
Bactrian $\chi\rho\omicron\nu\omicron$ ‘(calendar) year, (regnal) year’*



MATTHEW J. C. SCARBOROUGH

Abstract

Since H. Humbach’s *Baktrische Sprachdenkmäler* (Wiesbaden, 1966) the main etymological proposal for Bactrian $\chi\rho\omicron\nu\omicron$ ‘(calendar) year, (regnal) year’ has been A. Thierfelder’s suggestion of a loanword from Hellenistic Greek $\chi\rho\omicron\nu\omicron\varsigma$ ‘time’. In this article the plausibility of this etymology is re-examined, and it is further argued that it should be rejected on the grounds that the formal phonological differences between the potential Hellenistic Greek source form and its presumable loan-adaptation form in Bactrian are inconsistent with what is known of Bactrian diachronic phonology.

Keywords: Bactrian; Greek; loanword phonology; loanword adaptation; Middle Iranian

Introduction

The Bactrian language attests two words for ‘year’. While the spectacular discovery of new manuscripts in recent decades have now attested Bact. $\sigma\alpha\rho\delta\omicron$, $\sigma\alpha\rho\lambda\omicron$ (cf. MBact. *srd’nyg* ‘pertaining to years’) continuing the common Proto-Iranic word for ‘year’ **sardV-* (cf. Av. *sarəd-*, OPers. *θard-*, Chor. *srδ*, Sogd. *srd*, etc.),¹ the term $\chi\rho\omicron\nu\omicron$ was previously attested in dating formulae in the Surkh Kotal inscription, a handful of other brief inscriptions and coin legends. While this was previously considered the Bactrian word for ‘year’,² we now know that the term $\chi\rho\omicron\nu\omicron$, rather than being the general term in Bactrian, designates a more circumscribed concept of ‘(calendar) year, (regnal) year’ in the vast majority of texts

*In citing individual Bactrian documents in this article, I follow the classification system of N. Sims-Williams, *Bactrian Documents from Northern Afghanistan II: Letters and Buddhist Texts* (Oxford, 2007), N. Sims-Williams, *Bactrian Documents from Northern Afghanistan I: Legal and Economic Documents* (Oxford, 2012), and N. Sims-Williams and F. de Blois, *Studies in the Chronology of the Bactrian Documents from Northern Afghanistan* (Wien, 2017).

I would like to thank the anonymous reviewer for comments and several constructive criticisms which prompted some improvements to the final text of this article. All remaining errors and infelicities, of course, are my own.

¹BD2, p. 262. For MBact. *srd’nyg* see N. Sims-Williams, ‘The Bactrian Fragment in Manichaean Script (M 1224)’, in *Literarische Stoffe und ihre Gestaltung in mitteliranischer Zeit: Kolloquium anlässlich des 70. Geburtstages von Werner Sundermann*, (eds.) D. Durkin-Meisterernst, C. Reck, D. Weber (Wiesbaden, 2009) p. 264. PIr. **sardV-* continues PIIr. **car(a)d-* (cf. Ved. *śarād-* ‘autumn; year’); further connections outside of Indo-Iranic remain speculative, cf. *EWAla* II: 616, *NIL* 415n7.

²Cf. H. Humbach, *Baktrische Sprachdenkmäler: Teil I*, (Wiesbaden, 1966) pp. 23–24, p. 140, where Bact. $\chi\rho\omicron\nu\omicron$ is simply glossed as ‘Jahr’.

pertaining to the year count of the Bactrian era.³ The etymology of Bact. $\chi\beta\omicron\upsilon\upsilon$ remains uncertain and the only suggestion considered worth noting by Nicholas Sims-Williams in *BD2* repeats the suggestion of Andreas Thierfelder recorded by Helmut Humbach in *Baktrische Sprachdenkmäler*, who considered the possibility of a loanword from Hellenistic Greek $\chi\rho\acute{\omicron}\nu\omicron\varsigma$ ‘time’. In this article I would like to briefly revisit this etymological suggestion and ultimately argue that it should be rejected on grounds of formal comparison. It gives me pleasure to offer this brief study to François de Blois, with whom I studied Bactrian and other Middle Iranian languages at the Ancient India and Iran Trust, Cambridge. Given François’s interests in Bactrian chronology and the linguistic interactions between the Iranian languages and their neighbours, I hope that he will find this short article a fitting contribution in view of his work and philological erudition in these areas.

