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The Greek and Latin Root Based Approach to English Technical Vocabulary : A Reappraisal Employing Linguistics Terminology

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1. Introduction

In a paper that was somewhat of a departure from more traditional approaches to the teaching of English vocabulary to Japanese students (both instructional methodologies, such as Hulstijn, Hollander & Greidanus (1996) or Hunt & Beglar (1998), and teaching materials creation, such as Schmitt, N. & Schmitt, D. (1995) or Stapleton & Glick (1998)), Irwin (2000) introduced a novel method utilising a traditional Japanese teaching methodology to support the acquisition of English medical vocabulary. This paper, which employs a broadly similar method to Irwin (2000), seeks to build on it in three main ways.

Firstly, and most importantly from a theoretical point of view, it will aim to retest the 'Coefficient of Translation Transparency' introduced in Irwin (2000: 23-28) for gauging the accuracy of a Japanese linguistics term a student would obtain from using the Corpus (see §2 below for a more detailed discussion of the statistical methodology involved). Secondly, and most importantly from a pedagogical point of view, it widens the range of academic fields (or ESP applicability) by employing vocabulary drawn from the realm of linguistics. Whilst linguistics may not be the most important and widely studied academic field in Japan, and while compared to medical vocabulary its range of available ESP materials is not nearly as impressive, English linguistics vocabulary does, like medical vocabulary, contain many items derived from not just Greek, but also Latin, roots.[1] Finally, as just mentioned, this paper will deal not only with ancient Greek based roots, to which Irwin (2000) restricted itself, but also to Latin based roots. This allows us to extend the analogy — and the traditional Japanese teaching methodology on which our approach is founded — to encompass two different *on'yomi* 音読み readings (see §2 below), an older ancient Greek layer and a younger Latin layer, analogous to the different *goon* 呉音, *kan-on*

[1]Naturally, linguistics and medicine are not the only academic fields which can boast such vocabulary composition. Law, engineering and the natural sciences (especially biology, botany and zoology) also make similar 'targets' and the authors hope to address these fields also in the not too distant future.

漢音 and *tō-on* / *sō-on* 唐音・宋音 layers we find within Japanese *on'yomi*. Once again, the idea of having not only two different vocabulary strata from which sinograph readings are drawn － *wago* 和語 and *kango* 漢語, analogous to Irwin (2000)'s English and ancient Greek － but also different layers within vocabulary strata － *go-on*, *kan-on* and *tō-on* etc. within *kango*, analogous to this paper's ancient Greek and Latin within 'classical' － is a concept to which Japanese students can readily relate and which we are more than pleased to hijack in order to ease their burden of vocabulary acquisition.

The content of this paper is as follows. A brief summary of Irwin (2000) will be given in §2, while in §3, the linguistics Corpus, which is the core of this paper, will be introduced. The Corpus will be tested using the 'Coefficient of Translation Transparency' in §4, with our conclusions presented in §5.

2.Overview of Irwin (2000)

The foundation on which the rationale of the vocabulary acquisition methodology introduced in Irwin (2000) is based is the fact that Japanese schoolchildren are required to learn not only the approximately 2,000 sinographs the Japanese Ministry of Education, Culture, Sports, Science and Technology deems necessary for compulsory school education, but also numerous different readings for each. This learning process involving the acquisition of multiple readings for individual orthographic signs is familiar to all Japanese students of English, but what Irwin (2000) does is to assign new readings to sinographs already learnt by students. English vocabulary, especially in technical fields, is frequently composed of borrowed roots, most especially from the high-prestige 'classical languages of learning', Latin and ancient Greek, and, in the case of non-anatomical medical vocabulary (with which Irwin (2000) concerns itself), primarily with the latter. Thus some 200 sinographs exhibiting a high frequency of occurrence within Japanese medical vocabulary were assigned an ancient Greek reading (a new *on'yomi*, since both ancient Greek and the Japanese *on'yomi*, the latter derived from, for the most part, Early Middle and Late Middle Chinese dialects, are non-native readings) and an English reading (a new *kun'yomi* 訓読み since both are native readings). For example, the sinograph 脂, whose Japanese *on'yomi* and *kun'yomi* are /si/ and /abura/ respectively, are assigned the new *on'yomi* (ancient Greek) and *kun'yomi* (modern English) of /lipo/ and /fat/ respectively. Instead, therefore, of Japanese students of medicine having to memorize literally tens of thousands of English technical terms, the acquisition of a mere 200 new readings (essentially only the ancient Greek *on'yomi* since the modern English *kun'yomi* should already be known) makes it possible to make an intelligent guess at the meaning of a medical technical term by parsing the lexeme's roots.

