

Atticists and lexicographers. An important contribution is made to our understanding of the place in the history of Greek generally of the Septuagint and the New Testament. (The original plan was to divide the work up into chapters on the lines indicated, but this has been abandoned in favour of an alphabetical arrangement, as more practical for the reader and avoiding some overlapping.)

The only common form of modern Greek useful for our purpose is the vernacular, the *δημοτική*, as distinguished from the artificial *καθαρεύουσα*, or mixtures of the two. '*Δημοτική* is the result of natural development of Greek over the centuries', (2) and as such gives one direct access to antiquity, whereas the *καθαρεύουσα*, a hybrid resulting from a misapplied admiration for antiquity and used more formally, is largely borrowed rather than inherited from antiquity. (3)

In recent times the *katharevusa* has to some extent influenced demotic, and in using demotic one must be careful to disregard such features. 'Blind' tends to be *τυφλός* rather than *στραβός*, and 'left' to be *ἀριστερός* rather than *ζερβός*, just as phonetically *γούρυοπα* tends to replace *γλύκυοπα* 'quickly' and *λεπτά* to replace *λεφτά* 'money'.

As well as from the modern koine, the demotic, much information can be drawn from the dialects, either because they have kept words which have not passed into demotic or have been lost there, or else because they preserve features which directly reflect ancient dialects and sometimes help to illustrate or even elucidate them. (4) None of these dialects exists to-day in a pure form, all having been influenced to a greater or less extent by the demotic or by other dialects. There is the inevitable tendency for dialects to become weaker, and features mentioned in this book may be on the way out or actually lost. (5)

In the invaluable Lexikon der Archaismen in neugriechischen Dialekten recently published by Nikolaos Andriotis we have as good as complete information about the distribution in the modern dialects of features discussed in this book as of all other features of vocabulary as far as they have been recorded, and in view of the many lexika that are now available for separate dialects or groups of dialects it is hardly a rash presumption that not very much of importance is missing, though we should still like fuller knowledge from parts of the Peloponnes and Northern Greece.

The importance of the dialects for our purpose varies

My purpose has been to stress, following on the steps of others like Hatzidakis, the closeness in vocabulary as in grammatical features of the modern vernacular to that of the later period of the ancient language. It is admitted that this has been done without proper control by comparisons from the older periods, and also that we have more abundant and more varied evidence especially from the papyri. It is also stated here once and for all that the gaps in our knowledge of all periods of Greek are fully realized.

Finally, some remarks on points of biblical Greek not otherwise picked up are included, and the potentiality of Romance to illustrate Greek developments is shown by a few examples, usually combined with modern Greek evidence.

The documents of the Middle Ages do not fall within the scope of our subject, and in any case, as Kapsomenos 21 says, it is only Modern Greek as a spoken language that allows us to distinguish what in the written tradition belonged to the living language and what was merely paper Greek. Older documents have a value in helping us to trace the origin and development of features of the modern language that do not go back to antiquity, but this, again, is not our concern.

(I have occasionally quoted some examples from mediaeval literature but have made no attempt to use it systematically, my knowledge of it being quite limited.)

The Phonetics of Modern Greek

(These notes have the purely practical purpose of indicating the main phonetic features of modern Greek and their relationship to antiquity. For more details and for the chronology of the changes involved the reader is referred to Browning's Medieval and Modern Greek and more fully to Thumb's Handbuch.)

1. Features reflecting differences in the ancient dialects:

For the survival of ancient $\bar{\alpha}$ and for the representation of η in Pontic, etc., as ϵ see above in the discussions of Doric and Ionic. (14)

The ancient υ is in demotic and usually represented by /i/, but in Tsakonian and the 'Old Athenian' group by /u/ or /iu/ (see below).

As already in the koine σ prevails over the mainly Attic τ , so $\gamma\lambda\delta\sigma\sigma\alpha$, etc., also $\sigma\gamma\mu\epsilon\sigma\alpha$ 'to-day'.

Similarly the $\rho\sigma$ of Ionic, etc., is usual, not the $\rho\rho$ of Attic.

The displacement of the aspirate found in Ionic and occasionally elsewhere is reflected in a few words in Asia Minor, also elsewhere. (15)

2. Changes that have taken place at least in the main since classical antiquity:

There is now no phonemic difference of quantity in the vowels. Accented vowels are now longer than the same vowels unaccented. This change no doubt goes hand in hand with the importance of stress as a feature of the modern accent. Modern spellings have a purely historical value, as based on antiquity, so also for the next paragraph.