Early etymological proposals

As observed by Humbach, the initial discovery of Bact. $\chi\beta\omicron\upsilon\upsilon$ ‘(calendar) year, (regnal) year’ added another word to the group of vocabulary designating periods of time alongside Khot. $k\check{s}u\check{n}a-$ ‘section, period of time; period of rule in a year’ and Prak. $k\check{s}u\check{n}a-$ ‘time’.⁴ It remains a reasonable assumption that the Bactrian, Khotanese, and Prakrit lexemes are connected to each other in some way because of their close similarity in form and semantics. In the initial publication of the Surkh Kotal inscription André Maricq connected the lexeme to the Khotanese form and referred to the etymological proposal of Sir Harold W. Bailey who reconstructed for it OIr. $*x\check{s}aiwana-$ ‘ruling, reign’ derived to the verbal root $*x\check{s}ai-$ ‘to rule’ (cf. Ved. $k\check{s}ay-$ ‘to rule, have power over’).⁵ With the evidence available at the time of *Baktrische Sprachdenkmäler I* (1966), Humbach ruled out Bailey’s etymology on the grounds that (if one assumes that Khot. $k\check{s}u\check{n}a-$ and Bact. $\chi\beta\omicron\upsilon\upsilon$ are true cognates) other well-known examples of PIr. initial $*x\check{s}$ - appear to be reflected normally in Bactrian as $\beta-$ ~ $/\check{s}-$, citing the well-known examples $\beta\alpha\omicron$, $\beta\alpha\upsilon\omicron$ ‘king’ (< PIr. nom. $*x\check{s}āwā$ to n-stem $*x\check{s}āwan-$) and $\beta\alpha\omicron\upsilon$, $\beta\alpha\upsilon\omicron\upsilon$ ‘city’ (< PIr. $*x\check{s}a\thetara-$) and their derivatives.⁶ As an alternative Humbach accepted the suggestion of his Mainz colleague Andreas Thierfelder that Bact. $\chi\beta\omicron\upsilon\upsilon$ could be a loanword from AGk. $\chi\rho\acute{\omicron}\nu\omicron\varsigma$ ‘time’ with a specialised meaning ‘year’ developed within Bactrian from which the Khotanese lexeme would have been a loanword from Bactrian.⁷

³For the evidence for the Bactrian calendar and the dating of the Bactrian era, see N. Sims-Williams and F. de Blois, *Studies in the Chronology of the Bactrian Documents from Northern Afghanistan* (Wien, 2017).

⁴H. Humbach, *Baktrische Sprachdenkmäler: Teil I*, (Wiesbaden, 1966) p. 23. For Khotanese $k\check{s}u\check{n}a-$ see H. W. Bailey, ‘Irano-Indica’, *Bulletin of the School of Oriental and African Studies* XII (1948), pp. 328–329 and H. W. Bailey, *A Dictionary of Khotan-Saka* (Cambridge, 1979) p. 69; for Prakrit $k\check{s}u\check{n}a-$ ‘time’ see T. Burrow, ‘The Dialectal Position of the Niya Prakrit’ *Bulletin of the School of Oriental Studies* VIII (1936) p. 425.

⁵A. Maricq ‘Inscriptions de Surkh-Kotal (Baglān). Le grande inscription de Kaniska et l’Étéo-Tokharien?’ *Journal Asiatique* (1958) p. 364, H. W. Bailey ‘Irano-Indica’, *Bulletin of the School of Oriental and African Studies* XII (1948), pp. 328–329. The reconstruction of the underlying verbal root is not straightforward because of the existence of long-vowel variants found in Proto-Iranic $*x\check{s}ā-$ (cf. Cheung, *EDIV* pp. 451–452, who reconstructs PIr. $*x\check{s}aH-$ ‘to rule, be lord over’ = Ved. $\sqrt{k\check{s}ā}$ ‘to rule, have power, own’. Cf. *EWAIa* I: 426, *LIV*² 619 s.v. 1. $*tek-$ n1 for the difficulties of establishing a proto-form for this root and possible proposed etymologies outside of Indo-Iranic.

⁶H. Humbach, *Baktrische Sprachdenkmäler: Teil I*, (Wiesbaden, 1966) pp. 23–24). Cf. derivatives known to Humbach Sig 10 $\beta\alpha\upsilon\omicron\upsilon\beta\alpha\omicron$ < $*x\check{s}a\thetara-pā-$ ‘satrap’ (*ibid.* p. 72), MB 5,5 $\beta\alpha\upsilon\omicron\upsilon\sigma\tau\alpha\upsilon\omicron$ ‘country’ (*ibid.* p. 126).

⁷H. Humbach, *Baktrische Sprachdenkmäler: Teil I*, (Wiesbaden, 1966) p. 24: “Das Rätsel seiner [viz. $\chi\beta\omicron\upsilon\upsilon$] Etymologie zu lösen, ist erst meinem Kollegen A. Thierfelder gelungen. Er erklärt $\chi\beta\omicron\upsilon\upsilon$ und mit ihm khot.