How intelligent a guess it is possible to make － in other words, how effective the sinographic output (how closely the real Japanese translation, composed of a series of sinographs) is － when the Greek roots of the English medical term are input into the Corpus presented in Irwin (2000), is an important question and one which the 'Coefficient of Translation Transparency' sought to quantify. For example, if a student inputs the English medical technical lexeme 'ostealgia' into the

Corpus in Irwin (2000: 30-35), the sinographic output is 骨痛 which corresponds exactly to the actual Japanese translation of the English lexeme. Clearly, regardless of how one were to quantify statistically the relationship between input and output, any 'score' given for 'ostealgia : 骨痛' would have to be 100%. Such perfect matches, while not infrequent, do not however form the majority of cases. Most cases are similar to the output generated from the English medical lexemes 'haemostasis', 'tricephalus' or 'pathosis', which give 血止 (reverse of the actual Japanese term 止血), 三頭 (real Japanese term 三頭体) and 疾病病態 (actual Japanese term 病的状態). Here, although the matches are not perfect, an intelligent student should be able to easily parse the output and ascertain the correct Japanese term in all three cases. It should be mentioned that there are also a few isolated cases where the sinographic output is so far from the English input that parsing or intelligent guessing are out of the question: 'hypersomia' outputs 上体 or 超体, both so far from the actual Japanese term 巨大疾 that any 'score' given would have to be 0%. How to statistically quantify or assign a score, if possible in accordance with intuition, to those terms above which are neither 100% perfect nor 100% imperfect was the aim behind the creation of the CTT. Since it is one of the aims of this paper to review the CTT while using a corpus of linguistics terminology for the input and output, a more thorough and wide-ranging discussion of the statistical techniques employed in calculating the CTT will be left to §4.

3.The Corpus

As mentioned already, because many of the roots that make up English linguistics vocabulary are made up from both ancient Greek and Latin roots, the Corpus constructed for this paper is not restricted to ancient Greek only, as in Irwin (2000). Within the context of our pedagogical method, the fact that this creates doublets (e.g. Corpus items [6] and [8]) where the same sinograph is accorded two separate entries in the Corpus with two identical *kun'yomi* (English) but two different *on'yomi* (one ancient Greek, one Latin), is not something that should unduly disturb Japanese students for reasons already outlined in §1. The nature of linguistics vocabulary has also entailed the creation of a substantially shorter Corpus than that of Irwin (2000: 30-34): due to fewer technical terms and a narrower range of classical roots from which these terms are composed, the linguistics Corpus presented here contains only 40 lexemes, as against the 200 presented in Irwin (2000). That is not to say a full index of English linguistics lexemes composed of classical roots are composed of only 40 roots — while many more are present, their extremely low occurrence does not ultimately warrant their inclusion.

Appendix A shows the Corpus of 40 classic roots along with their sinographs or sinograph compounds. As the authors are unaware of any published frequency list of classical roots used in English linguistics terminology, the selection of items contained in the Corpus is thus based on linguistics vocabulary appearing in linguistics textbooks (Trask (1996), Lyle (1998), Crowley (1998), Akamajian et al. (2001) *inter alia*) and dictionaries (Ishibashi (1973), Crystal (2003) *inter alia*), as well as on personal experience. The table in Appendix A is divided into six columns (working from the left) which show the following:

