

SILENO

RIVISTA SEMESTRALE
DI STUDI CLASSICI E CRISTIANI
FONDATA DA QUINTINO CATAUDELLA

ANNO XL

1-2/2014



AGORÀ & CO.

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SILENO è una pubblicazione semestrale
Condizioni di abbonamento: € 85,00
Costo di un numero (due fascicoli): € 90,00
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Licosa S.p.a.
Via Duca di Calabria 1/1
I-50125 Firenze
telefono +39(0)556483201 - fax +39(0)55641257
e-mail: laura.mori@licosa.com

*Volume pubblicato con il concorso del Consiglio Nazionale delle Ricerche
e dell'Università degli Studi di Catania*

«Sileno» is an International Peer-Reviewed Journal

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Lugano

E-mail: infoagoraco@gmail.com

PROPRIETÀ ARTISTICA E LETTERARIA RISERVATA PER TUTTI I PAESI

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ISSN 1128-2118

TIME TO REPAY A MARITIME LOAN:
A NOTE ON SB III 7169 AND SB XVIII 13167 RECTO

FEDERICO DE ROMANIS
(ROMA ‘TOR VERGATA’)

Although only partially preserved, two texts on papyrus – SB III 7169 (= PBerol 5883+5853) and SB XVIII 13167 (= PVindob G 40822) recto – demonstrate how commercial procedures related to maritime loans in classical Athens can survive in Hellenistic and Roman Egypt, by adjusting to the peculiarities of Ptolemaic and Roman trade in the Indian Ocean. One of those procedures was pointed out by L. Casson and G. Thür long ago¹: just as is agreed by the borrowers of the συγγραφή transcribed in the πρὸς τὴν Λακρίτου παραγραφὴν², the borrower of the contract in SB XVIII 13167 recto also offered his commodities as security. A comprehensive exploration of this and other similarities would entail an analysis far beyond the scope of this paper. Nonetheless, it will be worthwhile to address one particular contractual element that persisted: the timing of the loan repayment.

The Demosthenic συγγραφή does not schedule a calendric date as an *a priori* deadline for the repayment of the maritime loan borrowed by Artemon and Apollodoros. It states only that the borrowers have twenty days after their return to Athens to repay their debt³. The imprecision of the repayment deadline – or, to be more accurate, its sensitivity to the day

¹ Cfr. below, nt. 23.

² D. 35.10-13. For the sake of convenience, I shall refer to this contract as the ‘Demosthenic συγγραφή’. The designation implies no claim about the authorship of the speech.

³ D. 35.11: σωθέντων δὲ τῶν χρημάτων Ἀθήναζε, ἀποδώσουσιν οἱ δανεισάμενοι τοῖς δανείασαι τὸ γιγνόμενον ἀργύριον κατὰ τὴν συγγραφὴν ἡμερῶν εἴκοσιν, ἀφ’ ἧς ἂν ἔλθουσιν

on which the ship actually returned⁴ –, has been a typical feature of ‘two way’ (*amphoteropla*) maritime loan contracts throughout antiquity. As the Constantinopolitan ναύκληροι explained to the praetorian prefect Ioannes in 540 CE, maritime loans were conceived not in relation to a predetermined time period but as contingent on a voyage: the total interests agreed upon before the voyage were irrespective of its actual length⁵. Justinian’s ναύκληροι’s claim that they were also indifferent to the *presumptive* length of the voyage⁶ may not have always been valid⁷, but their statement about its *actual* length certainly was: since the lender took upon himself all the risks of the navigation – delayed return included – the total costs of the interests were not affected by either later or earlier conclusion to the voyage.

As mentioned, borrowers of a maritime loan were also given some time to sell their commodities and repay their debt. Both in the Demosthenic συγγραφή and in the expertise of the Justinian’s ναύκληροι the extension

Ἀθήναζε, ἐντελὲς πλὴν ἐκβολῆς, ἦν ἂν οἱ σύμπλοι ψηφισάμενοι κοινῇ ἐκβάλωνται, καὶ ἂν τι πολεμίοις ἀποτείσωσιν· τῶν δ’ ἄλλων ἀπάντων ἐντελὲς.

⁴ D. 32.5: οὐσῶν δὲ τῶν συγγραφῶν, ὥσπερ εἰώθασιν ἅπασαι, σωθείσης τῆς νεῶς ἀποδοῦναι τὰ χρήματα κτλ.

⁵ Just. Nov. 106: εἰ δὲ οὐχ ἔλοιτο τὴν ὁδὸν ταύτην οἱ δανείζοντες, τὴν ὀγδόην μοῖραν λαμβάνειν ὑπὲρ ἐκάστου νομίματος ὀνόματι τόκων οὐκ εἰς χρόνον τινὰ ῥητὸν ἀριθμουμένων, ἀλλ’ ἕως ἂν ἡ ναῦς ἐπανέλθοι σεσωσμένη. Cfr. D. Gofas, *The Byzantine Law of Interest*, in A.E. Laiou, «The Economic History of Byzantium», Washington 2002, 1097. What is described here as the second type of the maritime loans actually “den normalen Hauptfall bedeutet”: G. Billeter, *Geschichte des Zinsfusses im griechisch-römischen Altertum bis auf Justinian*, Leipzig 1898, 325.

⁶ Just. Nov. 106: κατὰ τοῦτο δὲ τὸ σχῆμα συμβαίνειν ἴσως καὶ εἰς ἐνιαυτὸν ἐκταθῆναι τὸν χρόνον, εἴπερ τοσοῦτον ἕξω διατρίψειεν ἡ ναῦς ὡς καὶ τὸν ἐνιαυτὸν ἢ πέρασ λαβεῖν ἢ καὶ ὑπερβῆναι, θάττον γε μὴν ἐπανιούσης αὐτῆς τὸν χρόνον εἰς ἓνα μόνον ἢ δύο παρελκυσθῆναι μῆνας, καὶ ἐκ τῶν τριῶν κερατίων ὠφέλειαν ἔχειν, κἂν οὕτως βραχὺς διαγένηται χρόνος κἂν εἰ περαιτέρω παρὰ τῷ δανισαμένῳ μένοι τὸ χρέος. Cfr. Billeter, op. cit., 328-329.

