A New Intermediate Ancient Greek-English Lexicon: problems and perspectives

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The Intermediate Greek English Lexicon (hereafter IGL), published by Oxford L University Press, is a reprint of the first edition of 1889 and based on the seventh edition of Liddell & Scott Greek-English Lexicon of 1883 (LS). The fact that it has been continuously in print is monumental testimony to its usefulness. A new version should preserve these qualities of excellence and endurance. As a dictionary used by students and others who require a volume of manageable size, a new edition based on the 1940 ninth edition of the large Lexicon (LSJ^9), with a Revised Supplement (1996), is long overdue. However the large lexicon is now itself in need of reworking; the very first edition was originally a translation of a German lexicon, and LSJ^9 is the product of successive editorial revision and intervention (Zgusta 1989; Chadwick 1996). While it has been recognised that living languages require evolving dictionaries, such as the Oxford English Dictionary, realisation that dead languages with the complexity of ancient Greek also need them is slower. Modern research continually changes perspectives and new words and meanings are being discovered every year on stone and papyrus. The interest of users has also changed, in that most today consult the dictionary while translating from ancient Greek, and not only for help with prose and verse writing in ancient Greek.

1. AUTHORS AND WORKS FOR INCLUSION IN THE DICTIONARY

IGL is not an all-inclusive work like the large lexicon, but a dictionary of the major writers of classical literature. There is only a short explanatory paragraph in the preface as to how material for inclusion was decided on, and in practice the selections turn out to be quite unpredictable. One might have assumed that the authors whose names appear in the list of abbreviations at the beginning are those covered in IGL. On pages 614-618 of the letter " Π ", which this article uses for many of its examples, *Theocr.* is cited under $\Pi \epsilon \lambda \sigma \sigma \nu \nu \alpha \sigma \iota \sigma \tau$ and $\pi \epsilon \lambda \lambda \delta \varsigma$, yet Theocritus does not appear in the list. There are no abbreviations for the Homeric hymns given, but h.Merc. is cited under $\pi \epsilon \lambda \omega \varrho \sigma \varsigma$. Many other unexplained abbreviations from LS are used elsewhere in the work. Where authors do appear in the list of abbreviations, it cannot be assumed that there is no material to add.

The noun $\pi \epsilon i \varrho \alpha \sigma i \varsigma$, 'an attempt', occurs in Thucydides (6.56.1), in the particular sense of 'an attempt at seduction', but is absent here. $\Pi \epsilon i \varrho \alpha$ is in the dictionary, but not $\pi \epsilon i \varrho \dot{\alpha}$ from the root $\delta i \alpha \pi \epsilon \varrho \nu \tilde{\omega}$ meaning 'blade' or 'point', from Aeschylus' Choephori (860). There are two compound adjectives from Plato missing: $\pi \epsilon \zeta o \theta \eta \varrho i \nu \dot{\alpha} \varsigma$, 'for the hunting of land animals' (as opposed to fishing) and $\pi \epsilon \zeta o \nu \varrho i \nu \dot{\alpha} \varsigma$, 'for the care of land animals' (as opposed to birds of the air). The entry $\pi \epsilon \zeta o \nu \dot{\alpha} \varrho i \varsigma$, 'commanding by land', is not going to be very helpful, and there is no companion entry at all for $\pi \epsilon \zeta o \theta \eta \varrho i \nu \dot{\alpha} \varsigma$.

In the past, the canon of authors for students was relatively fixed, whereas the tendency nowadays is to read less in amount, but more widely and variously, including non-literary Greek from inscriptions and papyri. *IGL* included selections from some non-classical writers, but today's students require a wider range. For example, the inclusion of words from the complete works of Polybius and Strabo, needed by students of ancient history, would introduce a large number of new lemmata. A complete reading of these and some other later authors was never made even for the large lexicon. New Testament Greek in particular is sparsely covered, but a limited project cannot begin to attempt the kind of thorough and radical research that is now being done in Australia by Lee & Horsley (1998). Many students would like to learn a limited amount of Greek for courses on Classical Civilisation or the Classical roots of English language and culture. Transliteration of the Greek lemmata would open up the dictionary to this wider readership.