In light of the new Bactrian documents from northern Afghanistan we may well reconsider Humbach's generalisation that PIr. initial *xš- regularly yielded initial β- in Bactrian. In favour of this interpretation we may now add the following examples:

1. βu-, βi-, β- 'to be able, can; must, ought' < *xšāya- (BD2 pp. 284–85, EDIV pp. 451–52)
2. βιζγο 'good; well (in health)' < *xšija-ka- (BD2 p. 284, cf. EDIV p. 456)

Two further examples of initial xš- may also be adduced, but their reflexes are likely conditioned by intervening consonants in their complex onset clusters.⁸

3. αχνορο 'satisfaction, gratitude' < *xšnauθra-, cf. Av. xšnaoθra-, MMP/Parth. 'šnwθr (BD2 p. 199)
4. χοατο 'sixty' < *xšwašti-, cf. Av. xšuašti-, Chor. 'xγc (BD2 p. 279)

A small number of possible counterexamples to the proposed general development of initial PIr. *xšV- > Bactrian β- also exist:

5. χαβρωσο '(by) night and (by) day' < *xšapā- 'night' (cf. Av. xšāp-, Chor. ()xγb, Sogdian xšp-) + ρωσο 'day' (BD2 p. 276)
6. χαρο (title) 'khar, ruler' < *xšāθriya- (cf. BD2 p. 277)

Perhaps also the following, but without any clear Old Iranian antecedents:

7. αφχαλο, αφαχαλο noun 'grace, indulgence' if from *xšadV-, cf. Parth. 'xšd 'mercy' (BD2 p. 200)

ksuna-, prakr. *ksuna-* als Entlehnung aus gr. χρόνος. [...] In seleukidischer Zeit hatte griech. χρόνος noch nicht die Bedeutung 'Jahr', die andererseits durch die Datierung mit Xšono vorausgesetzt wird. Die Entwicklung dieser speziellen Bedeutung im Baktrischen, aus dem das Khotan-Sakische ohne Zweifel sein *ksuna-* 'Jahr' entlehnt hat, dürfte sicher eine gewisse Zeit benötigt haben." The original meaning of AGk. χρόνος was '(period of) time' (as opposed to αἰών 'long period of time, eternity'). While 'year' is the normal meaning of χρόνος in Standard Modern Greek, within Ancient Greek the meaning 'year' for χρόνος is only very rarely attested, and mostly in late usage. *LSJ s.v.* χρόνος A.2.c. only lists five examples, all except for one attested in CE attestations. The earliest isolated attestation of Ancient Greek χρόνος in the meaning 'year' is found in an inscription of the Attic deme Rhamnous of 83/82 BCE (V. Petrakos, *O Δήμος του Ραμνούντος. II. Οι επιγραφές*. (Αθήνα, 1999) pp. 141–142, No. 179). The remaining attestations given are a papyrus in the collection of the British Museum dated circa 346 CE (F. G. Kenyon, *Greek Papyri in the British Museum. Catalogue, with texts. Vol. II* (London, 1898), pp. 299–300, No. 417, l.14–15), an anonymous epigram in the *Appendix to the Greek Anthology* (cf. E. Cougny (ed.), *Epigrammatum Anthologia Palatina cum Planudeis et appendice nova. Volumen tertium*, (Parisiis, 1890), p. 494, No. 154), a section from the treatise ὁ καρπός ascribed to the mathematician Ptolemy, but generally considered Pseudo-Ptolemy (cf. Fr. Lammert and E. Boer (eds.), *Ptolemaeus III.2 Περὶ κριτηρίου καὶ ἡγεμονικοῦ, Καρπός*, (Lipsiae, 1961), p. 42, No. 24), and within a gloss attached to one of the explanations of the verb δεκατεῦειν in the 12th century CE Byzantine lexicon *Etymologicum Magnum* (T. Gaisford, *Etymologicum magnum; seu verius, Lexicon saepissime vocabulorum origines indagans ex pluribus lexicis scholasticis et grammaticis anonymi cuiusdam opera concinnatum*, (Oxonii, 1848), 254.11–13). At present there is no certain attestation of χρόνος used in the meaning 'year' in the Greek inscriptions of Iran and Central Asia. The only attestations are in the following phrases: ἐξ ἱκανοῦ χρόνου 'depuis bien longtemps' (G. Rougemont and P. Bernard, *Inscriptions grecques d'Iran et d'Asie centrale. Corpus inscriptionum Iranicarum. Part 2, Inscriptions of the Seleucid and Parthian period and of Eastern Iran and Central Asia. Vol. 1, Inscriptions in non-Iranian languages, 1*, (London, 2012), pp.48–49, No. 11.10, dated to 417 CE after L. Robert), εἰς τὸν ἅπαντα χρόνον 'for all time' (*ibid.* pp. 102–121, No. 53.55, 92–93, 205 BCE; pp. 152–153, 73.16, 88/77 BCE), ἀπ' ἐκεῖνου τοῦ χρόνου 'from that time' (*ibid.* pp.171–73, No. 83.14, Greek translation of Ashokan edicts XII and XIII). Meanwhile, the usual *koiné* Greek lexeme for 'year', ἔτος, is well attested in the same corpus of inscriptions (*ibid.* p. 294).