⁷ Different rates for different destinations are implied by D. 56.6: δανείσασθαι ἐπὶ τῇ νηί, ἐφ’ ᾧ τε πλεῦσαι εἰς Αἴγυπτον καὶ ἐξ Αἴγυπτου εἰς Ῥόδον ἢ εἰς Ἀθήνας, διομολογησάμενοι τοὺς τόκους <τοῦ> εἰς ἑκάτερον τῶν ἐμπορίων τούτων. However, in D. 35.13 interests remain unchanged whether the borrowers sail or do not beyond the Hellespontus: ἐὰν δὲ μὴ εἰσβάλωσι, μεινάντες ἐπὶ κνὴν ἡμέρας δέκα ἐν Ἑλλησπόντῳ, ἐξελόμενοι ὅπου ἂν μὴ σῦλαι ὡσιν Ἀθηναίοις, καὶ ἐντεῦθεν καταπλεύσαντες Ἀθήναζε τοὺς τόκους ἀποδόντων τοὺς πέρυσι γραφέντας εἰς τὴν συγγραφὴν. They change only if they sail back from Pontus after the rising of Arcturus, see below, nt. 19.

is twenty days⁸. After that, the lenders of the Demosthenic συγγραφή were allowed to seize the mortgaged goods⁹. Those of Justinian's *Novella* 106 were entitled to additional interests at the rate of 8% per year¹⁰.

The remnants of the two texts on papyrus contain conditions that may be compared, either *per similitudinem* or *per differentiam*, with Demosthenic and Justinianic texts. In his edition and commentary of the loan contract transcribed in SB III 7169, U. Wilcken remarked¹¹ that, while in the Demosthenic συγγραφή the loan is issued *for a voyage* from Athens to Mende (or Scione), then to Bosphorus¹², then, optionally, along the north-west coast of the Black Sea up to Borysthene, and finally back to Athens¹³, the SB III 7169 loan is given *for a period of time* (one year) to people who happen to be sailing to the Aromatophoros Land¹⁴. However, upon further consideration, such a difference turns out to be less consequential than it first seems. In fact, the emphasis on the voyage rather than on the time span in the Demosthenic συγγραφή has to be explained by the Athenian law prohibiting the loan of money to commercial enterprises not having Athens as their final destination¹⁵. That rule compelled all Athenian citi-

⁸ D. 35.11, above nt. 3; Just. *Nov.* 106: εἰ μέντοι μετὰ τὴν ἐπάνοδον τῆς νηὸς σωθείσης καὶ μηκέτι πλεῖν διὰ τὸν καιρὸν δυναμένης ἐπανέλθοιεν, εἴκοσι καὶ μόνων ἡμερῶν προθεσμίαν δίδοσθαι παρὰ τῶν δανεισάντων τοῖς δανεισαμένοις, καὶ μηδὲν ὑπὲρ τῶν ὀφλημάτων τόκου ἔνεκεν ἀπαιτεῖν, ἕως πραθῆναι συμβαίῃ τὸν φόρτον.

⁹ D. 35.12: ἐὰν δὲ μὴ ἀποδώσιν ἐν τῷ συγκεκριμένῳ χρόνῳ, τὰ ὑποκείμενα τοῖς δανείσασιν ἐξέστω ὑποθεῖναι καὶ ἀποδόσθαι τῆς ὑπαρχούσης τιμῆς.

¹⁰ Just. *Nov.* 106: εἰ δὲ μένοι περαιτέρω τὸ χρέος οὐκ ἀποδιδόμενον, τὸν ἐκ διμοίρου τῆς ἑκατοστῆς τοῖς κυρίοις τῶν χρημάτων δίδοναι τόκον, καὶ μεταβάλλειν εὐθὺς τὸ δάνεισμα καὶ εἰς τὸν τῶν ἐγγείων μεταχωρεῖν τρόπον, οὐκέτι τῶν θαλαττίων κινδύνων τὸν δανειστὴν ἐνοχλοῦντων.

¹¹ U. Wilcken, *Punt-Fahrten in der Ptolemäerzeit*, «ZÄS» 60, 1925, 94; cfr. also R. Bogaert, *Banquiers, courtiers et prêts maritimes à Athènes et à Alexandrie*, «CE» 40, 1965, 149.

¹² Of the two interpretations of εἰς Βόσπορον suggested by E.E. Cohen, *Athenian Economy and Society: A Banking Perspective*, Princeton 1992, 54, nt. 71, I prefer the second.

¹³ D. 35.10: ἐδάνεισαν Ἀνδροκλῆς Σφήτιος καὶ Ναυσικράτης Καρύστιος Ἀρτέμωνι καὶ Ἀπολλοδώρῳ Φασηλίταις ἀργυρίου δραχμῆς τρισχιλίας Ἀθήνηθεν εἰς Μένδην ἢ Σκιώνην, καὶ ἐντεύθεν εἰς Βόσπορον, ἐὰν δὲ βούλωνται, τῆς ἐπ' ἄριστερα μὲχρι Βορυσθένους, καὶ πάλιν Ἀθήναζε κτλ.

¹⁴ SB III 7169, l. 12: το[ῖς ε] τοῖς εἰς[] τὴν Ἀρω[ματο]φ[όρον συ]νπλοῖς; l. 13: εἰς ἐ[ν]ι[α]υ[τ] τ[ὸ]ν [ἀπὸ το]ῦ προ[ο]κει[μένου] μηνός.

¹⁵ D. 35.50-51: ἴστε γάρ, ὧ ἄνδρες δικασταί, τὸν νόμον ὡς χαλεπός ἐστιν, ἐὰν τις Ἀθηναίων ἄλλοσε ποιησῆται ἢ Ἀθήναζε, ἢ χρήματα δανείσῃ εἰς ἄλλο τι ἐμπόριον ἢ τὸ Ἀθηναίων, οἷα ζημίαι περὶ τούτων εἰσίν, ὡς μεγάλαι καὶ δειναί. μᾶλλον δὲ αὐτὸν ἀνάγνωθι

zens, Athenian residents, and people who had them as κύριοι to draw up maritime loan contracts providing an accurate route description of the financed voyage, which without exception had to end in Athens. True, the Demosthenic συγγραφή does not state clearly for how long the loan was granted. However, the fact that Athens had to be the final destination of the voyage clearly implied that both the outbound and return journeys had to occur in the same sailing season, since otherwise it would have been only too easy to circumvent the public law. Only *force-majeure* circumstances could have justified a delayed return to Athens: any deliberately postponed return journey by the merchants/borrowers would have been taken as a violation of the contract.