A very important source of new material is the newly discovered literature from papyri, in particular lyric verse and New Comedy, but much of it is very fragmentary. It is probably best to make a selection of the most widely read works, rather than decide to include or exclude particular authors. The same could be done for Callimachus and other Hellenistic poets as well as for large corpora such as the works of the Attic orators, Aristotle and Greek literature of the Roman period. The work involved in selecting excerpts is, however, very considerable, and if one decided to leave out some works that are covered in the existing dictionary, some might feel that the old dictionary had not been improved. There is occasionally a case for including something from outside any proposed list of authors. For $\pi \epsilon \lambda \iota \tau \nu \dot{o} \zeta$ in Thucydides it would be useful to have an entry for $\pi \varepsilon \lambda \iota \delta \nu \delta \zeta$, the more usual later form of the adjective; for $\pi \alpha \chi \nu \delta \omega$ there are early examples of the metaphorical meanings, 'become numb' (with emotion), but not the literal meaning 'congeal' first encountered only in the 1st century AD. The word $\pi \dot{\epsilon} \mu \varphi \iota \xi$ is commonly used in poetry and among medical writers, who do not usually appear on any list.

A modern list of editions of texts needs to be decided on, and this will lead to a number of changes. Thus $\pi a v \varrho \acute{a} \varkappa \iota$ (Thgn. 859) was rejected in LSJ^9 , presumably in favour of $\pi o \lambda \lambda \acute{a} \varkappa \iota$, but the accepted reading is now again $\pi a v \varrho \acute{a} \varkappa \iota$.

Πελεχυφόρος, 'axe-bearer, carrier of Roman fasces' appears in IGL from Plb., but is absent from LSJ^9 . The 1883 edition of LS gives the word as a variant for $\dot{\epsilon}\xi\alpha\pi\dot{\epsilon}\lambda\epsilon\kappa\nu\varsigma$, 'with six axes', now the accepted reading. The form $\pi\epsilon\mu\pi\tau\dot{\epsilon}\varsigma$ is no longer read in Thucydides (8.86.9). It would be extremely helpful to lexicographers to have an international Data Base of rejected readings and ghost words. Dictionaries are ongoing projects over generations and it is important in general to keep an archive of work notes for the next compilers.

2. SPACE-SAVING MEASURES

If new material is going to be inserted, space-saving measures are required. The dictionary could be a little longer than the present 910 pages, but it ought not to be any heavier. Shorter abbreviations for authors as in LSJ^9 , such as A. instead of Aesch. for Aeschylus etc., would conform to internationally accepted usage and save space, but beginners would find them less obvious. Latin equivalents are given in IGL for many words, such as cetratus for $\pi \epsilon \lambda \tau \alpha \sigma \tau \eta \varsigma$. Many of these date back to Stephanus' translations into Latin (1572), and can be removed, as they were from LSJ^9 . It is no longer true that everyone learning Greek has a prior knowledge of Latin as a reference point. However, there is a case for retaining the Latin for scientific labelling, such as ciconia for $\pi \epsilon \lambda \alpha \varrho \gamma \delta \varsigma$, and Latin borrowed from Greek, as pirata under $\pi \epsilon \iota \varrho \alpha \tau \eta \varsigma$.