⁸Similarly lost in clusters in medial position: Bact. νοβιχτο 'written' < *nīpīxšta-, cf. N. Sims-Williams, "Bactrian" in *Compendium Linguarum Iranicarum*, (ed.) R. Schmitt (Wiesbaden, 1989) p. 234.

The first two counterexamples could possibly be explained away as later dialectal loanwords,⁹ but in any case there a good parallel does not appear to exist to support a development of initial *PIr.*xʰV-* > Bact. *χῑV-* and Humbach is likely to have been correct to suggest that the origins of *χῑνο* should be sought elsewhere. To my knowledge, no alternative etymology for Bactrian *χῑνο* apart from Thierfelder *apud* Humbach has yet been suggested, nor has this hypothesis of a borrowing from AGk. *χρόνος* been adequately re-examined.¹⁰ While I do not have any new suggestions regarding the former matter, in the remainder of this article I will undertake to investigate the latter.

Re-evaluating the Hellenistic Greek loanword hypothesis

Approximating the phonetics of Hellenistic Greek χρόνος

The reconstruction of the phonetics for a Hellenistic Greek source form likely to underlie *χρόνος* poses relatively few problems of interpretation as most of the phonemes in this word have remained relatively stable in Greek to the present day.¹¹ The only major obstacle is the thorny question of when the shift of the voiceless-aspirated stops /p^h/, /t^h/, and /k^h/ to voiceless fricatives /f/, /θ/, and /x/ had occurred, and whether one should reconstruct [k^hrónos] or [xrónos] as the potential source form for the proposed Hellenistic Greek loanword. In the *koiné* of the Egyptian papyri there is no good evidence for early fricativisation of Ancient Greek /k^h/ until after the Roman Imperial period.¹² Elsewhere Eduard Schweizer accepted evidence for fricative pronunciation of <χ> in the inscriptions of Pergamon already by the second century BCE,¹³ and Leslie Threatte considers evidence for <φ> representing /f/ in less literate Attic inscriptions of the second century CE.¹⁴ On the basis of this evidence, while admitting that there is not much to go on, Geoffrey Horrocks has plausibly suggested that the fricativisation of Hellenistic Greek /p^h/, /t^h/, and /k^h/ began in varieties of *koiné* spoken outside of Egypt and was carried to completion probably by the fourth century

⁹(5) *χαβρωσο* ‘(by) night and (by) day’ occurs in **za**19, one of the four known Bactrian Buddhist fragments, whose literary register may have been more susceptible to dialectal loans. As for (6) *χαρο* ‘khar, ruler’, as a formal title it belongs to a semantic category that may be more easily borrowed than other vocabulary.

¹⁰*BD2* p. 281 only considers “possibly loanword from Gk. *χρόνος* (A. Thierfelder *apud* Humbach 1966, p. 24)”. H. Bailey, *A Dictionary of Khotan-Saka*, (Cambridge, 1979) p. 69 later retracted his original etymology for Khotanese *ksuṃa*- preferring a secondary formation as though from PIE **ks-en-o-* to PIE **sek-* ‘cut’, although the assumption of a metathesised variant of the root is *ad hoc*. No further hypotheses on the etymology of the Khotanese form were advanced in R. Emmerick and P. O. Skjærvø, *Studies in the Vocabulary of Khotanese I* (Wien, 1982), R. Emmerick and P. O. Skjærvø, *Studies in the Vocabulary of Khotanese II*, (Wien, 1987), or R. Emmerick and P. O. Skjærvø, *Studies in the Vocabulary of Khotanese III*, (Wien, 1997).

¹¹For the pronunciation of Classical (Attic) Greek, cf. W. S. Allen, *Vox Graeca: The Pronunciation of Ancient Greek* (3rd ed.), (Cambridge, 1987) and L. Threatte, *Grammar of the Attic Inscriptions. Volume I: Phonology*, (Berlin, 1980). A further change, not likely to be of great relevance for present purposes is the shift of the pitch accent to an expiratory stress accent. For a description of Standard Modern Greek, cf. David Holton, Peter Mackridge, Irene Philippaki-Warbuton, and Vassileios Spyros, *Greek: A Comprehensive Grammar* (2nd ed.), (London, Routledge).

¹²For the data and discussion thereof, cf. F. Gignac, *A Grammar of the Greek Papyri of the Roman and Byzantine Periods. Volume I: Phonology*, (Milano, 1976) pp. 98–101, S.-T. Teodorsson, *The Phonology of Ptolemaic Koine* (Göteborg, 1977). Note also the Coptic alphabet, adapted from the Greek alphabet, synchronically analyses the Coptic letters <φ> <θ> <x> diphonemic sequences πϩ /ph/ τϩ /th/ κϩ /kh/ rather than using new letters ϣ [f] ϣ [x] or ϣ [h] (cf. B. Layton, *A Coptic Grammar* (3rd ed., revised), (Wiesbaden, 2011), p. 16.