On the other hand, it would be not entirely correct to assert that the one-year loan contract to the five σύνπλοι bound for the Aromatophoros Land in East Africa was based on a period of time rather than on a voyage. As a matter of fact, if the loan was released εις ένιαυτὸν ἀπὸ τοῦ προκειμένου μηνός, it foresaw an exception, in case the σύνπλοι returned to Egypt too late for the loan to be repaid within a year¹⁶. In that case, for a certain number of days—either fifty, seventy, eighty, or ninety¹⁷—after their landing in an Egyptian port, no additional interests could be claimed by the lender. The longer interval between the ship's docking and the loan repayment deadline—between fifty and ninety days as opposed to twenty—was required by the distance between the Red Sea port and the main emporion (Alexandria). Apparently, the delayed traders were given time

αὐτοῖς τὸν νόμον, ἴν' ἀκριβέστερον μάθωσιν. ΝΟΜΟΣ. Ἀργύριον δὲ μὴ ἐξεῖναι ἐκδοῦναι Ἀθηναίων καὶ τῶν μετοίκων τῶν Ἀθήνησι μετοικούντων μηδενί, μηδὲ ὧν οὗτοι κύριοι εἰσιν, εἰς ναῦν ἥτις ἂν μὴ μέλλῃ ἄξειν σίτον Ἀθήναζε, καὶ τἄλλα τὰ γεγραμμένα περὶ ἐκάστου αὐτῶν. ἐὰν δὲ τις ἐκδῶ παρὰ ταῦτα, εἶναι τὴν φάσιν καὶ τὴν ἀπογραφὴν τοῦ ἀργυρίου πρὸς τοὺς ἐπιμελητάς, καθάπερ τῆς νεῶς καὶ τοῦ σίτου εἴρηται, κατὰ ταῦτά. καὶ δίκη αὐτῶ μὴ ἔστω περὶ τοῦ ἀργυρίου, ὃ ἂν ἐκδῶ ἄλλοσέ ποι ἢ Ἀθήναζε, μηδὲ ἀρχὴ εἰσαγέτω περὶ τούτου μηδεμία. Cfr. D. 56.5: Διονυσόδωρος γὰρ οὐτοσί, ὧ ἄνδρες Ἀθηναῖοι, καὶ ὁ κοινῶν αὐτοῦ Παρμενίσκος προσελθόντες ἡμῖν πέρυσιν τοῦ μεταγαιτιῶνος μηνός ἔλεγον ὅτι βούλονται δανείσασθαι ἐπὶ τῇ νηί, ἐφ' ᾧ τε πλεῦσαι εἰς Αἴγυπτον καὶ ἐξ Αἴγυπτου εἰς Ῥόδον ἢ εἰς Ἀθήνας, διομολογησάμενοι τοὺς τόκους <τοὺς> εἰς ἐκάτερον τῶν ἐμπορίων τούτων. ἀποκριναμένων δ' ἡμῶν, ὧ ἄνδρες δικασταί, ὅτι οὐκ ἂν δανείσαιμεν εἰς ἕτερον ἐμπόριον οὐδὲν ἄλλ' ἢ εἰς Ἀθήνας κτλ.

¹⁶ SB III 7169, l. 14: ἐὰν δ' ἐκπε[σ]τό[ν]τ[ε]ς τοῦ χρόν[ου] παραγένω[νται] ἀπὸ τῆς Ἀ[ρ]ω[μα]τοφ[ο]ροῦσ[σ]ιν τὴν χώραν ὁμοίως ..[

¹⁷ SB III 7169, l. 15: ἢε., ἀφ' ἧς ἂν ἡμέρας παραγένωνται [ε]ἰς τὴν χώραν [ἡμερῶν .5] ἡκοντα.

to cross the desert between the Nile and the Red Sea, sail downriver to Alexandria, sell their *aromata* and repay their debt. Exactly like the Demosthenic συγγραφή, the deadline for the repayment of the loan was contingent on the day on which the ship arrived at its final destination. More substantial was another difference: at the expiration of the twenty days after the return, the lenders of the Demosthenic συγγραφή were allowed to seize the imported goods, if the loan had not been repaid. The lender of SB III 7169 instead, as is said to be the custom among Justinian's ναύκληροι, is permitted only to charge additional interests, if of a rather high rate: while Justin's ναύκληροι claimed that an annual rate of only 8% was charged, SB III 7169 shows an interest of 24%¹⁸.

The fact that the Aromatophoros Land loan contract did not penalize those who were unable to return to Egypt does not necessarily mean that it left them free to leave the Aromatophoros Land at any time. Although the extant fragments do not confirm it, it is probable that the contract required a timely start to the return voyage on the part of the borrowers. It is probable, in other words, that the concession of extra time in the event of a late return was balanced by the condition that the return voyage begin before a certain date. Thus, a delayed return to Egypt would have occurred only in exceptional and unpredictable circumstances.

Maritime loan contracts may favor or require a timely beginning of the return voyage in order to limit the financial risk to the lender. In the Demosthenic συγγραφή, if the borrowers began their return voyage from Pontus after the rising of Arcturus, the interest rate would rise from 22.5% to 30% because of the higher risk associated with winter sailing. In the contract between the slave Seius and the merchant Callimachus recalled by the jurist Cervidius Scaevola¹⁹, the loan was granted both for the entire 200

¹⁸ D. 35.10: ἐπὶ διακοσίαις εἴκοσι πέντε τὰς χιλίας, ἐὰν δὲ μετ' Ἀρκτοῦρον ἐκπλεύσωσιν ἐκ τοῦ Πόντου ἐφ' Ἰερόν, ἐπὶ τριακοσίαις τὰς χιλίας.

¹⁹ Dig. 45.1.122.1: *Callimachus mutuam pecuniam nauticam accepit a Sticho servo Seii in provincia Syria civitate Beryto usque Brentesium: idque creditum est* [Lübto : esse cod.] *in omnes navigii dies ducentos, sub pignoribus et hypothecis mercibus a Beryto comparatis et Brentesium perferendis et quas Brentesio empturus esset et per navem Beryto invecturus: convenitque inter eos, uti, cum Callimachus Brentesium pervenisset, inde intra idus Septembres, quae tunc proximae futurae essent, aliis mercibus emptis et in navem missis* [Lübto : mercis cod.] *ipsam* [Lübto : ipse cod.] *in Syriam per navigium proficiscatur, aut, si intra diem supra scriptam non reparasset merces nec enavigasset de ea civitate, redderet universam continuo pecuniam quasi perfecto navigio et praestaret sumptus omnes prosequentibus*

days of the sailing season as well as for a voyage from Berytus to Brentesion and back²⁰. However, if Callimachus were not able to sail out of Brentesion by September 13th, he would have had to repay his dues—loan and interests—in Italy, sending the money to Rome²¹, just as if he had sailed back to Berytus.

The text partially preserved on SB XVIII 13167 recto apparently relates to a loan financing a commercial enterprise importing Indian commodities from Muziris, in South India²². It was a great achievement by L. Casson and G. Thür to realize that the borrower of the contract does not pledge the ship, but only the imported commodities, as do the earlier Demosthenic *συγγραφή* and Callimachus' contract. Nonetheless, this important development does not solve the problem regarding the nature of the document; scholars disagree about how this text and the loan mentioned therein are connected. In part, the connection depends on the sentence that alludes

eam pecuniam, ut in urbem Romam eam deportarent: eaque sic recte dari fieri [fide] [secl. Lübtow] roganti Sticho servo Lucii Titii <fide> [Lübtow] promittit Callimachus.