Some articles can be considerably shortened. The word $\pi \hat{\epsilon} \lambda \hat{\epsilon} \chi \nu \zeta$ means 'axe', and always does so, whether it is used for felling trees, sacrificing animals, or fighting when there are no proper weapons to get hold of, so there is no need for most of sections 1 and 2 here. Under $\pi \hat{\epsilon} \lambda \tau \eta$ the second section can be removed. The word is no longer understood as having a separate sense in Xenophon Cyrou Anabasis 1.10.12. In section I 2 the sense 'horse's ornament' arises from a misunderstanding of line 305 in Euripides' Rhesus, where Rhesus' shoulders have been confused with those of his horses'. The same mistake appears in LSJ^9 and is not clearly corrected in the revised Supplement, an instance which shows that the work will involve more than a straightforward abridgement. The lemma πειοαίνω should be combined with that of $\pi \epsilon \rho \alpha i \nu \omega$, of which it is a dialectal variant. The special sense 'tie the two ends of a rope' in Od. 22.175 is contextual specification. A number of lemmata have several lines devoted to encyclopaedic information which could be omitted or shortened to a minimum, necessary for understanding cultural connotations. The word $\Pi \varepsilon \lambda \alpha \sigma \gamma \delta \zeta$ has explanations of the different uses in the Homeric poems which take up seven lines. Etymologies could be omitted, since many are out of date and their revision would be a large undertaking. The information under $\pi \varepsilon \lambda \alpha \rho \gamma \delta \zeta$, 'stork', that it is from $\pi \varepsilon \lambda \delta \zeta$ and $\dot{\alpha} \rho \gamma \delta \zeta$ is probably correct and interesting. $\Pi \tilde{\epsilon} i \sigma \mu \alpha$, 'rope' is not related to $\pi \tilde{\epsilon} i \theta \omega$, but it is actually from * $\pi \acute{\epsilon} \nu \theta \sigma \mu \alpha$, from a root reflected in English bind. Many will think that a sys-

tematic treatment of etymology does not belong in a dictionary of this level. However, there is great popular interest in the history of words and it is a useful part of the learning process. A decision would have to be made as to whether etymological notes would include Indo-European cognates as Montanari (1995) or only English cognates and borrowings as in Wilbur Gingrich & Danker (1983).

3. A SIMPLE ABRIDGEMENT OF LSJ⁹ AND THE REVISED SUPPLEMENT OR A DICTIONARY WHICH IS NO LONGER PART OF THE SERIES?

A revised dictionary with changes of the kind mentioned could justly be called a revision based on LSJ^9 and its revised Supplement. Ideally, a more extensive reworking is needed, but the new dictionary could not then properly be said to be based on LSJ^9 , although the large lexicon would be the chief source of material for quotations and references. An editor with limited resources for revising an existing dictionary cannot make a new collection of material. The concise Abridged version of LS of 1891 (based on an even earlier edition of LS than the IGL) is still in print and if IGL moves away from LSJ^9 , then the smaller work should follow close behind. It is important to establish clearly the place of the new IGL within the LS series, as well as in the context of other dictionaries and lexical projects. There is the $Diccionario\ Griego-Español\ (DGE)$, which will be much larger than LSJ^9 when it is completed. On a scale smaller than LSJ^9 but larger than IGL, Montanari's $Greek-Italian\ Lexicon$ was published in 1995.

4. LAYOUT OF THE TEXT

The worst hurdle for users of book-dictionaries is long solid columns of print with no clear way of finding the information required. Where an article on a word is long and complicated, there is a strong case for putting a summary of the basic information at the start. A new line for each sense is another way of making consultation easier. This is a much praised feature of the Oxford Latin Dictionary (OLD), but it takes up a lot of space. It is also difficult to copy for IGL, which is a small dictionary derived from a large one where articles are arranged on syntactic principles in order to help with Greek composition. There are short quotations or context indicators in English, whereas OLD is arranged semantically, has no context indicators, and much longer Latin extracts from authors. There are numerous decisions to be made about the presentation and layout of articles e.g. the distribution between italics and roman, the number of columns per page, the use of fonts of different sizes, or colour for differentiated information. A system of electronic tagging should be used, with each component part, or type of significant information, in an article marked electronically, so that conventions are standardised throughout. This system imposes discipline on the compiler, increasing overall uniformity and clarity (Weiner 1994).