SINOGRAPH NUMBER. The reference number to which Corpus items are referred to in this paper.
SINOGRAPH (COMPOUND). Where possible, a single sinograph is preferred to a two-character compound, although this is not always possible for two reasons. Firstly, some English words (e.g. [39] *sign*) simply do not have a corresponding one-character translation. Secondly, a 2-character compound was deemed necessary in some cases for reasons of clarity or in order to avoid ambiguity. The two sinographs that make up [32] 形態, for example, individually both have general meanings[2] such as 'shape', 'figure', 'form' etc.; together, however, the compound means unambiguously *form*. In some instances (e.g. [13] *tongue* / *language*, [26] *science* / *theory*), the Greek root has two possible English translations and hence also two possible sinographs, whilst there are also cases where there is more than one English translation but only one possible sinograph (e.g. [4] *different* / *other*, [12] *upon* / *near* / *in addition*).
KUN'YOMI. The English meaning.
ON'YOMI (CLASSICAL ROOT). In quite a few cases Greek roots are evidenced by both prefixes and suffixes, both of which can also function (where forms exist) as infixes. Prefixes and suffixes are indicated by the standard use of a hyphen at either the beginning or the end of the cited form, whilst brackets indicate the connecting vowel used when a prefix (or infix) is compounded (this connecting vowel is frequently -/o/ due to the grammatical rules governing compound formation in ancient Greek). When the form following the prefix or infix begins with another vowel, the connecting vowel is generally elided. As regards pronunciation, no indication is given since students will, on the whole, be required to recognise forms and ascertain their Japanese meaning, rather than reproduce them. The reader may, however, refer to Irwin (2000: 23) for further guidance in this matter.
SOURCE. Classical roots derived from ancient Greek are indicated by 'G', from Latin by 'L'.
EXAMPLE LINGUISTICS TERM. Where possible, more common terms have been selected.

Sinographs, English terms or classical roots that require further elucidation or explanation are indicated by footnotes given in Appendix B.

4.Analysis

As already stated in §2 above, a 'Coefficient of Translation Transparency' (henceforth referred to as the CTT) was devised as a measurement of the accuracy of Greek root based English medical terms input into the Appendix A corpus *vis-à-vis* the resulting Japanese output. It should be noted, however, that since:

> ... the author is unaware of any published statistical method for quantifying the accuracy of (machine or human) translation between lexical items, both with meaning X, composed of foreign roots in language Y and [sinographs] in language Z, it has been necessary to devise a

[2]Here and following, I do not seek to imply that a given sinograph necessarily has 'meaning' in an unbound state: sinographs may only be said to have meaning at the morphemic level and the majority of Sino-Japanese lexemes are bimorphemic or longer.

> schema to do so... By its very nature, however, the CTT is heavily orientated towards Japanese and would not be applicable for statistical quantification between other languages.
>
> Irwin (2000: 24), square brackets mine

In other words, the CTT was perforce a creation *ex nihilo*, is highly restricted in its application, and, as it has been utilized only in Irwin (2000), requires retesting.

In this section, then, after first calculating the CTT of 20 randomly chosen Greek and Latin root based English linguistic lexemes and examining the method's efficacy in outputting the correct Japanese terms for the English input, we will then review the methods underlying the CTT calculation.

Using Urbaniak & Plous's (1997-2003) *Research Randomizer*, three-number arrays of random numbers were generated, the three numbers in each array corresponding respectively to a page number (range 1213-1228), column number (range 1-2) and word heading number (range 1-56) in the 'Comparison of Japanese-English Technical Terms' section of *Seibido's Dictionary of English Linguistics* (Ishibashi (1973)).[3] Where a given column contained fewer word headings than the generated random number, the final word heading in the column was selected. Since the majority of the entries are not composed of classical roots, the authors chose a slightly different method of lexeme selection to that used in Irwin (2000): in cases where the word heading number did not elicit a word composed of classical roots included in Appendix A, the nearest that did was selected. Where two words tied for nearest position, the entire array was rejected.

Table 1 below lists these randomly generated items in alphabetical order and is divided into six columns (numbered from the left below) which show the following:

(1) English Input. The randomly generated items with their constituent classical roots separated by hyphens. As can be seen, the vast majority of the English Input consists of two-root lexical items, there being only 2 three-root words, no single-root words, and no forms with four roots or more.