²⁰ It is very likely that also in this case the time of the loan—all the 200 days of the sailing season—did not imply an *a priori* deadline for the restitution of the loan, which itself must have been dependent on when Callimachus' ship ultimately arrived back in Berytus (Scaevola did not need to refer all the conditions of the contract). If Callimachus left Brentesion on or before September 13th, but ended up landing in Berytus after the 200th day of the sailing season, he would certainly have still been allowed a period of time at no additional cost to sell his commodities and repay his debt.

²¹ Most probably to Seius' master: F. De Romanis, *Cultores huius loci. Sulle coabitazioni divine del lucus Furrinae*, in B. Palma Venetucci (ed.), «Testimonianze di culti orientali tra scavo e collezionismo» Roma, 2008, 156.

²² H. Harrauer /P.J. Sijpesteijn, *Ein neues Dokument zu Roms Indienhandel. P. Vindob. G 40822*, «AAWW» 122, 1985, 124-155; L. Casson, *P. Vindob. G 40822 and the Shipping of Goods from India*, «BASP» 23, 1986, 73-79; Id., *New Light on Maritime Loans: P. Vindob. G 40822*, «ZPE» 84, 1990, 195-206; G. Thür, *Hypotheken-Urkunde eines Seedarlehens für eine Reise nach Muziris und Apographe für die Tetarte in Alexandria*, «Tyche» 2, 1987, 229-245; Id., *Zum Seedarlehen κατὰ Μουσειρίν. P. Vindob. G 40822*, «Tyche» 3, 1988, 229-233; F. De Romanis, *Cassia, Cinnamomo, Ossidiana. Uomini e merci tra Oceano Indiano e Mediterraneo*, Roma 1996, 186-192; D. Rathbone, *The 'Muziris' papyrus (SB XVIII 13167): financing Roman trade with India*, «The Archaeological Society of Alexandria. Bulletin», 46, 2000 (= Alexandrian Studies II, in honour of Mostafa el-Abbadi), 39-50; X. Pérez López, *Pap. Vindob. G 40822: préstamo marítimo y perspectiva romanística*, in «IX Congreso Internacional XII Iberoamericano de Derecho Romano. El Derecho Comercial. De Roma al Derecho Moderno, II, (Las Palmas de Gran Canaria, 1, 2 y 3 de febrero de 2006)», Las Palmas de Gran Canaria 2007, 635-679; F. Morelli, *Dal Mar Rosso ad Alessandria: il verso (ma anche il recto) del 'papiro di Muziris' (SB XVIII 13167)*, «Tyche» 26, 2011, 199-233.

to the deadline for the repayment of the loan²³. This sentence is generally thought to refer to a deadline more explicitly specified elsewhere: either in the previous column of the papyrus (according to the first editors) or in another document, which would be the ‘real’ loan contract (Casson, Thür, Rathbone) or the ‘original’ loan contract (Pérez López), or just a first of two loan contracts (Morelli). The ‘real’, ‘original’, or first loan contract would have been signed in Muziris (Casson, Pérez López) or Alexandria (Thür, Rathbone, Morelli).

Casson and Morelli have argued that the contract of SB XVIII 13167 recto was signed at an Egyptian Red Sea port after the borrower had returned from India. According to Casson, it was a supplementary agreement redefining an old agreement signed in Muziris. In Morelli’s view, the document is about a new loan financing the travel from the Red Sea coast to Alexandria. Despite their ingenious arguments, I do not think these explanations suffice, when we consider both what is missing and what remains of the papyrus. It has to be pointed out that one entire column is missing on the left. If the contract, whatever it was about, was signed in a Red Sea port and concerned only the last leg of the voyage, the missing information would hardly necessitate 26 lines of some 44-55 letters each, especially if the same two parties had signed another contract immediately prior. Quite to the contrary, the size of the lost portion suggests strongly that the first column concerned the first part of a much longer voyage.

As a matter of fact, what details remain in the papyrus show that the lender’s presence was possible both in Coptos and Alexandria²⁴, but hardly in a Red Sea port, where, as Col. ii, l. 1:],μένων σου ἐτέρων ἐπ[ι]τρόπων ἢ φροντιστῶν²⁵ indicates, only the lender’s ‘other agents or representatives’ were supposed to be in charge. Whatever action is being described, it is clear that it was taken in a Red Sea port immediately after the ship landed. More importantly, the ἐτέρων in the same sentence implies that other agents or representatives of the lender—different from those who operated in the Red Sea port—took some other action *before* the ship had docked in

²³ SB XVIII 13167 recto, Col. ii, ll. 11-12: ἐνστάτος τοῦ ἐν ταῖς κατὰ Μουζείριν τοῦ δα[ν]είου σ]υγγραφαῖς τῆς ἀποδόσεως ὤρισμένου χρόνου.

²⁴ Ibid., Col. ii, l. 5-6: ὑ]πὸ τὴν σὴν ἢ τῶν σῶν ἐπιτρόπων ἢ τοῦ παρόντος αὐτῶν| ἐξουσία] ν καὶ σφραγεῖδα; l. 9: ὑπὸ τὴν σὴν ἢ τῶν σῶν ἐξουσίαν καὶ σφραγεῖδα.

²⁵ Casson (*P. Vindob. G 40822* cit., 78) postulates that it was a lender’s deputy who actually cosigned the contract.

the Egyptian port. Apparently, the contract recorded more than a simple transport from the Red Sea to Alexandria—indeed, much more than that, as suggested by the loss of an entire column.

Again, based on the controversial reading at Col. ii, l. 2²⁶ and on the unmistakable ναύλων at Col. ii, ll. 11, Thür had argued that more than one transport across the desert and more than one sailing event along the Nile were considered²⁷. Despite reading at Col. ii, ll. 10-11: καὶ φο[ρέτρω]ν ὄρους καὶ ναύλων ποταμίων²⁸, which makes the text even more consistent with Thür's interpretation, Morelli argues that the plurals φορέτρων and ναύλων may be generic and do not necessarily imply more than one desert crossing and more than one river journey²⁹. Legitimate as this may be, those plurals are consistent with what is to be inferred from Col. i and Col. ii, l. 1, and strongly suggest that it was an Alexandria-Muziris-Alexandria voyage that the SB XVIII 13167 recto financed.

SB III 7169 has offered a clear example of what a maritime loan contract financing a commercial voyage beyond Bab el-Mandeb could entail: a restriction of the loan to a time span of one year (εἰς ἐνιαυτὸν ἀπὸ τοῦ προκειμένου μηνός) and the concession of a delayed repayment in the case of a delayed return (ἐὰν δ' ἐκπεσόντες τοῦ χρόνου παραγέωνται). It is extremely unlikely that a loan contract for an Alexandria-Muziris-Alexandria voyage was structured differently. Indeed, since ships bound for the Somali coast and South India both used to leave from Egypt in July³⁰, loans for both the Aromatophoros Land and for Muziris had to be granted more or less in the same month and for the same one-year duration. In fact, Pliny's paragraphs on the Alexandria-Muziris route give accurate information about the timing of the departures from Egypt and from India. The merchants bound for Muziris must leave Berenice *ante Canis ortum aut ab exortu protinus*³¹. Their return voyage had to begin *mense Aegyptio Tybi in-*

²⁶ Read as δώσω τ]ῷ σῶ καμηλείτη ἄλλα (τάλαντα) ρο (δραχμάς) γ by the first editors; as δώσω τ]ῷ σῶ καμηλείτη ἄλλα (τάλαντα) ε[ί]κοσι by Harrauer (apud Casson, *New Light cit.*, p. 204); as παρα]δώσω καμηλείτη ἀξιοχρέω by Morelli.