5. GRAMMATICAL INFORMATION

A dictionary cannot provide a full grammar, though of course grammatical information cannot be entirely separated from meaning. Old fashioned terms like deponent, are not usual in Greek grammar books today, and abbreviations such as med. or sea. are anachronisms. Grammatical terms such as causal under $\pi\alpha\dot{\nu}\omega$ may cause difficulty. There are many decisions to be made about how to present such concepts. Some teachers prefer the gender of nouns to be marked with a definite article, to encourage students to learn them alongside nouns, but it may be preferable to use the abbreviations m, f and n. In any case, Attic forms of the article are not suitable for dialect words. $\Pi \varepsilon \lambda i \gamma \nu \alpha$, 'small drinking cup', from Alcman (19.3) should be marked with the article $\dot{\alpha}$ rather than Attic $\dot{\eta}$. It is difficult to intersperse necessary grammatical information without cluttering the article. Comparative and superlative forms of adjectives are usually put at the beginning or end, as are adverbs of the same stem, but this separates them from their appropriate senses. At the end of the lemma $\pi\alpha\chi\dot{\nu}\zeta$, the Homeric comparative form $\pi \acute{a}\sigma \sigma \omega \nu$ is listed; it applies to Odysseus' 'physique', but is not attached to the semantic section where it belongs.

6. DEFINITIONS

Old-fashioned English in definitions needs to be updated, though it is not possible to guarantee that the replacements will not themselves become quickly outmoded (Glare 1987, 12). Under κροκωτός 2, IGL has 'a saffron-coloured frock, worn by Bacchus' and LSJ⁹ begins 'a saffron-coloured robe worn by gay women ... etc.', replacing one old fashioned word, but introducing another which has already come to have different associations. Very literal translations, those left at an interlanguage stage, can be useful. Under $\pi \dot{\alpha} \chi \nu \eta$ the meanings 'hoar-frost' and 'clotted blood' could be appropriately linked with an explanation 'of a liquid that has become solid'. But literal translations can sound stilted and are not always very accurate. Many filo- compounds are translated as 'a love of...', or 'loving...', 'fond of...', but simple adjectives or nouns often express the meaning more accurately. This corresponds with the original meaning of the stem, which was to denote attachment to a group or quality, rather than a sentimental relationship. Such filo- compounds in a modern Greek dictionary show a much higher proportion of adjective or noun definitions in current English than is found in ancient Greek dictionaries: $\varphi\iota\lambdaοδοξία$, 'ambition', $\varphi\iota\lambdaόδικος$, 'litigious', and these suit the ancient words as well. Under $\partial \mu \varphi \iota \theta \alpha \lambda \dot{\eta} \zeta$ in IGL, there is the literal 'blooming on both sides', which makes no sense at all without the explanation 'of children who have both parents alive'. It would take an even longer entry to explain fully the cultural significance (Richardson 1993, 161 on Il.22.496), and it is in general difficult to cover adequately sociolinguistic aspects with translation definitions.

Under $\pi \varepsilon \lambda \alpha \gamma \delta \zeta$ the translation 'the main' is a fairly close synonym of the Greek word in some contexts, but it is almost obsolete today in English. It could be argued that where a word has an archaic or poetic flavour in Greek it is better to find an English word of similar register, but standard English is a reference point for everyone, and other connotations of the word can be made clear explicitly. The range of a Greek word is often different from an English equivalent; the custom here is to give a list of synonyms from which possible translations can be selected. For μέλας the synonyms black, swart (swarthy in standard English now), dark, murky, obscure, are given, but there is no indication of how far these overlap, or what kind of range $\mu \dot{\epsilon} \lambda \alpha \zeta$ has in comparison to black. It is very difficult to convey whether they are partial synonyms or whether the Greek word comprises all of the English senses at the same time. Nevertheless, some attempt ought to be made to be as precise as possible. Words with no reasonably exact equivalent in English such as $\pi \dot{\epsilon} \delta o \nu$ have to be paraphrased; French sol is nearer, and this is a reminder that if the new IGL dictionary is to be translated into other languages, it will not be a straightforward process.