¹³E. Schweizer, *Grammatik der Pergamenischen Inschriften. Beiträge zur Laut- und Flexionslehre der gemeingriechischen Sprache*, (Berlin, 1898) pp. 109–115, cf. E. Schwyzler, *Griechische Grammatik auf der Grundlage von Karl Brugmanns Griechischer Grammatik. 1. Band: Allgemeiner Teil. Lautlehre. Wortbildung. Flexion*, (München, 1939) pp. 201–205.

¹⁴L. Threatte, *Grammar of the Attic Inscriptions. Volume I: Phonology*, (Berlin, 1980) p. 470.

CE.¹⁵ Certainly an upper date of the fourth century CE is too late as a *terminus post quem* where we can be reasonably confident of a form [xrónos] as a potential source form for a borrowing, since if $\chi\rho\omicron\upsilon\varsigma$ was the source of Bactrian $\chi\beta\omicron\upsilon$ it must have been borrowed at least by the beginning of the Bactrian era, which has been calculated as 223 CE by Nicholas Sims-Williams and François de Blois.¹⁶ And, even in consideration of that date, it must have been borrowed at some time before then given the earlier attestations in the Surkh Kotal and Rabatak inscriptions.¹⁷ At the same time, however, we cannot entirely rule out that such a pronunciation was not in use in some varieties of *koiné* in the later Hellenistic and early Roman Imperial periods. Because of the uncertainty over whether this sound change would have occurred or not in the variety of Hellenistic Greek which could have been the potential source form for Bact. $\chi\beta\omicron\upsilon$, I consequently will consider both [k^hrónos] and [xrónos] further below as potential source forms in evaluating the possibility of a Hellenistic Greek loanword.

Approximating the phonetics of Bactrian $\chi\beta\omicron\upsilon$

The earliest attested form of the lexeme is $\chi\beta\omicron\upsilon$, and is first found with in a datable context in the Surkh Kotal inscription (Kushan era 31).¹⁸ This form is regular in the earliest dated documents until the first attestation of $\alpha\chi\beta\omicron\upsilon$ in document J (Bactrian era 295 = 517 CE) and with the exception of document N (Bactrian era 407 = 629 CE) $\alpha\chi\beta\omicron\upsilon$, this continues to be the normal form encountered in the later dated documents.¹⁹ It appears clear, therefore, that the prothetic α - in attested in later Bactrian documents is a secondary phonological development. While the phonological representation of a Bactrian lexeme remains a matter of interpretation, we may reasonably postulate a pronunciation $\alpha\zeta$ - for initial $\chi\beta$ - and $-n$ - for medial $-v$ -.²⁰ While we know more about the vowel system of Bactrian better than other Middle Iranian languages, the phonetic interpretation of the spellings of medial $-o$ - and final $-o$ are not entirely unproblematic. Georg Morgenstierne observed that in Bactrian epigraphic texts that /a/ is usually written before a nasal and concluded that it is probable that the medial vowel is $-u$ -.²¹ This observation fits well with the comparison of Khot. *kṣiṇa*-. The phonological status of final $-o$ is difficult to determine. Shortly after the publication of the Surkh Kotal inscription, Walter Bruno Henning suggested of the ubiquity of final $-o$ in the Surkh Kotal inscription that “it is possible omicron expressed a vowel actually pronounced in speech at the time of the inscription; in most cases it functioned virtually as a word divider”.²² Alternatively, Morgenstierne considered it would be surprising that final

¹⁵G. Horrocks, *Greek: A History of the Language and its Speakers* (Chichester, 2010) pp. 170–172.

¹⁶N. Sims-Williams and F. de Blois, *Studies in the Chronology of the Bactrian Documents from Northern Afghanistan*, (Wien, 2017).

¹⁷See also further below.

¹⁸For another early attestation, cf. Rabatak Inscription l.2 $\chi\beta\omicron\upsilon$ in N. Sims-Williams, ‘The Bactrian Inscription of Rabatak: A New Reading’, *Bulletin of the Asia Institute* XVIII (2004 [2008]).

¹⁹For CE dates, cf. N. Sims-Williams and F. de Blois, *Studies in the Chronology of the Bactrian Documents from Northern Afghanistan* (Wien, 2017) pp. 117–130.

²⁰For the probable phonetic values of the Bactrian-Greek script, cf. N. Sims-Williams, ‘Bactrian’, in *Compendium Linguarum Iranicarum*, (ed.) R. Schmitt (Wiesbaden, 1989), pp. 232–33.