²⁷ Thür, *Hypotheken-Urkunde* cit., 234, nt. 7; 235, nt. 14.

²⁸ Morelli, art. cit., 200, nt. 3.

²⁹ Morelli, art. cit., 206, nt. 21.

³⁰ *Peripl. M. Rubr.* 14: πλεῖται δὲ εἰς πάντα ταῦτα τὰ τοῦ πέραν ἐμπόρια ἀπὸ μὲν Αἰγύπτου περὶ τὸν Ἰούλιον μῆνα, ὃ ἐστὶν Ἐπίφι; ; 56: πλέουσι δὲ εἰς αὐτὴν οἱ κατὰ καιρὸν ἀναγόμενοι ἀπ' Αἰγύπτου περὶ τὸν Ἰούλιον μῆνα, ὃ ἐστὶν Ἐπίφι.

³¹ Plin. *HN* 6.104.

*cipiente, nostro Decembri, aut utique Mechiris Aegyptii intra diem sextum, quod fit intra idus Ianuarias nostras: ita evenit ut eodem anno remeent*³². In other words, they had to leave Egypt around July 20th and leave India by January 13th (= January 11th Gregorian) coming back to Alexandria in the same year they left³³.

It is very likely that the strict deadline for the return journey (by January 13th) was established in connection with maritime loan contracts. Just like borrowers of Berytus-Brentesion-Berytus loan contracts were required to leave from Brentesion by September 13th, so too must borrowers of Alexandria-Muziris-Alexandria loan contracts have been required to leave from Muziris by January 13th. Moreover, since the Muziris-bound merchants were usually back in Alexandria within twelve months of their departure (*ita evenit ut eodem anno remeent*), they were very likely to seek loans ‘for a year starting from the aforesaid month’ (εις ἐνιαυτὸν ἀπὸ τοῦ προκειμένου μηνός), exactly as the five σύνπλοι bound for the Aromatophoros Land did almost three centuries earlier. Finally, it is equally very likely that, again like the loan contract for the Aromatophoros Land voyage, an Alexandria-Muziris-Alexandria loan contract would allow a postponement on repayment if the sea vessel returned too late to Egypt (ἐὰν δ’ ἐκπεσόντες τοῦ χρόνου παραγένωνται κτλ.)³⁴.

Under these circumstances, how are we supposed to understand the sentence at SB XVIII 13167 recto col. ii, ll. 12-13: ἐνστάντος τοῦ ἐν ταῖς κατὰ Μουζεῖριν τοῦ δα|νείου σ]υγγραφαῖς τῆς ἀποδόσεως ὄρισμένου χρόνου? The alleged existence of a separate document with a more explicit specification of the repayment deadline has challenged scholars’ imaginations. Casson thought that a first agreement was signed in India: although the supposed first document would have already specified the repayment deadline, a supplementary agreement would be needed once the ship landed in Egypt³⁵. Thür argued for what would be the only known example of a division between the loan contract and the related security³⁶. Pérez López

³² Plin. *HN* 6.106.

³³ The words *eodem anno* refer neither to the Roman nor to any of the Egyptian calendars, but to a commercial ‘calendar’ shaped by the sailing seasons. A similar custom is implied by D. 35.13: [...] τοὺς τόκους ἀποδόντων τοὺς πέρυσι γραφέντας εἰς τὴν συγγραφὴν.

³⁴ It is very likely that in SB XVIII 13167 recto a similar clause was specified in the missing col. iii.

³⁵ Casson, *artt. citt.*

³⁶ Thür, *artt. citt.*

proposed that a financier from Alexandria sent an agent to India with the power to draw legally defective contracts, which then had to be put right in Egypt³⁷. Morelli suggested two distinct loans involving the same parties³⁸, the second of them addressing expenses that, I would argue, were easily projected from the start and thus could have been folded into the first contract.

In my opinion, all this is unnecessary. The alleged ‘real’, ‘original’, or ‘first’ loan contract could not indicate a strict deadline for the repayment of the loan. The contract must have followed a standard form, whose basic terms can be easily inferred from Pliny’s timetable: a length of one year for the loan, the obligation to leave India by January 13th, and the possibility of delaying the repayment in case something went wrong on the return journey. All these conditions were already traditional at the time of Pliny, almost a century before SB XVIII 13167 recto was signed. With the sentence ἐνστάντος τοῦ ἐν ταῖς κατὰ Μουζείριον τοῦ δανείου συνγραφαῖς τῆς ἀποδόσεως ὀρισμένου χρόνου the contract could only refer to a traditionally established deadline, in which the loans for commercial enterprises to Muziris were repaid³⁹. That time limit had to have been familiar to everybody in Alexandria who was involved in the India trade. If this argument

³⁷ Pérez López, art. cit., 656; 678.

³⁸ Morelli, art. cit., 206.

³⁹ Cfr. F. De Romanis, *Cassia, cinnamomo, ossidiana*, cit., p. 191-192. Frankly surprising is the objection raised by Pérez López, art. cit., 654: “creo que la referencia a συναγραφαι (*sic*) no puede ser tomada como una referencia genérica. ¿No hubiese sido suficiente con referirse al “término establecido para los viajes a Muziris”? ¿Qué necesidad habría de hacer referencia a los documentos que contenían los acuerdos relativos a dichos viajes?”. The sentence is about the deadline for a *repayment of a loan*. By itself, a *voyage* does imply neither a loan nor a repayment. It takes a loan contract (in Greek, συναγραφή) to have a loan and an obligation to pay it back. The plural ἐν ταῖς – συναγραφαῖς strongly suggests that ἐν is used ‘in übertragen räumlichem Sinn’ and “bezeichnet [...] Klassen und Kategorien von Personen und Sachen” (E. Mayser, *Grammatik der griechischen Papyri aus der Ptolemäerzeit*, II, 2, Berlin-Leipzig 1934, 394). A plural συναγραφαί may well allude to multiple copies of a single contract (cfr. [Dem.] 34.32), but when reference is made to the *content* of a single contract, the singular is required, because even if it was written in several copies, the text of a loan contract was one and the same: cfr. SB XIV 11850, ll. 7-8: κατὰ ναυτικὴν συναγραφὴν ἧς ἡ ἔνγγειος παρ’ ἐμοῖ. The expression ἐν ταῖς – συναγραφαῖς would be confusing, if not misleading, if it alluded to different transcriptions of the same loan contract.

is right, then the need to posit a second document evaporates: SB XVIII 13167 recto is the loan contract itself. No other document is missing.