Demotic and most dialects have a simple system of five vowels: a, e (open), i, o (open), u (written ou). The ancient η, ει, οι and υ have normally run together with τ, and αι with ε. In some words οι is found in unaccented syllables where an i sound would be expected, esp. in dialects: χροοσδς, σουσδυ 'sesame', etc.; so also instead of ω, ο: σκουλήκι 'worm', κουκι 'bean' < κόκκος.

In demotic and most dialects ea, ia and eo, io become ya, yo even if the e or i was originally accented, the accent then moving backwards, as épyasa 'seized', except at the end of a word, where it moves to the final

syllable: elyá 'olive', nyόs 'young'. (16) The yod is commonly indicated by an inverted crescent or other sign under the ε or ι.

In the diphthongs au and eu the second element has become β (ν) before voiced sounds and φ (f) before unvoiced stops: so in παύεύω, ἀλεύρι 'flour', φεύρης; but before υ the υ is lost, as in ψέμα 'lie' (so also γ, πράμα), and before ν it becomes υ, as λάμνω 'row', εμνόστος.

Ir commonly becomes er, esp. in unaccented syllables: Εερός, μεράγνι 'ant'; but τυρόι 'cheese', etc.

Over a wide area of Northern Greece unaccented i and u tend to be lost, and in most of the same area unaccented e and o become i and u, e.g. μεφάλι = μεφάλι 'head' (Pontus), σλεόου = δουλεύω 'work' (Jannina). (17) The reduction of -τον to -τν and of -ιος to -ις, which began in the koine period, is normal in Mod., and very important in the extremely frequent diminutives in -τι (ν).

The anc. stops β, δ, γ and φ, θ, χ have become spirants.

The combinations πτ and κτ have become φτ and χτ, e.g. ἑφτά, ὁχτώ; the same result comes from φθ and χθ,

e.g. φτάνω 'arrive', ἔχτρος, so also ἐλέφτερος, ἐφιαριστῶ; in σθ, σχ, and in dialects in σφ the spirant becomes a stop, αἰστάνομαι, σκολεξό, Pontic σπάζω 'kill'.

The unvoiced spirants tend to interchange, esp. in some dialects. The demotic tends to avoid θ + dental, so χλιβερός, ἀρύφνητος.

The voiced spirants βδγ tend in many dialects to be lost or interchanged initially or between vowels, most noticeably in the S.E. dialects, e.g. Carpathos (Β)δλλω φο(β)οῦμαι, πη(γ)ά(θ)ι 'well', βδλα 'milk', γψψ 'thirst'.

An opposite tendency appears in many dialects in the insertion of a γ to avoid hiatus between vowels: ἀγάρτι 'boy' from ἄμαρος (demotic), κλαί(γ)ω esp. after ν, χορεύγω, etc.

Unvoiced stops become voiced after nasals: [lámbo] 'shine', [pénde] 'five', [ángura] 'anchor'. It is usual, however, to write μπ, ντ, γη, so even γαυπρός, δέντρο for old μβ, νδ. Some dialects have simple voiced stops, and the nasal is very weak initially even in demotic.

Before a consonant l becomes l, as ἀδερφός.

The sequence l - - r is commonly dissimilated to l - - r, as πλώρη 'prow'.

Nasals disappear before the unvoiced spirants, as

νύφη 'bride', γρόθος 'fist', συχωρῶ 'pardon'.

Final ν is lost in demotic (retained in some dialects) except before a word beginning with a vowel or unvoiced stop, which then becomes voiced, as [tim bóli] = τὴν πόλιν.

Double (long) consonants are reduced to single consonants in demotic and most dialects. They are kept, however, in S. Italy, S.E. dialects, Chios and Livisi, and single consonants are sometimes doubled, as often in Carpathos.

