίου προcέcχομεν ταύτη,
- 15 αὐτοῦ, ὅπολλάκις, ὅταν ἀνόμοια ἦι, δι' αὐτοῦ προcεθέμεθα καὶ

8 ὑποβ. ν.... proposuit RJ 10 καὶ (vel μηὸ') ἔλλειψιν κριταῖς RJ, καὶ ἡδονὴν ταις FN 11 τὸ δ' ἔτι GDM, RF, RJ, FN, τόδε τι fortasse DD 12 τινος DD, τινὸς τά τε RJ 12 sq. ἐλλείμ|ματ' proposuit RJ, ἀδική|ματ' e.g. proposuit FN 15 τἰς πρόληψιν post αὐτοῦ RJ 16 ἐπαινεῖ post πολλάκις proposuit RJ 17 ἀνόμοια GDM, RF, RJ, FN, ἀνομοία fortasse DD «... particular ... having been attracted (to it). However, we no longer persist in this for a longer time than in the other. For this reason, it is necessary not to condemn ... by producing dominance ... The fact that even more than this one ... as a result of what is scarce we devoted ourselves to this, ... of itself ... often ..., when they are dissimilar, by means of it we were in agreement and ...».

col. -4

... [., πολ]λάκι[ς δ'] οὐχ ἦττον ἀλλὰ καὶ μᾶλλον ἤρεςέν τι[[ν]]`c´ ἡμῖν. καὶ κατὰ τὸ πάθος μὲν

- - -

- 5 ἐπαινοῦντες οὐ διαμαρτάγομεν· ἐκινήθημεν γὰρ ἰςχυρῶς, εἰ μὴν τι ἐκώλυεν, καθάπερ ἐπὶ τῶν χυ-
- 10 λών ... ροτερα κατη γορούμεν, ὃν λείπες θ' ἢ πολλάκις παραςκευ άζειν τὴν ἡδονήν ...
- 15
 ^τ
 ^ζ δη φήςομεν ύποδε έςτερον εἶναι. τοῦ τον οὖν τὸν τρόπον

8 εἰ GDM, RF, RJ, FN, ἐκ vel ἐχ DD ἰξιሱν fortasse τι ἐκώλυεν GDM, RF, RJ, FN, τεκμαίρει fortasse DD 10 μακρότερα FN (acc. GDM, RJ), ἰςχυροτέρας fortasse DD 10 sq. κατη|γοροῦμεν fortasse, διη|πορεύομεν fort. DD 11 sq. ὃν λείπες|θ' GDM, RF, RJ, FN, ἐνλείπες|θ' fortasse DD 14 sq. τί Υ' ἀμρε|ςιν proposuit RJ 15 sq. | ὃ δὴ DD, GDM, RF, FN φαίνες|θαι proposuit RJ

«Often we liked a certain (*e.g.* sound?) not less, but even more. If we praise (it) according to our feeling we are not mistaken: for we were strongly moved, unless a certain [particularity?] hindered it, as in the case of flavours. ... we speak against (?) that which (we expect?) to remain or often provide pleasure ..., which we will say is inferior. Therefore, this way ...».

col. -3 - - -[....].οιμ[...τό]ν οὐ φρονοῦντα κριτὴν άόριςτον αὐτῶν εἶναί φαμεν· καθάπερ γάρ 5 $\delta_{.(.)}$ μόνος κρίνει καὶ τὰς ὑπεροχὰς ὡς χρὴ λαμβάνειν ἀναλογίζεται. μουςικ _ δέ πε-10 ς ν.αν.... περὶ τούτων. περὶ γὰρ ἡδονής αιως έκχωρήςομεν τηι κατα κριται 15α η καί τιςιν, άλλ' οὐ περὶ τῆς κατὰ γεῦςιν ἄλλοις δὲ καὶ