Pliny gives the correspondence Mechir 6th = January 13th (Julian) as the cutoff date for the Muziris-Alexandria return voyage, which contrasts with the later timing of the Calicut-Aden or Calicut-Jeddah sea-routes in the 15th century CE:

Estes no tempo que prosperaram nos seus tratos e navegação, faziam nesta cidade naus de quilha de mil e mil duzentos bahares de carga [...] e partiam desta cidade cada monção dez e quinze naus destas para o mar Roxo, Adem e Meca [...] partiam em Fevereiro, chegavam de meado Agosto até meado Outubro do próprio ano etc.⁴⁰

Two factors allowed Calicut ships to leave at a later date (Julian February⁴¹) than the Roman ones: their shorter route, which did not require them to navigate in the Red Sea up to almost 24° lat. N, and their smaller tonnage (*naus de quilha de mil e mil duzentos bahares de carga*⁴²), which allowed them greater speed. The Roman ships bound for Muziris had cargoes that may well have surpassed a weight of 600 tons⁴³ and their speed was definitely slow⁴⁴. Under these circumstances, the best comparison for them is

⁴⁰ Duarte Barbosa, *Livro em que dá relação do que viu e ouviu no Oriente*, Lisboa 1946, 160-161.

⁴¹ Cfr. Ibn Mājid's advice in G. R. Tibbetts, *Arab Navigation in the Indian Ocean before the Coming of the Portuguese*, London 1971, 231: "He who leaves India (Malabar?) on the 100th day (2nd March) is a sound man, he who leaves on the 110th will be all right. However, he who leaves on the 120th is stretching the bounds of possibility and he who leaves on the 130th is inexperienced and an ignorant gambler".

⁴² In Portuguese texts of the 16th century pepper is usually measured by *bahar* of Cochin (=166.272 kg): 1,000/1,200 *bahar* would be 166/200 tons. Alternatively, but less likely, Barbosa may refer to the Calicut *bahar* (= 208.156 kg), which would give 208/250 tons. For the different *bahar*, cfr. R. J. Lima Felner, *O Livro dos Pesos, Medidas e Moedas por Antonio Nunes*, Lisboa 1868, 46-47.

⁴³ F. De Romanis, *Playing Sudoku on the Verso of the 'Muziris Papyrus': Pepper, Malabathron and Tortoise Shell in the Cargo of the Hermapollon*, «Journal of Ancient Indian History» 27, 2010-2011, [2012], 75-101. For a different calculation of the *Hermapollon's* cargo, cfr. Morelli, art. cit., 227-231.

⁴⁴ L. Casson, *Rome's Trade with the East: The Sea Voyage to Africa and India*, «TA-PhA» 110, 1980, 32-33, dismisses Pliny's timing (Plin. HN 6.104) for the Ocelis-Muziris leg (forty days) on the ground that it implies too slow a speed. However the data is consistent with the approximately thirty days assigned to the Berenice-Ocelis (or Cane) leg in the

with the mid 16th century Portuguese ships, which, albeit along a different sea route, had problems similar to those of the Roman ones.

E cousa muy forte parece aver trinta e tantos anos que Vosa Alteza senhorea a Imdia⁴⁵, e o principal fruto que deela espera he a pimenta, e não aver quem fale a verdade do que se deve prover, para a negociação deela ser de maneira que as naos partam de Cochim a tempo que pasem seguras, e nenhuma nao inverte nem ande tanto tempo ao pairo, onde se gastão muito mais que com muitas viagens. Porque, partindo de Cochim, de 15 ate 20 de Dezembro, tomão Moçambique, onde se enchem de agoa, para que, não acertando Santa Elena, posão passar sem risco de sede; o que não podem fazer, partindo a 20 de Janeiro e dy para çima, como partem; que não podem vir senão da ilha de Sam Lourenço [sc. Madagascar], e não podem fazer agoada senão na ilha de Santa Elena, que he huma boya no maar, que os mais herrão; e errando-se, bem craro estaa quoão em perigo de sede chegarão a Portugal, so com agoa que tomarão na Imdia. Eu osaria afirmar que as naaos que não parecem se perderão todas ha sede sem aver quem as marease. Partindo estas naaos da Imdia, de 15 ate 20 de Dezembro, vem a Moçambique a 15 ate 20 de Janeiro, que he o tempo em que o sol anda nos signos da banda do Sul, e pasão o Cabo ate meado Fevereiro, e alcanção o sol, ante que chegue ha linha, e pasando o sol a linha, tambem a pasão as naaos⁴⁶.

As pointed out, the route taken by Portuguese ships was different from the Roman route. Still, their timings can be compared because, with respect to the Muziris-South Arabia leg, the longer Cochin-Mozambique leg profited somewhat from a more favorable wind direction, such that the Portuguese pepper carriers (generally smaller than the Roman ones) could see Mozambique only a month after their departure from Cochin. Both Roman

same passage; there is no need to reject both estimates. The slow pace despite the favorable wind—two knots in the Indian Ocean, even less than that in the Red Sea—is to be explained with the considerable size of the ships and with the circumstance that the Arabian Sea was mostly crossed (*pace* Casson, *ibid.*, 34) not in August, “when the southwest monsoon was blowing its hardest, often stirring up violent storm”, but mostly in September, “when the southwest monsoon was approaching its end and beginning to quiet down”, especially if their stop in Ocelis or Cane to take water (cfr. below nt. 52) lasted more than one day.

⁴⁵ It should refer to D. João III, therefore the text is somewhat later than 1551 and all the dates are Julian.

⁴⁶ *Informação a el-rei sobre o comércio da pimenta e do cravo* (ANTT, CVR n. 95), in A. B. de Sá, «Documentação para a história das missões do padroado português do Oriente. Insulíndia», Lisboa 1954, 332-333.

and Portuguese ships tried to avoid a late January departure from South India. For the Portuguese, it was imperative *dobrar o cabo antes de entrarem os ponentes*⁴⁷. Therefore, if they wanted to take fresh water in Mozambique, it was advisable to leave by December 20th (Julian) or, more optimistically, by January 10th (Gregorian)⁴⁸. When they were forced to depart later, as very often happened because of delays in the purchase of pepper, the Portuguese vessels had to sail east of Madagascar and straight to the Cape of Good Hope without the chance to get water until St. Helena Island or even Lisbon⁴⁹.

⁴⁷ R. de Bulhão Pato (ed.), *Documentos remetidos da India ou Livros das Monções*, I, Lisboa 1880, 66 [1607].