Kvúζα (Theoc.) = ορνυζα; hence Bov. kliža, etc., elsewhere only Corfu kruša 'publicaria' (Rohlf); demotic (ά) ορνυζα. The priority, ωύζα or ούνυζα, is doubtful (Frisk). The Bov. and Corfu forms have treatments of ου- for which compare forms of ου'δη, and ορνυζα could be thought to have an epenthetic vowel, accented like άνδια from άντην, q.v., differing from Otr. kinida from ωύζη. The loss of an accented vowel would also be somewhat surprising. Byzantios, for whom άκρυζον is the form in Attica, demotic ωρυζόχοπτον and other words, compares ορυζα, which is not without interest.

Kvúζα 'wrinkled' see LA.

Kόβαλος: the late-attested but probably original (non-Attic) sense 'porter' (LSJ, Frisk) is the one found in mod. κοβαλῶ 'transport', -ητής, etc. Add to LSJ SB 9699.336 ὅνων ἡ κοβαλευόντων οπρον εἰς Ἡβύλ (ou).

Kόβαπος: ὄνος (Hsch.), 'woodlouse', see Frisk, and Kukules Hsch. 33f.

Kούτζα (koine) 'encamp', 'bivouac', is illustrated by the mod. sense 'look at' 'observe', through 'keep

'watch'. False etymologies led to the mod. spelling κυττάζω. (238)

The transition is illustrated by Plb. 10.15.9 συναθρούσαντες εἰς τὴν ἀγορὰν τὰ διεσπαρμένα κατὰ σημαῖας ἐπὶ τούτων ηοτάτεσθαι, N.B. as opposed to οἱ μὲν ἐπὶ τῆς παρεμβολῆς ἔμενον, not then 'encamp' with LSJ; also POXY. l.c. of an ἀλωνοφύλαξ.

Kούτζω 'put to bed' is dialect, details in LA.

Cf. ἐκ-, παρα-, προ-κοτέω 'keep watch' in LSJ.

In Carpathos the verb is not used = βλέπω, but only of 'going to rest', esp. of birds, which confirms the accepted derivation. Κούτη is frequent of fowls, 'roost'. So also in the 'Old Athenian' group and elsewhere.

Κόκκινος gives the demotic for 'red', replacing ἐρυθρός. With Pontic 'beautiful' as well as 'red' compare Russ. krasny 'red', 'beautiful'. Because of the proximity of Pontic to the Slavonic languages their influence cannot be ruled out.

Κόκκινον· οἱ πυρῆνες τῶν ἐλατῶν (Hsch.). Late compares mod. κουκουνάρι, which is the seed of a pine or fir (Lex.Pr.). Kukules reads κουκύνιαν, cf.

S. Ital. has stinno (Bov.) and ftinno (Otr.) from *όπτενω.

'Οπτύλ(λ)ος: the Laconian word for 'eye' has persisted into Tsak. (ἐ)ψυλέ. The sound-change found in Laconian πτύλον > ψύλον, etc., (321) is found in the Tsak. form but not in Laconian in the word under discussion. Possibly the -pt- remained in antiquity through the influence of the form of the word in neighbouring dialects, as at Epidaurus.

"Οραμα of NT, also papyri, inscr., remains in E. dialects and Cretan and Tsakonian, often as ὅρουμα (LA).

'Ορίζω: 'Oríστε from ὅρίζω 'command', originally in a polite request to superiors to order something to be done, is anticipated by κελεύω (and no doubt replaces it) in PGiss. 55.11 (VTP) ηαταξίωσον κελεῦσσαι ἀχθῆναι.

Particularly striking anticipations of mod. usage are given by Lampe, who translates the imperative κελευσσον, κελεύσατε by 'please'. This does not bring out the peculiar appositeness of examples like Moschus Pratum 2952B (Ch. 93) a servant who had gone upstairs to announce the arrival of visitors κατήλθεν λέγων ἡμῖν.

κελεύσατε, i.e. 'please come in', also 2988D (Ch. 127), κελευσσον, πάτερ, εἰς τὸν κάνονα. 'Ορίστε can be used in

precisely the same way. So also Vit.Aesop. G 40 κελεύσατε ἀναστῶμεν.