²¹G. Morgenstierne, ‘Notes on Bactrian Phonology’, *Bulletin of the School of Oriental and African Studies* XXXIII (1970) pp. 125–126.

²²W. B. Henning, ‘The Bactrian Inscription’ *Bulletin of the School of Oriental and African Studies* XXIII (1960), p. 50.

vowels would have been completely lost at such an early period in East Iranian and considered it more probable that final -o at least represented a reduced vowel [ə].²³ By the time of the late Bactrian documents at least, if there was a final vowel represented by -o it appears to have been completely lost to judge from the orthography of the Manichaean Bactrian fragment.²⁴ In any case, I will therefore assume a probable phonetic interpretation of the earliest form of Bact. $\chi\beta\omicron\nu\omicron$ as [xšunə] or [xšun].

Final Obstruents in Greek Loanwords in Bactrian

Only four certain loanwords of Greek origin are considered in *BD2*: Bact. $\delta\iota\nu\alpha\rho\omicron$ ‘dinar’ < AGk. $\delta\eta\nu\acute{\alpha}\rho\iota\omicron\nu$ (ultimately < Lat. *denarius*) (*BD2* p. 209); $\delta\rho\alpha\chi\mu\omicron$ ‘dirham’ < AGk. $\delta\rho\alpha\chi\mu\acute{\eta}$ ‘drachma’ (*BD2* p. 209); Bact. $\omicron\beta\omicron\eta\gamma\gamma\omicron$, $\omicron\beta\omicron\iota\gamma\gamma\omicron$, $\omicron\beta\iota\gamma\gamma\omicron$ ‘cloth made of linen or cotton’ < Bact. * $\omicron\beta\omicron$ ‘linen, cotton’ < AGk. $\beta\acute{\upsilon}\sigma\sigma\omicron\varsigma$ ‘flax, linen’ (+ Bact. - $\eta\gamma\gamma\omicron$ ‘suffix’) (*BD2* p. 248); and Bact. $\sigma\iota\mu\iota\nu\omicron$ ‘made of silver’ (adj.), ‘silverware’ (n.) < Bact. * $\sigma\iota\mu\omicron$ ‘silver’ < AGk. $\acute{\alpha}\sigma\iota\mu\omicron\varsigma$ ‘unmarked, uncoined (silver)’ (+ suffix **-aina-*) (*BD2* p. 264). From these examples it would seem reasonable to assume that Greek nouns were normally borrowed into Bactrian as the uninflected stem, and a lack of final -ς in Bact. $\chi\beta\omicron\nu\omicron$ is not a problem for the Hellenistic loanword hypothesis.

*PIr. *xr- in Bactrian*

To better understand how one might expect Bactrian to have adapted a foreign initial consonant cluster /k^hr-/ or /xr-/, I will now consider the regular reflexes of PIr. **xr-* in Bactrian. As far as the available Bactrian documents attest, initial $\kappa\rho-$ does not appear to have been a permitted onset cluster in Bactrian, but the lack of attestation of an initial cluster $\kappa\rho-$ is probably not unexpected historically because PIIr. **k-* regularly developed to **x-* before a consonant in Proto-Iranic.²⁵ Words containing reflexes of **k_r-* from an original zero-grade appear to have been normally vocalised with an anaptyctic vowel, e.g. $\kappa\iota\rho\delta\omicron$ < **k_rta-* (*BD2* p. 223, *EDIV* pp. 236–38), $\kappa\iota\beta\alpha\gamma\omicron$ < **k_ršāka-* (**k_rša-* ‘to plough’, cf. Ved. *k_rša-*, Av. *pairi.karša-*; *BD2* p. 224) etc. It is unclear to me whether the allophonic rule operating in Proto-Iranic which originally shifted voiceless plosives to fricatives was operating at the time when an alleged borrowing of $\chi\rho\acute{\omicron}\nu\omicron\varsigma$ would have taken place, although it is notable that the only attestation of $\kappa\rho-$ as a consonant cluster in the Bactrian corpus occur in the names of Bodhisattvas in the Buddhist fragment **za**, $\beta\iota\kappa\rho\acute{\alpha}\delta\omicron$ (*BD2* p. 203) and $\sigma\iota\gamma\gamma\omicron\beta\iota\kappa\rho\iota\delta\omicron$ (< *Simha-vikrīḍita-*, *BD2* p. 263), which may be regarded as representations of Buddhist Sanskrit proper names and likely not subject to a Bactrian phonological rule. If the potential Greek source form for $\chi\rho\acute{\omicron}\nu\omicron\varsigma$ was /k^hr-/, then we therefore *might* expect that it would be adapted into Bactrian with an initial /xr-/. If the potential Greek source form had already

²³G. Morgenstierne ‘Notes on Bactrian Phonology’ *Bulletin of the School of Oriental and African Studies* XXXIII (1970) p. 126.