(2) Appendix A References. The Appendix A corpus sinograph numbers of the English Input classical roots (see (1) above) and corresponding Japanese output sinographs (see (3) below), again separated by hyphens.

(3) Japanese Output (JO). This shows the sinograph generated for each of the classical roots of the word in the English Input column using the Appendix A corpus. Here, the separate sinograph (compound) outputs are separated by commas and where two sinograph (compounds) are possible (e.g. [26] *学/論－(o)logy*), these are separated by a backslash.

[3] *Seibido's Dictionary of English Linguistics* is the only technical Japanese-English linguistics dictionary of which the authors are aware. The 16-page 'Comparison of Japanese-English Technical Terms' (Japanese title 日英用語対照表), appearing on pp. 1213-1228 of the dictionary, is effectively a Japanese-English index of the approximately 1,200 pages of entries that precede it. Being shorter in terms of pages while still containing approximately the same number of entries, it therefore lends itself better to random entry selection.

(4) Japanese Translation (JT). The correct Japanese translations of the terms in the English Input column (see (1) above), using Ishibashi (1973).

(5) JO/JT Breakdown. Each of the 2 or 3 sinograph (compounds) in the JO is assigned a percentage (see (i)-(vi) following), whose average equals the CTT (see (6) below).

(6) Coefficient of Translation Transparency (CTT). The average of each of the 2/3-sinograph (compounds) in the JO/JT Breakdown, in the form of a percentage, whereby a CTT of 100% equals a perfect translation and a CTT of 0% indicates a complete mistranslation (see further below).

English Input	Appendix A References	Japanese Output	Japanese Translation	JO/JT Breakdown (%)	CTT (%)
allo-morph	4-32	異, 形態	異形態	100, 100	**100**
allo-phone	4-35	異, 音	異音	100, 100	**100**
ant-onym	5-34	対, 名	反義語	90, 0	**45**
bi-labial	6-22	二, 唇	両唇音	(90, 100) x 0.95	**90**
dia-chronic	9-7	通, 時	通時的	(100, 100) x 0.95	**95**
di-logy	8-26	二, 言	復言	90, 100	**95**
gloss-eme	13-11	舌/語, 素	語素	100, 100	**100**
glotto-chrono-logy	13-7-26	舌/語, 時, 学/論	言語年代学	80, 80, 100	**87**
grapho-logy	15-26	記器, 学/論	文字素論	0, 100	**50**
homo-phone	17-35	同, 音	異形同音異義語	(100, 100) x 0.5 x 0.5 x 0.5	**13**
lex-eme	23-11	言, 素	語義	90, 0	**45**
logo-gram	25-14	語, 録	表語文字	60, 0	**30**
met-onymy	28-34	変, 名	換喩	90, 0	**45**
morph-eme	32-11	形態, 素	形態素	100, 100	**100**
morpho-logy	32-26	形態, 学/論	形態論	100, 100	**100**
morpho-phon-eme	32-35-11	形態, 音, 素	形態音素	100, 100, 100	**100**
phon-eme	35-11	音, 素	音素	100, 100	**100**
poly-phone	36-35	多, 音	多義	100, 0	**50**
semio-logy	39-26	記号, 学/論	記号論	100, 100	**100**
syn-chronic	40-7	共, 時	共時的	(100, 100) x 0.95	**95**

Table 1: Randomly Generated Greek Root Based English Linguistics Vocabulary Items and their Corresponding CTTs

In order to give an indication of the transparency or opacity of a JO compared to its 'real' JT, the formula used to calculate the CTT consisted of five separate quotients each designed to capture a different aspect of the JO～JT relationship. The values of each quotient were designed to reflect the effects of various alterations, but at the same time produce an end sum (the CTT) which would fall on a scale wherein 100% equals complete transparency, 0% equals complete opacity, and 50% equals a borderline case. At the outset, all JO sinograph (compounds) begin with 1 point and, after being multiplied by two or more of these quotients, the end result is multiplied by 100 to produce a percentage CTT. Of the five quotients introduced in Irwin (2000: 26-28), two, the Compound Reduction Quotient and the Misordering Quotient, do not arise in the JO～JT relationships in Table 1 above. The remaining three are here summarized briefly:

(i) Thematic Compounding Quotient: where a single sinograph in the JO becomes a sinograph compound in the JT, then the JO sinograph is multiplied by 0.8 if the extra sinograph forms a natural (thematic) compound. For example, the *glotto-* of *glottochronology* gives the JO [13] 語, but in the JT this is compounded to 言語. The 言, however, since it has a 'meaning' much the same as 語, forms a natural compound.

(ii) Athematic Compounding Quotient: where an extra sinograph is totally unrelated and alters significantly the nuance or meaning, then the JO sinograph is multiplied by only 0.6. For example, the *logo-* of *logogram* outputs simply [25] 語, but this is enlarged to 表語 in the JT, the sinograph 表, adding a whole new athematic component to the meaning.

(iii) Synonym Replacement Quotient: where a JO sinograph is replaced with one of essentially the same meaning in the JT, the JO sinograph is multiplied by 0.9. For example, the *ant-* of *antonym* elicits [5] 対, 'opposite', but this is replaced with 反, 'opposing', in the JT.

Three new quotients are needed, however, in order to account for new types of alternation not encountered in Irwin (2000), but apparent in examples in Table 1:

(iv) Redundant Suffix Quotient: where the JO and the JT are identical (or approximately identical in the case of *bilabial*) apart from the latter exhibiting a redundant suffix, the final CTT is multiplied by 0.95, reflecting the very high degree of transparency attached to such redundant suffixes. For example, *diachronic* and *synchronic* output 通時 and 共時 respectively, while their JTs are 通時的 and 共通的. Here, the suffix -的 is analogous to the suffix -'ic' on the English translations.

(v) Compound Synonym Replacement Quotient: identical to (iii) Synonym Replacement Quotient above, except that a single sinograph is replaced by a sinograph compound of essentially the same meaning. Here the JO sinograph is multiplied by 0.8, reflecting the slightly lower degree of transparency introduced by a compound. For example, the *-chrono-* of *glottochronology* elicits [7] 時, 'time', but this is replaced by the sinograph compound 年代 'era, generation'.

(vi) Redundancy Quotient: where the JO forms only part of the JT (in other words where the JT contains redundant sinograph (compounds) not appearing in the JO output), the final CTT is multiplied by 0.5 for each redundant sinograph (compound). The one example of this is *homophone* which outputs 同音 as against a JT of 異形同音異義語. Since the latter can be subdivided as 異形 - 同音 - 異義 - 語, the final CTT is multiplied by 0.5 three times.

Of the 20 randomly generated words in Table 1, it can be seen that 8 have a CTT of 100% (i.e. complete transparency) and a further 5 have a CTT of over 80%. Taking 50% as the benchmark between transparency and opacity of translation as mentioned above, we can see that 13/20 (65%) of the linguistics lexemes lie on the side of transparency, only 5/20 (25%) lie within the sphere of

opacity, whilst 2/20 (10%), having CTTs of 50%, straddle the border. As a whole, the CTT average is 77.0%. This compares with 70% transparency, 13% opacity, 17% borderline, and a CTT average of 72.2% for the 30 randomly generated medical lexemes in Irwin (2000).

5.Conclusions

The close correlation between the sample analysed in §4 and that in Irwin (2000) offers strong backing to the method employed for calculating the CTT, in that it would appear to give approximately similar results in two different lexical fields. Once again, however, we must stress that the method introduced in Irwin (2000) and further analysed here is not perfect. That said, as an alternative to rote-learning, it is without doubt more effective, especially for the astute student.

Buoyed by the positive results evinced above, the authors hope in the very near future to extend their research to other fields of academic vocabulary where classical roots are common, and make the results known to English-teaching academia in Japan.

References

Akamajian, Adrian, Richard Demers, Ann Farmer & Robert Harnish (2001). *Linguistics: An Introduction to Language and Communication*. Cambridge, Mass.: MIT Press.