In the LXX κελεύω is rather rare. Its place is taken by other verbs, and of these ἐπίτραξον is used in Tobit in just the same way as κέλευσσον above. Thus in 3.6 ἐπίτραξον ἀναλαβεῖν τὸ πνεῦμα μου ὅπως ἀπολυθῇ and ἐπίτραξον ἀπολυθῆναι με τῆς ἀνάγκης ἕδη εἰς τὸν αἰώνιον τόπον (so versions BA, essentially the same S), 3.15 ἐπίτραξον ἐπιβλέψαι ἐπ' ἐμὲ καὶ ἐλεῆσσαι με, 8.7 ἐπίτραξον ἐλεῆσσαι με the contexts allow no other interpretation; so even 3.13 BA εἰπὼν ἀπολυσσάτε με ἀπὸ τῆς γῆς (S εἰπὼν ἀπολυθῆναι με ἀπὸ τῆς γῆς seems more ordinary). In NT κελεύω is never in Marc. or Io. (ἐπιτάσσω, λέγω) often in Matt. and Act.Ap.

There is a close parallel to the old use of κελεύω in PGiss. and to those of ἐπίτραξον in Machairas 350f. ἀν φαύνεται τῆς ἀφεντιᾶς σου, νὰ ὁρίσης νὰ μᾶς τὰ δώσῃς 'if it please your Lordship, order that you give them to us.' We have here one of the many remarkable parallelisms in the history of late Greek and late Latin in that iube(te) is used in the same way. Examples are given by A.H. Saloniūs Vitae Patrum 403 f. from the third book, e.g. magis iubete facere nobiscum aliquantos dies; non enim dimitto vos hodie. He quotes also Anth. Lat. 491.5

(Riese) Asterique tui semper meminisse iubeto, which was emended to iubetor by Ziehen, as it was bound to be by someone. (Asterius consul 494 A.D.) Note in the VP quotation magis = Fr. mais and aliquantos for aliquot. This use must in Mod. come from the katharevusa. A parallel may be pointed out in the καλῶς ἀλθεῖς and καλῶς σε εὔπονος and variations, 'expressions of salutation' quoted by Sophocles, the first from about 400 A.D. We have here the modern greetings καλῶς ώρισατε (ήρθατε) and καλῶς σᾶς βρόμαιε of host and visitor, where καλῶς replaces the demotic καλά.

For a med. anticipation of mod. usage note Flor.

1469 'Καλῶς σὲ ηὗρα, κύρις μου'. 'καλῶς ἀλθεῖς' τὸν λέγει.

In the Poèmes Prodr. κελεύω means 'desire', 'please', I 61 ἦ χάρισον, ἦ πάλησον, ἦ δός ὅποις νελεύεις, II 19d ἀν δὲ κελεύης ἀκουσον, noticeably in 2nd person. So also Vita Aesop. W 66 εἰ κελεύεις, δέσποτα, λούσασθαν. For κελεύω see also s.v.

'Ορμός > Tsak. ὄρμός 'narrow strip of raised land between two fields', presumably from anc. ὄρμος 'cord', supporting anc. statements that the word was so accented in this sense, see Hsch. and final note in LSJ. (Under ὄρμος 'Ankerplatz' in LA.)

"Ὀρμός is differentiated by Ammonius 353 from ὄλμος or ὄλμος. This is early evidence for the change of λ to ρ before consonants, which is normal in demotic. It is to be added to those cited from II^P onwards by Schwyzer I 213, 'esp. before labials'.

Thumb Hell. 192 reported hearing ἀδελφός in Samsun and ἀελφός from a Cappadocian, and suggested that in the koine there were separate λ and ρ areas, both in A.M., λ remaining in the present day NE. Later evidence makes it clear that λ persisted in varying degrees at different localities in A.M., with variations depending on the following consonants and perhaps other considerations.

Costakis Silli 42 says λ changes to ρ before κ, τ, η. On the other hand ἀλυέζω 'milk' is usual, ὄλμος is given for several localities by Dawkins and ἄλμη is given by Andriotis 25 from Pharasa. Forms of ἀδελφός have only λ. In Papadopoulos' lexicon I note for Pontic ἐλπίδα and ἀδλφός but ἔρκος, ἡρθα or ἡρτα (= ἤλθον, perhaps influenced here and elsewhere, e.g. at Pharasa, by ἔρχομαι). The question for A.M. is clearly separate from that for Greek elsewhere. I have not pursued the matter further.

The definition of ὄλμος as ωρεψινὸν σκεῦος is not supported by Cappad. 'mortar for pounding grain' (Dawkins). Cf. s.v. ὄλμος.