²⁴Cf. N. Sims-Williams, ‘Bactrian’, in *Compendium Linguarum Iranicarum*, (ed.) R. Schmitt (Wiesbaden, 1989) p. 234 for further discussion and references.

²⁵Cf. P. O. Skjærø, ‘Old Iranian’, in *The Iranian Languages*, (ed.) G. Windführ, (London, 2009) p. 63, and A. Cantera, ‘The Phonology of Iranian’, in *Handbook of Historical and Comparative Indo-European Linguistics (HSK 4.1.1)*, (eds.) J. Klein, B. Joseph, and M. Fritz, (Berlin, 2017) p. 491.

undergone the inner-Greek shift of /k^h/ > /x/, then we should reasonably expect that it would have been adapted into Bactrian as /xr-/ , or another similar permissible syllable onset.

I will now consider certain examples of reflexes of PIr. *xr in Bactrian gathered from the glossary of *BD2*, excluding obvious secondary derivatives:

- PIr. *xra- > Bact. αχρ-
 - αχριουνο ‘purchasable’(?) of unclear stem formation but clearly related to χιρ- ‘to buy’, αχρινο ‘purchase’ (*BD2* p. 199)
 - αχρινο ‘purchase’ < *xray-anā-, to the root of χιρ- (*BD2* p. 199)
- PIr. *xrī- > Bact. χιρ-
 - χιρ- / χιρδο ‘to buy, acquire, purchase’ < *xñnā-/xrīta-, (cf. Sogd. *xryn/xryt*, Khot. *ggān-*; *BD2* p. 227, *EDIV* pp. 446–47)
 - χιρηγο ‘purchase, purchase price’ < *xraya-ka-, cf. Ved. *krayá-* ‘buying, purchase’ (*BD2* p. 227)²⁶
 - χιρσο ‘purchase, purchased (property)’ < *xrīti-čī-, cf. Sogd. *xryc* ‘purchase’ (*BD2* p. 227–228)
- Medial PIr. *-xr- > -χρ-
 - αβαχρηγο ‘fee, compensation, wages’ < *apa-xraya-ka-, cf. Sogd. *prxyγ* ‘wages’, NPers. *barxai* ‘compensation, ransom’ < *apa-xraya- (cf. Ved. *krayá-* ‘buying, purchase’) (*BD2* p. 199).
 - οιχρηγο, οιχαρηγο ‘hire, rent’ < *wi-xraya- (Ved. *vi-krayá-* ‘sale’) + suffix -γο (BD2 p. 248)
 - οιχρινο ‘hire, rent’ < *wi-xraya-anā- (*BD2* p. 248)

Perhaps to be added to these is the verb of uncertain meaning φριχηθ- ‘to molest’(?), ‘to seduce’(?) if from *f_{ra}-x_{rā}šaya-, cf. NPers. *xarēšīdan* ‘to scratch’, Sogd. *xryš* ‘to irritate’ < *x_{rā}šaya-, Chor. *b_{xr}’h-* ‘to be abraded’ < *apa-x_{rā}ša- (*BD2* p. 275), but without a more certain semantic identification, the etymology must remain be regarded as uncertain.

From the preceding examples we may observe that the only certain examples of initial or medial PIr. *(-)xr- in Bactrian are derivatives of Proto-Iranic *xray- ‘to buy’ (*EDIV* pp. 446–447 *xraiH- ‘to buy’ < PIE *k^wrei_h₂- ‘to exchange, acquire through exchange’ *LIV*² pp. 395–396). In initial position the reflexes appear to be χιρ- or αχρ-, although, as Sims-Williams notes, since all the vocabulary is derived from the same lexical root, it is possible that some of the nominal forms may have been influenced by the verbal stem. The reflexes exhibiting αχρ- are attested in **L** and **P**, dated respectively to Bactrian era 397 (= 601 CE) and Bactrian era 446 (= 668 CE), which are dates after which secondary prothetic α- is normal in χθovo and therefore we may well expect the initial α- to be secondary from earlier χρ- in these examples also. In medial position *-xr- is stable and preserved without change. I would therefore argue that if a potential Greek source form with initial /xr-/ ,

²⁶For this example, *BD2* suggests “with initial χιρ- for *χρ- under the influence of the verb χιρ-?”, comparing αβαχρηγο ‘fee, compensation, wages’ < *apa-xraya-ka- (see below).

or /k^hr-/ that was perceived by Bactrian speakers as /xr-/ , there is no good reason to expect that it would not have been adopted by Bactrian speakers as /xr-/. Secondly, there is no good evidence for the PIr. cluster *(-)xr- to yield Bact. χ^hβ- in its inherited vocabulary under any circumstances; this cluster appears to be stable in Bactrian, there is no good reason to expect an *ad hoc* development /xr-/ > /xš-/ affecting this lexeme alone. For these phonological reasons, a Hellenistic Greek loanword hypothesis seems improbable.²⁷