⁴⁸ The first date is given by the *Informação a el-rei sobre o comercio da pimenta e do cravo* quoted above; the second is in Bulhão Pato, op. cit., 65: “[...] partindo de Cochim o podem fazer de natal até dez de janeiro e partir a tempo que levem a mesma derrota que de Goa, por dentro da ilha de São Lourenço” [1607].

⁴⁹ As a matter of fact, despite the recurring royal recommendations (e.g., R. de Bulhão Pato (ed.), *Documentos remetidos da India ou Livros das Monções*, III, Lisboa 1885, 327: “E porque á segurança da viagem e das ditas naus importa tanto, como sabeis, que ellas partam quanto mais cedo puder ser, vos encomendo e encarrego muito que procureis que saiam d’esses portos, em todo caso, em dezembro, e que venham providas, de maneira que por nenhum caso lhes seja necessario tomar a ilha de Santa Helena” [1615]), in the 16th and 17th centuries Portuguese ships rarely managed to leave India before December 31st (Gregorian), cfr. T. Bentley Duncan, *Navigation between Portugal and Asia in the Sixteenth and Seventeenth Centuries*, in C. K. Pullapilly/ E. J. Van Kley, «Asia and the West. Encounters and Exchanges from the Age of Explorations. Essays in Honor of Donald F. Lach», Notre Dame 1986, 14: “Of the 462 ships with known dates of departures, 69 left in December, 173 during 1-15 January, 172 during 16-31 January and 46 in February”. Consequently, the route east of Madagascar was by far more used than the route to the west of it: C. R. Boxer, *The Principal Ports of Call in the “Carreira da Índia” (16th-18th Centuries)*, in «Recueils de la Société Jean Bodin XXXIII. Les grandes escales, 2^{ème} partie: Les temps modernes», Brussels 1976, 43-44 (= C. R. Boxer, *From Lisbon to Goa, 1500-1750. Studies in Portuguese Maritime Enterprise*, London 1984, II, 43-44). Of course, the departure date had consequences for the voyage in terms of safety, cfr. Bentley Duncan, art. cit., 14: “Of the ships that left in December and January 84% arrived safely in Lisbon, without shipwreck or *invernada*; but of those leaving in February only 50% arrived in Portugal on time. Actually, 15 January seems to have been the critical date. Of the 231 ships that had left by then 87% arrived in Lisbon without mishap or unusual delay. The percentage drops to 81 for those leaving between 16 and 23 January and 67 for those leaving 24 January and later”.

Following a stop somewhere in the Gulf of Aden for fresh water⁵⁰ (and possibly to transact some additional business⁵¹), the Roman ships had to cross the southern part of the Red Sea before the southern wind weakened (in March-April)⁵². Pliny's sentence makes clear that between 48/49 and 51/52 CE⁵³ a departure anytime between Tybi 1st and Mechir 6th (= December 8th and January 13th) was thought to provide sufficient time for a timely return to Egypt. On the other hand, the inscription of C. Numidius Eros, who on his way back from India (most probably from South India) managed to cross the Egyptian desert between Berenice and Coptos in the Egyptian month of Phamenoth 2 BCE, suggests that the Latin-speaking merchant must have left India in early rather than late Tybi⁵⁴.

I have assumed that at the time of Pliny the deadline imposed by the Muziris loan contracts for the return journey was indeed January 13th.

⁵⁰ Along the Egypt-India sea route, water supply was available at Ocelis (*Peripl. M. Rubr.* 25: [...] Ὀκλις, οὐχ οὕτως ἐμπόριον ὡς ὄρμος καὶ ὕδρευμα καὶ πρώτη καταγωγὴ τοῖς ἔσω διαίρουσι) and Eudaemon Arabia (*Peripl. M. Rubr.* 26: [...] Εὐδαίμων Ἀραβία, κόμη παραθαλάσσιος, βασιλείας τῆς αὐτῆς Χαριβαήλ, τοὺς ὄρμους μὲν ἐπιτηδεῖους καὶ ὕδρευματα γλυκύτερα <καὶ> (Blancard) κρείσσον<α> (Fabricius) τῆς Ὀκλήεως ἔχουσα κτλ.).

⁵¹ For the island of Socotra, cf. *Peripl. M. Rubr.* 31: συνεχρήσαντο δὲ αὐτῇ καὶ ἀπὸ Μούζα τινὲς καὶ τῶν ἐκπλεόντων ἀπὸ Λιμυρικῆς καὶ Βαρυγάζων ὅσοι κατὰ τύχην εἰς αὐτὴν ἐπιβάλλοντες ὄρουζάν τε καὶ σίτον καὶ ὀθόνιον (Frisk: ὀθόνην) Ἰνδικὸν ἀντικαταλασσόμενοι καὶ σώματα θηλυκὰ διὰ σπάνιν ἐκεῖ προχωροῦντα, χελώνην ἀντεφορτίζοντο πλείστην. For Moscha Limen, cf. *Peripl. M. Rubr.* 32: [...] Μόσχα λιμὴν λεγόμενος, εἰς ἣν ἀπὸ Κανὴ συνήθως πλοῖα πέμπεται τινα, καὶ παραπλέοντα ἀπὸ Λιμυρικῆς ἢ Βαρυγάζων <ἦ> (ego) ὀψινοῖς καιροῖς παραχειμάσαντα παρὰ τῶν βασιλικῶν πρὸς ὀθόνιον καὶ σίτον καὶ ἔλαιον λίβανον ἀντιφορτίζουσι κτλ.

⁵² Cfr. Plin. *HN* 6.106: *navigant autem ex India vento volturmo et, cum intravere Rubrum mare, Africo vel austro*. See the wind maps in <http://www.punchdown.org/rvb/wind/RSWindex.html>. I thank R. Van Buskirk for directing me to the website.

⁵³ See below.

⁵⁴ *AÉ* 1999, 1722; 1723. It is not certain if C. Numidius Eros' Phamenoth relates to the fixed (February 25th to March 26th) or the revolving (February 20th to March 21st) year. The suggestion that a normal inward sea voyage lasted as long as a normal outward one, as is assumed by R. Böker, *RE Suppl.* B. IX, 1962, coll. 409-412, should not be taken for granted, not least for the contrary wind in the last leg of the return journey. Moreover, an Egypt-bound ship that called at Ocelis on February 5th was unlikely to leave for Berenice the next day (*ibid.* 409-410); even more unlikely is the assumed compatibility of a landing at Berenice on March 7th and a departure by the caravan for Coptos the following day (*ibid.* 409-410): ships sailing back from South India carried commodities weighing several hundred tons, and could not be unloaded and packed onto camels in a few hours.

That is because I think that at Plin., *HN* 6.106 *Mechiris Aegyptii intra diem sextum, quod fit intra idus Ianuarias nostras* Pliny takes from his source both calendric indications, the first according to the Egyptian calendar and the second one according to the Roman. I interpret the date based on the Egyptian calendar from the revolving year. And, since the 6th day of Mechir on the revolving calendar coincides with January 13th only in the years 49-52 CE, Pliny's information must go back to those years⁵⁵.