Παιδίσκην μέν ἔστι πᾶσα ἡ τὴν παιδικήν ἔχουσα
ἡλικίαν, ὡς καὶ παιδίσκος, θεράπαυα δὲ ἡ δούλη
(Ammonius 378). Παιδίσκη μέν ἔστι ἡ ἐλευθέρα παρ'
'Αττικοῦς, παῖς δὲ ἡ δούλη (380).

NT illustrates Ammonius' warning, in that παιδίσκην
is here only = δούλη. It is important that neither
δούλη in the ordinary sense nor θεράπαυα occurs in

Bauer's Lexikon, nor does παῖς ever mean 'female
servant'. (328) An instructive passage is Luc. 12.45 ἐὰν
... δοῦλος ... ἀρεταὶ τύπειν τοὺς παῖδας καὶ τὰς

παιδίσκας, illustrating the use of the diminutive for
'girl' rather than 'boy' which is found e.g. in puella
(puer, Mädchen) Knabe, (329) and also the change 'boy' >
'slave', at first of young slaves, here contrasting with
the δοῦλος who is in charge during the master's absence.
(Παιδίσκην LXX as NT.)

'Η παῖς occurs only in Luc. 8.51 τὸν πατέρα τῆς
παιδός, 54 ἡ παῖς ἔγειρε! It is clear that this is a
purism, no longer in living speech, to avoid the
κοράλοι of Matt. 9.24f. and Marc. 5.41f., obviously a
popular diminutive, here applied to a girl twelve years
old, as Mark v. 42 tells us. This word occurs only in
one other context, Matt. 14.11 = Marc. 6.22ff. of Salome.
This context is not in Luke, neither in John.

Kόρη is not found in NT, and it is only as 'pupil
of the eye' in Bauer's other literature, as also in LXX.
It survives, however, in Cappad. as 'girl, daughter', in
Pontic as 'girl', 'pupil of the eye', 'doll', also in
Cephalonian, and as 'girl' in Makhairas, e.g. 214.14,
386.31. (These not in LA.)

Kόρη survives in Livisi κούρη, and κορήσιον in
Pontic κορήν (v), both listed in LA.
Κοράτον is not demotic, but is common, esp. in
songs, throughout the dialects. The usual words are
κορίτσι, with presumably Slav. ending, and also κοπέλα,
of doubtful origin. It was εὐτελές for Pollux II 17 and
condemned by Phrynicus 73, who accepted κόρην, κορήσιον,
κορίσιη. Photius tells us that Philippides ridiculed it
as ξενικόν. It came into use at the time of Philip and
Alexander and was called Μακεδονικόν by Sch.B on γ
404. (330) It has a certain isolation especially in the
Attic vocabulary, and -άσιον belongs largely to the
North-West, cf. s.v. κυράτον. As Chantraine Noms 75
observes, it is the only example which 'présente
nettement une valeur diminutive'. A reason for its
success is suggested by Arr. Epict. 2.1.28 οὐδένα ἔχεις
κύρον; οὐκ ἄργυρον, οὐ κοράσιον, οὐ πατέραρον ...;

The normal -άρον would have produced an awkward ρ...ρ,

a succession which Greek tended to avoid in ancient times (Schwyzer I 264) as in modern, where λ...ρ is the common result. The only early example of such a -ράρυον is Ar. 'σὰνδράρυον, no doubt an occasional formation, too early for -άστρον.

The corresponding terminology for males and for the two sexes together has many points of interest in NT.

Παῖς itself does not occur in Mark, and in John only once, 4.51 λέγοντες ὅτι ἡ παῖς αὐτοῦ ἐστί, with variants παιδύον and υἱός, elsewhere in NT Matthew, Luke, Acts, here once of humanity, 20.12 τὸν παῖδα = 9 τὸς νεανίας, otherwise of David and Jesus as παιδεῖς of God, which involves theological problems and is of little value for the study of the language of the times. The absence of the word from Mark (apart from 9.21 ἐκ παιδός D.) is highly significant, as he has παιδίον twice where Luke or Matthew have παῖς, 5.40 τὸν πατέρα τοῦ παιδίου = Luc. 8.51 τὸν πατέρα τῆς παιδός (κοράστου in the same context), and 9.24 = Matt. 17.18 παῖς. In this second example ὁ πατήρ τοῦ παιδίου tells Christ that his son has suffered from fits ἐκ παιδιόθεν, the curious illogicality of the παιδόν suffering thus from when he was a παιδίον showing vividly the loss of diminutive sense in the word.