Conclusions

Given the more serious formal difficulties to reconcile the possibility of a Greek loanword with the problematic initial consonant cluster, the need to explain the additional difficulty of assuming a secondary semantic specialisation of ‘time’ > ‘period of time’ > ‘(calendar) year’ within Bactrian may be passed over as unnecessary. I therefore propose that the hypothesis for an origin of Bact. χ^hβovo from AGk. χ^hρόνος should be rejected. While this conclusion is perhaps a negative one, we may consider that Humbach’s original criterion for rejecting an inherited origin was the assumption that β- is the normal Bactrian reflex of PIr. initial xš-, and that more data from the more recently discovered Bactrian documents (cf. §2) suggests that perhaps the development of initial xš- in Bactrian may have been more complicated than originally assumed. Perhaps it may be worthwhile reviving some form of Bailey’s earlier proposal (originally for Khot. *kṣuṇa-*) as a derivative of the PIr. root *xšai- ~ *xšaH- ‘to rule, be lord over’ with a semantic progression ‘(regnal) year’ > ‘(calendar) year’, but for now I leave speculation in that direction a topic for later investigation.

Bibliographical abbreviations used in this article include: *BD2* = N. Sims-Williams, *Bactrian Documents from Northern Afghanistan II: Letters and Buddhist Texts* (Oxford, 2007), *EDIV* = J. Cheung, *Etymological Dictionary of the Iranian Verb*, (Leiden, 2007), *EWAia* = M. Mayrhofer, *Etymologisches Wörterbuch des Altindoarischen* (Heidelberg, 1992–2001), *LIV²* = H. Rix et al., *Lexikon der indogermanischen Verben: Die Wurzeln und ihre Primärstammbildungen. Zweite, erweiterte und verbesserte Auflage.* (Wiesbaden, 2001), *LSJ* = H. G. Liddell, R. Scott, H. S. Jones & R. McKenzie *A Greek-English Lexicon* (9th ed.), *With a revised supplement*, (Oxford, 1996), *NIL* = D. Wodtko, C. Schneider & B. Irslinger, *Nomina im Indogermanischen Lexikon* (Heidelberg, 2008). Linguistic abbreviations used include: AGk. (Ancient Greek), Av. (Avestan), Bact. (Bactrian), Chor. (Choresmian/Khwarazmian) Khot. (Khotanese), Lat. (Latin), MBact. (Manichaean Bactrian), MMP (Manichaean Middle Persian), NPers. (New Persian), OIr. (Old Iranian), OPers. (Old Persian), Parth. (Parthian), PIE (Proto-Indo-European), PIIr. (Proto-Indo-Iranic), PIr. (Proto-Iranic) Prak. (Prakrit), Sogd. (Sogdian), Ved. (Vedic). Citations in this article to the Bactrian Glossary in *BD2* have been checked against N. Sims-Williams’s unpublished revised version of the glossary

²⁷Typologically a sound change strengthening rhotics as voiceless sibilants are not unattested, although typically the conditioning is restricted to when /r/ is immediately preceded or followed by a coronal obstruent (cf. M. Kümmel, *Konsonantenwandel: Bausteine zu einer Typologie des Lautwandels und ihre Konsequenzen für die vergleichende Rekonstruktion*, (Wiesbaden, 2007) pp. 162–163 for examples). The anonymous reviewer points out to me that such a sound change with /r/ followed by a coronal obstruent actually does occur in Bactrian in the example of Bact. αθ^hβo ‘(god) Fire’ < PIr. *āθr-, I note however, this is not the same environment as we might have attested via AGk. χ^hρόνος, nor does the phonetic development [k^hr] or [xr] > [xš] or [xj] appear to be common typologically (cf. M. Kümmel, *ibid.*).

originally published in *BDz* which includes the vocabulary from documents **Nn** (N. Sims-Williams, 'The Bactrian Fragment in Manichaean Script (M 1224)', in *Literarische Stoffe und ihre Gestaltung in mitteliranischer Zeit: Kolloquium anlässlich des 70. Geburtstages von Werner Sundermann*, (eds.) D. Durkin-Meisterernst, C. Reck, D. Weber (Wiesbaden, 2009) pp. 245–268), **bi** (N. Sims-Williams, *Bactrian Documents from Northern Afghanistan III: Plates*. (Oxford, 2012) p. 21), **jj** and **zd** (N. Sims-Williams 'Two Late Bactrian Documents' in *Coins, Art, and Chronology II: First Millennium C.E. in the Indo-Iranian Borderlands*, (eds.) M. Alam, D. Kimburg-Salter, M. Inaba, and M. Pfisterer (Wien, 2010) pp. 203–212).

MATTHEW J. C. SCARBOROUGH

MacEwan University & Max Planck Institute for the Science of Human History
matthew.scarborough@cantab.net