- - -

4 καθάπερ DD, καθάτε vel καθὰ τὸ ut videtur 5 Δάμων, ὃc DD, RF, δὲ μόνοc FN, δεῖ μόνοc RJ 7 sq. ἀναλογί|ζεται. μουcικοὺς δὲ RJ, ἀναλογί|ζεται. μουcικὸς δὲ FN, ἀναλογί|ζεται μουcικὸς ὅὲ FN, ἀναλογί|ζεται μουcικὸς ΈΝ, ἐκ το τος δὶ σι ἀς τος ὑρι ἀς δὶ καί τας τας ἐκ- DD 13 sq. τῆι κα|τας τάς ἐι κριταὶς c> [ŋ] εἶ ναι proposuit RJ, τῆι κα|τας μές ει κριταὶ [ŋ]] εἶ ναι FN 15 sq. βία τί μὲν λέγει θεὶς Ι ἢ "βία κλᾶcθ" ἢ καί "τιςιν" proposuit RJ 16 ταῦνε GDM, FN

«... we affirm that the man who has no common sense is an uncertain judge of them. For as ... he alone judges even the dominances, and reasons that one must accept (them). But ... musical ... about everything ... about these things. For regarding pleasure ... we will yield to the ... for judges that ... is ..., ... even to some (people), but not regarding the (pleasure) according to taste. But for other (people) too ...».

col. -2

του.[...].η ο...[δ]ιὰ τῶν ἑκάςτης κριτηρίων θεωροῦνται, πρὸς δέ, οὕτε καθόλου περὶ

- - -

- 5 ήδονῆς ἐχόντων τι λέγειν οὔτε περὶ τῆς κατὰ μέρος, οτε ὡ- ριςμένον τι, ἀλλ' οὖν τῶν · διὸ καὶ τὰς
 10 ἀμφιςβητήςεις ποι- ο಼ῦνται καὶ πρὸς ἀλ-λήλους. εἰ δ' ἐκχωρεῖν τινι δέο಼ι, τούτῷ τίς ἂν ἐκχωρήςειεν εἴ
 15 τις μηδ' ἄλλο τι κρί-
- νε಼ι μηδ' ἄλλῷ τινὶ ἢ τῶι πάθει; διὰ δὲ τὸ πο̞λ̞λάκιc ἀκ̞ŋκ̞ο-[έναι - - -

1 του
[μέ]νη, οἶα[ι δ]ιὰ proposuit RJ 3 πρòc `τὸ΄ δε DD 7 ο<
ύ>τε fortasse GDM, RF, RJ, ἄτε DD, ὅτε FN 9 τῶν ὅλ
ῶν ΥΝ, τῶν παθῶν DD διὸ καὶ τὰς RF, RJ, FN, ἕκαςτα DD

«... they are observed through the criteria of each (*fem. noun lost*). Besides, as they have nothing to say about pleasure either in general or in detail, when (?) there is anything definite, at least ... wherefore they also make disputes even against each other. But if it is necessary to give way to someone, who would give way to someone if he does not judge anything else, nor by means of anything other than feeling? Moreover, because it has often been said that ...».

col. -1

παρατρεχόντως τὰ μὲν κρίνειν, τὰ δὲ κατέχειν, καὶ ἐμφαί-

5 νοιθ' ἡμῖν ἀληθῆ λέγειν, ὥcπερ πολλάκιc ἂν ἐμφανείη {ι}.

ante 1 où]| vel µŋ]| fortasse

«... to judge some things hastily but to hold onto others, and may he (*sc*. Epicurus?) seem to us to speak the clear truth, just as he would often seem to do!».

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Fig. 8. The Grand Prize winning image (divided in three rows to fit the page). \mathbb{C} Vesuvius Challenge-Académie des Inscriptions et Belles Lettres, Institut de France, Paris

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Fig. 9. Photo-realistic rendering of the virtually unwrapped portion of *PHerc.Paris*. 4 (divided in three rows to fit the page). © Vesuvius Challenge-Académie des Inscriptions et Belles Lettres, Institut de France, Paris

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