In Matthew and Luke παῖς is either 'child' in age or 'slave' (so surely the παιδεῖς of Herod in Matt. 14.2), 'son' only Jo. 4.51 if the reading is right (neglecting, as above, the passages where the relationship is to God).

In John the preceding υἱός would mark the meaning. The extent to which παῖς + genitive is really ambiguous in any form of Greek would merit examination. The combination of the senses 'boy' and '(young) slave' is of course common elsewhere, e.g. puer, garçon, Anglo-Indian boy. It no doubt prompted the curious etymology of the Cod. Gud. quoted by Valckenaer, παῖς ὁ ἐπιτίθετος εἰς τὸ παιδεῖσθαι.

Παιδίον is usually 'infant', 'young child', plur. 'children' in general. Mark's use of the word twice of older children (above) anticipates the modern παιδί 'child'. A still more remarkable anticipation of Mod. is in Jo. 21.5 παιδία, μή τι προσφάγων ἔχετε; 1 ep. Jo. 2.18 παιδία, ἐσχάτη δύρα ἐστίν, in familiar address, like Eng. 'my lads!', 'boys!', without reference to age, just like παιδία in Mod., where even the sing. is similarly used, e.g. καλὸ παιδί 'decent sort' even of a woman (denied by one informant).

Παιδάριον apart from being a v.l. in Mt. 11.16 for παιδίοις 'children' is used only by Jo. 6.9 ἐστι

παιδάριον έν δέ (not in parallels in Synoptics), hardly distinguishable from παιδίον.

The meaning 'child of a parent' is regularly given by τέκνον, used also, with τεκνίου, as an affectionate form of address to others than children. In demotic παιδί has replaced τέκνον.

Παιδάριον is recorded on only a few of the Academy's slips. The lack of distinction between παιδίον and παιδάριον in John is illustrated by Cypriot, where παιδάρια i.e. παιδάρια (the κ being a normal phonetic development here) is given by Sakellarios as the plural of παιδίον. In Seriphos, however, τὸ παιδάριον is given as = ὁ νεανίας. The word is quoted in a folktale from Thera, and as occurring only in a lullaby at Κρήτη near Smyrna. Παιδάριος = μέγας παῖς, παιδαρέλλι 'street urchin' and a few compounds of παιδαρο- occur occasionally. These words not in LA.)

Τέκνον survives in places, with a strong tendency to be restricted to certain kinds of context, e.g. from Pontic ποτανοῦ πηδία εἶστε, τέκνα μ'; 'whose children are you, my children?', (331) with interesting retention of the common use of τέκνον as a term of address, and differentiation from παιδία, the Bithynian proverb καλὸς γονὸς καλὰ τέκνα, καὶ γονὸς καλὰ τέκνα (καλός 'good',

as regularly in Mod.), the Euboean curse τέκνον ωὐ μὴν 'πουχτήσῃς 'may you get no child', a song from Symi with typical doubling of synonyms ἐκάμα δεκά μαῖ παιδγύα. (332) See also LA.

The reader will be reminded of Caesar's καὶ σύ τέκνον, to Brutus in Suetonius.

Παῖξαι: Δωρεῖς διὰ τοῦ Σ, ὁ δὲ Ἀττικὸς παῖσαι. καὶ παῖσαι καὶ συμπαῖσαι διὰ τοῦ σ ἑρεῖς (Phryn. 240). As Hatzidakis Einleitung 136 stresses, ἐπαιξα and παῖξω ousted the Attic forms in later Greek. The only early example is Crates Com. 27 (not 23), where the reading has been suspected, ἡ. ἐπαιξον for ἐπαιξαν Kock. It is very important that Mayser I ii 133 knows only one ex. of such an Σ for σ, PSI 445.17 πατέπαιξ from III^a. The aor. is notoriously rare in Attic itself. Hdt. has ἐπαισα.

In Mod. the aor. is ἐπαιξα in demotic and so also Pontic and Pharsala, in a region of generally Ionic colouring.

Πατέλη does not seem to be mod., and even in anc. was replaced by παστάλη. There can be little doubt that they are forms of the same word (Schwyzer 423), though this is not stated by Frisk. If we assume the