In friendly disagreement with me, Prof. Jehan Desanges suggests that Pliny's source offered only the date according to the Egyptian calendar and that Pliny himself worked out the corresponding Roman date⁵⁶. In doing so, he argues, Pliny erroneously calculated from the Egyptian revolving year a date that referred to the fixed Alexandrian calendar. As a consequence, Pliny took for January 13th (Mechir 6th according to the revolving year in the years 49-52 CE), a date that was actually January 31th/February 1st (Mechir 6th according to the Alexandrian year)⁵⁷. The starting point of Desanges' argument is the reading *Neacyndon* (*neachyndon* F – *cindon* Ta – *cridon* E^s) at Plin. *HN* 6.105, which he takes for a misreading from Νέλκυνδα of a Greek written source, tentatively identified as Juba⁵⁸. From Juba, Desanges suggests, Pliny would have taken his entire account on the *navigaciones in Indiam* (*HN* 6.96-106). Even Pliny's claim itself – that all the names of places, nations, towns and harbors mentioned at *HN* 6.104-

⁵⁵ F. De Romanis, *Romanukharattha e Taprobane. Sui rapporti Roma-Ceylon nel I sec. d.C.*, «*Helikon*» 28, 1988, 5-19 (= F. De Romanis, A. Tchernia, *Crossings. Early Mediterranean Contacts with India*, New Delhi 1997, 161-172; 207-216). However, later updates cannot be excluded: *ibid.* 9, nt. 11 (= 210, nt. 12).

⁵⁶ J. Desanges, *L'excursus de Pline l'Ancien sur la navigation de mousson et la datation de ses sources*, in M.-Fr. Boussac, J.-Fr. Salles, J.-B. Yon, «*Autour du Périples de la mer Érythrée, Topoi, Supplément*» 11, 2012, 68: "Il n'est pas interdit d'envisager la possibilité que ce soit Pline lui-même, et non sa source, qui ait proposé, pour la dernière date initiale possible d'un retour de l'Inde sous l'action de la mousson, l'équivalence entre le sixième jour de Méchir et les ides de janvier".

⁵⁷ *Ibid.*, 69: "Mais si c'est Pline lui-même qui a jugé bon, pour faciliter la tâche de ses futurs lecteurs, d'introduire des équivalences entre le calendrier égyptien et le calendrier romain – comme il le fera aussi en 27.105, mais pour évoquer, cette fois, une pratique magique –, il a très bien pu se tromper et prendre la date exprimée dans le calendrier égyptien réformé, devenu fixe, qu'il lisait dans sa source, pour une date exprimée dans le calendrier traditionnel".

⁵⁸ My reasons for not taking Juba as source for Plin. *HN* 6.100 in F. De Romanis, *Hypalos: distanze e venti tra Arabia e India nella scienza ellenistica*, «*Topoi*» 7, 1997, 673-674.

105 were not to be found in any of *priores*⁵⁹ – would have been copied from Juba and would thus be a reference to Juba’s (not Pliny’s) predecessors. Pliny would have simply transcribed it, unconcerned that an unsophisticated reader would credit him and not Juba as the source.

Prof. Desanges’ argument is extremely clever and elegant, but I am sorry to say, I am not convinced. I shall set aside the likelihood of Pliny confusing his readers regarding the source of his information⁶⁰, nor shall I discuss whether the form *Neacynd-* may have a phonetic rather than paleographic explanation. I will point out that 1) if Pliny’s source were Juba, and Juba mentioned only Mechir 6th as the deadline for the departure from India, and 2) if Pliny were aware of the correspondence between Roman calendar and Egyptian revolving year, in the same way he is aware of Juba’s chronology⁶¹, then he would not have translated Juba’s ‘Mechir 6th’ as ‘January 13th’.

I am also much less confident than Prof. Desanges about Pliny’s familiarity with the Egyptian revolving year. In fact, neither *HN* 6.106 nor *HN* 27.105 show him to be cognizant of the fact that Egyptian dates mentioned there relate to a revolving year⁶². In my view, Pliny just took from his sources both the dates derived from the Egyptian calendar and their conversions into Roman dates. Conversely, I am less skeptical than Prof. Desanges about the persistence of the Egyptian revolving year among the Egyptian population of Roman Egypt, particularly in terms of its use by the Egyptian seamen who traveled the India sea routes⁶³. Because it takes centuries for calendars based on a 365-day year to move a month from

⁵⁹ Plin. *HN* 6.105: *quae omnia gentium portuumve aut oppidorum nomina apud neminem priorum reperiuntur, quo apparet mutari locorum status.*

⁶⁰ Cfr. Plin. *HN* praef. 21-22: *est enim benignum, ut arbitror, et plenum ingenui pudoris fateri per quos profeceris, non ut plerique ex <i>is, quos attigi, fecerunt. scito enim conferentem auctores me deprehendisse a iuratissimis e<x> proximis veteres transcriptos ad verbum neque nominatos.*

⁶¹ Plin. *HN* 6.141: *in hac tamen parte arma Romana sequi placet nobis Iubamque regem, ad eundem Gaium Caesarem scriptis voluminibus de eadem expeditione Arabica.*

⁶² Indeed, the contrast between *NH* 6.104 (*regnabat ibi, cum proderem haec, Caelobothras*) and 106 (*Mechiris Aegyptii intra diem sextum, quod fit intra idus Ianuarias nostras*) strongly suggests that he was not.

⁶³ Desanges, art. cit., 69: *“il est étrange qu’un marin ou un négociant [...] ait employé un calendrier faisant fi des saisons pour décrire une navigation par excellence saisonnière, étrange aussi qu’il se soit enfermé dans un usage qui constituait une survivance strictement égyptienne [...] Au surplus, le calendrier traditionnel s’est surtout maintenu s’agissant de fêtes*

one season to the next, the sailors of the Red Sea and the Indian Ocean would not be too uncomfortable following them under the pharaohs, the Ptolemies and the Julio-Claudian emperors, and even up to the time of Ibn Mājid and beyond⁶⁴.

The endurance of these various features—the use of the revolving year among the Egyptian seamen of the Indian Ocean, the timing of the commercial ventures bound for the Horn of Africa and South India, and the forms of the loan agreements that financed them—is a testament to the strength of the Ptolemaic legacy to the East Africa and India trade of the Roman age. Such is a point worth making in a conference dedicated to ‘tracce di presenza greca fra Etiopia e India’.

sacrées ou ... d'horoscopes”. My point of view in F. De Romanis, *Lysas e il tempo: ulteriori considerazioni su AEp*, 1954, 121a, «Epigraphica», 63, 2001, 9-36.

⁶⁴ Tibbetts, op. cit., 361-363.