Derivative suffixes are not treated with enough precision in these dictionaries; the studies contained in the rich collection made by Buck & Petersen (1944) in particular need to be taken as a starting point. The second element of $\pi ελειοθοείμμων$, 'dove-nurturing' in A. *Pers.* 309, of the island of Salamis, is not a participle, nor an agent noun with the same suffix as ἡγεμών, but an adjectival formation in -ων meaning something like 'having', 'characterised by', from the noun θοείμμα, 'creature' and a more correct translation would be 'with flocks of doves'. The Aeschylean adjective μεγαλοσχήμων (Pr. 408) is of parallel formation. On almost every page in this dictionary one finds words defined by equation with other Greek words, as πανρίδιος = παῦρος, πειρατήριον = πεῖρα. These are imprecise; occasionally they may be diachronically correct, but complete synchronic synonymy in a language is extremely rare.

In some cases, particularly with epic and poetic vocabulary, we simply do not know the meaning; often it had been forgotten even in ancient times. IGL and LSJ^9 are less than honest about this. The old epithets $\mu \acute{\epsilon} \rho o \psi$ and $\acute{\epsilon} \lambda \lambda o \psi$ were assigned dubious etymologies and meanings by ancient grammarians. The doubt comes through in LSJ^9 which reports the ancient testimony, but without any evaluation, and IGL repeats two of the suggested meanings as certain, 'endowed with speech' and 'mute' respectively. In a very important article Silk (1983) has suggested that poetic words reused over and over in the tradition, even though they were dimly understood, such as $a \grave{l} a v \acute{\eta} \varsigma$, $a \check{l} \theta o \psi$, $a \acute{\epsilon} \mu \varphi \iota \xi$, should be termed "iconyms". They are resistant to normal lexicographical procedures, and can be arranged only according to association or context, not meaning. He makes the suggestion with reference to the very important and much neglected problem of

how dictionaries might take better account of literary language.

A difficult word in the letter Π is $\pi \hat{\epsilon} \lambda \alpha v \sigma \zeta$. Most of the evidence for it is epigraphical (Amandry 1950, 86ff), and beyond the scope of this dictionary. Yet the epigraphic sources need to be considered before the literary occurrences can be fully evaluated. The word seems to refer in inscriptions not to a 'half liquid substance' (as in IGL $\pi \dot{\epsilon} \lambda \alpha v o \zeta$ I), but specifically to 'an offering' (as in LSJ $\pi \dot{\epsilon} \lambda \alpha v o \zeta$ II and π έλανος III), usually made to chthonic deities. It can be solid, grain or a cake, or a liquid libation, and Plato (Lg.782c) mentions it as an offering which is not animal. In tragedy it seems to be used figuratively of the blood of a murdered victim poured on to the earth as if in sacrifice, a pointed and bold figure if the meaning of $\pi \hat{\epsilon} \lambda \alpha v o \zeta$ did not include a blood offering. There is another example which sits less easily, where it is a foamy substance in the mad Orestes' mouth and eyes which on waking he asks Electra to wipe away (E. Or. 220). This is placed in LSJ^9 near an example from a poem about cures (Heliod.ap.Stob. 4.36.8), where $\pi \hat{\epsilon} \lambda \alpha voi$ are growths over the eyes like cataracts. Are we to think that caking in Orestes' eyes and mouth after sleep is meant? Or does the word mean something like 'mucus', giving perhaps a yet bolder figurative extension than the other examples in tragedy? There is some discrepancy too in our sources as to the accent, $\pi \hat{\epsilon} \lambda \alpha v o \zeta$ or $\pi \hat{\epsilon} \lambda \alpha v o \zeta$, and the source of the difficulties may be that there were two separate words. Important issues are raised here, how much doubt about a meaning can and should be expressed, how much research there are resources for, and whether an editor may give an independent opinion which differs from the traditional interpretation. These questions admit of no definite answers, but at least one strong lesson can be taken from this example, that sources outside the defined corpus of a dictionary, whether contemporary or later, right up to modern Greek in fact, can often be elucidating.

7. ORDERING OF SENSES

An editor revising a dictionary has to decide whether the existing arrangement of articles is still valid in itself and appropriate for the readers' needs. Arrangement of an article can be made in various ways which are potentially useful, each bringing benefits along with losses. Semantic development can clash with chronological attestation for example, and different users on different occasions will require one or the other. In any case, meaning depends on a network of structural, syntagmatic and paradigmatic relations, and the tensions of competing arrangements are impossible to resolve fully. The *LS* dictionaries give priority to arranging senses according to syntax in order to help with translation into Greek, whereas a semantically based approach is more appropriate today. For example, articles for verbs are usually divided into active, middle and passive sections; but they could well be amalgamated where there is one basic meaning underlying the voice distinctions.

8. OUOTATIONS

An editor wants to be free to select any quotation he wishes to illustrate senses, but since IGL gives names of authors without precise references, it is not possible to check the source easily. If quotations are restricted to those in LSJ^9 and its Revised Supplement they remain traceable. Many have come down in an inherited line from Stephanus' dictionary, and are suitable in that they have a very old pedigree in the history of teaching Greek. Quotations in Greek are important to illustrate a word's range of attested use and collocational sense relations, and shorter context indicators in English are also helpful, even in short entries from which they are usually omitted in IGL. It needs to be made clear though that the contexts given are not necessarily the only ones where the word may occur.

LS and IGL quotations are short and have words omitted, altered word order and inflexions, the Greek words for someone or something instead of the actual nouns. The word in the lemma is abbreviated to its initial letter, but the user may have difficulty in restoring the correct form of the word and the position of the accent. All these practices save space and are useful for those who wish to translate into Greek, but the phrases are in prose which has lost its natural shape, or in verse which does not scan. It is better for today's users to see a full phrase or sentence which is translated, but this means having fewer quotations. Quotations are usually put in chronological order, with a resulting bias towards examples from earlier authors. When indicating that the word continues to be used in later authors, it is too lengthy to put all the abbreviated names, but "Homt" is an inadequate description. The best indicators may be those of genre: epic, lyric, tragic, Attic prose etc., and the abbreviations "Trag", "Oratt." do occasionally occur in this dictionary. However, even genre indicators can be imprecise in that they do not indicate the distinctive lexical or stylistic choices of a particular author.

9. WIDER PERSPECTIVES

For an editor considering the writing or revision of a dictionary today, there are two very important differences from a hundred years ago: the advent of electronic technology and the modern science of general linguistics. We are still only beginning to appreciate how these two will affect lexicography, but even for a revised dictionary at this level it is important to lay foundations for future developments as far as possible.

A new *IGL* will have to be available also on CD ROM, and it will be possible soon to have pocket computer versions of dictionaries of this length. An electronic version can have extra features, such as a "Help" index with access from every page. Sound can be used to illustrate pronunciation of words, though of course it is possible only to deal with standard and approximate pronunciations for a dead language. A complete aural version could be produced for the blind;

IGL has already been read aloud and recorded on cassette tapes with braille labels at Homai College for the Blind in Auckland, New Zealand. There will be scope for an interactive dictionary, where users can re-sort material in a number of ways to produce alternative orderings by chronology, semantic development or genre etc., and word lists for their own needs. Since electronic versions can be continually updated, readers' comments and corrections can be taken account of. Space-saving measures appropriate for the book are not needed for an electronic version. It is easy, for instance, to arrange articles with a lot of space between sections. But when it comes to the writing of the articles, the need for conciseness, one of the most important aspects of the lexicographer's art, should never be lost sight of. A dictionary is not a Data Base; it must include an interpretation, a summing up of all the known facts.

There are more fundamental opportunities for change with electronic versions which fit very well with developments in modern linguistics. Both compiler and reader can escape from the traditional alphabetical ordering of a book, and it is thus possible to create a tool which has features corresponding more closely to the natural lexical structures of the language (Aitchinson 1987, 9-14). A large number of lexemes can be grouped together into semantic fields in which they interrelate and define each other. For accurate and subtle interpretation of words, a lexicographer should have the perspective of these structures, rather than look at each word as it comes up in a particular context or in alphabetical order. It will be easier to do this with a shorter dictionary such as *IGL* than with a large lexicon. In future, the natural structures of the language will be more thoroughly and scientifically taken account of in the compilation of dictionaries. Componential analysis, the analysis of lexemes into their sense components, will be important for making the crucial links.

One readily identifiable example of a structure is kinship terms, where meaning is determined by relative position in the family. Colour terms similarly can only be appreciated by looking at the whole system in a language (Lyons 1995a). Both these structures are culturally specific and difficult for speakers of other languages. To take other simple examples, the article for $\delta\epsilon\xi\iota\delta\varsigma$ should be cross-referenced to that for $d\varrho\iota\sigma\tau\epsilon\varrho\delta\varsigma$. The phrasal lexeme $\dot{\omega}\varsigma\,\dot{\epsilon}\pi\sigma\varsigma\,\epsilon\dot{\epsilon}\tau\epsilon\dot{\epsilon}\nu$ is given two different explanations under the two articles $\dot{\epsilon}\pi\sigma\varsigma\,$ II 4 and $\epsilon\dot{\epsilon}\pi\sigma\nu$ in LSJ^9 , leaving doubt about how precisely to interpret it in A. Pers. 714 and other passages. In a large group of synonyms, such as adjectives meaning 'curved, bent': $\dot{\alpha}\gamma\kappa\dot{\nu}\lambda\sigma\varsigma$, $\beta\lambda\alpha\iota\sigma\dot{\sigma}\varsigma$, $\gamma\alpha\mu\psi\dot{\sigma}\varsigma$, $\gamma\varrho\nu\pi\dot{\sigma}\varsigma$, $\dot{\epsilon}\lambda\iota\kappa\tau\dot{\sigma}\varsigma$, $\kappa\alpha\mu\pi\dot{\nu}\lambda\sigma\varsigma$, $\kappa\nu\lambda\lambda\dot{\sigma}\varsigma$, $\kappa\nu\upsilon\tau\dot{\sigma}\varsigma$, $\kappa\alpha\lambda\dot{\iota}\varrho\rho\sigma\pi\sigma\varsigma$, $\dot{\varrho}\alpha\mu\dot{\rho}\varsigma$, $\dot{\varrho}\omega\kappa\dot{\sigma}\varsigma$, $\sigma\kappa\partial\lambda\dot{\iota}\varsigma$, $\sigma\tau\varrho\epsilon\beta\lambda\dot{\sigma}\varsigma$, the conventional ordering makes it impossible to distinguish them synchronically or diachronically with any exactness. The English-Greek word searches available on Perseus are already a powerful tool for lexical studies of this kind.

Layers of information about a word can be presented: first a basic summary and then further in-depth material. For instance, lexical structures, etymologies or more syntactic and grammatical information could be incorporated as deeper layers. Links to larger lexica and concordances are possible and, very importantly, to texts and commentaries. The lexicographer's essential work of looking at every word in its context, previously so time consuming, is now being transformed with the quick access provided by computerised texts. This is one of the most important changes in the history of lexicography. Some advances will only really become possible when LSJ^9 is revised. For instance, it is easier to find different quotations to illustrate the use of a word, rather than repeat those handed down in Greek dictionaries over centuries (Adrados & Somolinos 1994). Summaries from computer-generated data for collocational semantics will be much more sophisticated than the present context indicators. Computation of word frequency is also easy for an electronic lexicon linked to texts, in place of the impressionistic "frequent", "rare" etc. of traditionally compiled lexica.

Modern semantic studies reject the division between two kinds of knowledge: linguistic and non-linguistic. Traditional lexicographical theory was based on an Aristotelian theory of definition in terms of the essential properties of things. Meaning is now recognised as depending on knowledge both of the language and of the world of the speaker, and the old distinction between dictionary and encyclopaedia is no longer clear (Lyons 1995b, 99-101). This fits neatly with the technological ease with which reference works in computer form can now be bundled together with cross linking of key words. Sociolinguistic and cultural aspects, for instance, cannot be treated adequately without encyclopaedic information. It would be difficult to understand what the message staff $\sigma \varkappa v \tau \acute{a} \lambda \eta$, used by couriers in the Spartan army, precisely was without the six line explanation (somewhat out of date now) given in all three of the LS dictionaries. A link with encyclopaedic articles makes it easier to omit such information from the linguistic dictionary, while at the same time giving immediate access to much fuller information than was previously possible.

An exciting possibility for the future would be the addition of illustrations, an integration of language and visual images from the external world and from ancient art and artifacts. A large part of the physical environment of the ancient Greeks is recoverable, and the juxtaposition of word and image can give insights into how the language lexicalised their perception of it. This, like the grouping of words into semantic fields, reproduces something close to the natural language learning process. Educational illustration is normally thought suitable only for encyclopaedias or children's books (Landau 1989, 258-261). This will change however, and the change will be in fact a return to older attitudes. Robert Keep's translation of Georg Autenrieth's *Homeric Dictionary* (1877) introduced nearly

one hundred and fifty woodcuts closely linked to Greek words. W. Smith's *Dictionary of Greek and Roman Antiquities* has in its preface:

The representation of an object gives a far better idea of the purposes for which it was intended, and the way in which it was used, than any explanation in words only can convey (Smith 1842, x).

The process of selecting visual images for a dictionary can be compared to that of writing verbal definitions. Their employment should conform to the general criteria for any lexical entry: precision, conciseness and relevance. They should also be of high quality and aesthetically pleasing. Words which are terminological immediately lend themselves to illustration, that is words for artifacts and words referring to the natural world, such as π έλεινς, π έλτη, π έλεια, and π ελαογός. The description $\pi \varepsilon \lambda \alpha \rho \gamma \dot{\omega} \delta \eta \zeta$ for the ibis bird, can easily be demonstrated by an illustration. Place names such as $\Pi \epsilon \iota \rho \alpha \iota \epsilon \dot{\nu} \zeta$, $\Pi \dot{\alpha} \varphi \sigma \zeta$, can be elucidated by maps and photographs. For names such as Π αονασσός or Λ χελ $\tilde{\omega}$ ος used in poetry to evoke powerful associations, the imagination could be helped with photographs. Diagrams of structures such as kinship terms, or of overlapping circles showing the comparative semantic range of words, are very useful. A bank of illustrations could be built up year by year. The scope for interdisciplinary collaboration, such as for zoological terms, is very exciting. Even very difficult things, such as the range of hue and texture covered by colour terms could eventually be tackled. Three-dimensional or moving images, in fact all the possibilities of the multimedia age could be used. In book form, a companion volume to the dictionary could be published, an ancient Greek version of the visual dictionaries available today for modern languages.

10. CONCLUSIONS

The juxtaposition of the kind of problems discussed in paragraphs 1-8, beside the new and exciting prospects offered by modern linguistics and technology, shows that a limited revision at this time will entail some unsatisfactory compromises. The material can be updated and presented with more clarity. Definitions can be sharpened with rigorous attention to consistency within natural language structures, and with a semantic arrangement more in line with the needs of today's user. But until there is a new version of the large lexicon, this can only be an interim work. However, the revised *IGL* will be a useful tool for learners and teachers, and a step towards the desideratum of a new *LSJ*.

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