Campbell, Lyle (1998). *Historical Linguistics — An Introduction*. Cambridge, Mass.: MIT Press.

Crowley, Terry (1998). *An Introduction to Historical Linguistics*. South Melbourne, Victoria: Oxford University Press.

Crystal, David (2003). *A Dictionary of Linguistics and Phonetics*. Oxford: Blackwell.

Hulstijn, J., Hollander, M. & Greidanus, T. (1996). Incidental vocabulary learning by advanced foreign language students: the influence of marginal glosses, dictionary use, and reoccurrence of unknown words. *The Modern Language Journal* 80.

Hunt, A. & Beglar, D (1998). Current research and practice in teaching vocabulary. *The Language Teacher* 22.1.

Irwin, Mark (2000). It shouldn't have to be trachelodynia — a new pedagogical approach to Greek root based English medical vocabulary. *JACET Bulletin*, 32, 19-36.

Ishibashi, K. (ed.) (1973). *Seibido's Dictionary of English Linguistics*. Tokyo: Seibidō.

Quinion, Michael (2002). *Ologies and Isms — Word Beginnings and Endings*. Oxford: Oxford University Press.

Schmitt, N. & Schmitt, D. (1995). Vocabulary notebooks: theoretical underpinnings and practical suggestions. *ELT Journal* 49.2.

Stapleton, P. & Glick, C. (1998). Faculty word bank on the internet. *The Language Teacher* 22.1.

Trask, R. L. (1996). *Historical Linguistics*. London: Arnold.

Urbaniak, G. & Plous, S. (1997-2003). *Research Randomizer*. Available online at http://www.randomizer.org. [accessed 5 August 2004].

Appendix A — The Sinograph-Greek/Latin Root Corpus

No	Sino-graph	*Kun'yomi*	*On'yomi*	Source	Example
1	歯	tooth	odont(o)-/-dontia/-dental	G	labiodental
2	無	without	a(n)-[1]	G	aphasia
3	聴	hearing	acoust(o)-	G	acoustic
4	異	different / other	all(o)-	G	allophone
5	対	opposite	ant(i)-	G	antonym
6	二	two	bi-	L	bilabial
7	時	time	-chronic	G	synchronic
8	二	two	di-	G	diphthong
9	通	through	dia-	G	dialect
10	難	difficult / abnormal	dys-	G	dysgraphia
11	素	linguistic unit	-eme	(G)[2]	phoneme
12	上	upon / near /in addition	epi-	G	epiphora
13	舌・語	tongue / language	gloss(o)-/glott(o)-/ -glossal/-glottic/-glossis	G	glottochronology
14	録	written record	-gram	G	phonogram
15	記器[3]	record, copy	graph(o)-/-graph(y)/-graphic(al)	G	grapheme
16	異	different / other	hetero-	G	heteronymy
17	同	same	home(o)-/hom(o)-	G	homophone
18	下	under / deficient	hyp(o)-	G	hypotaxis
19	超	above / excessive	hyper-	G	hyperbole
20	個	own, distinct	idi(o)-	G	idiolect
21	等	equal	iso-	G	isomorphic
22	唇	lip	labi(o)-/-labial	L	labiovelar
23	言	word	lex(i)-	L	lexis
24	舌	tongue	lingu(o)-/-lingual	L	linguistics
25	語	word / communication	log(o)/-logy/-logue[4]	G	logogram
26	学・論	science / theory	-(o)logy[4]	G	philology
27	大	large	macr(o)-	G	macrosegment
28	変	change / beyond	met(a)-	G	metathesis
29	側	measure	metr(o)-/-metry/-meter	G	monometer
30	小	small	micr(o)-	G	microlinguistics
31	一	single / one	mon(o)-	G	monosyllable
32	形態	form	morph(o)-/-morph(ia)	G	morphophonology
33	新	new	ne(o)-	G	neologism
34	名	name	-(o)nym(y)	G	homonym
35	音	sound	phon(o)-/-phone	G	phonology
36	多	many	poly-	G	polysemy
37	前	before	pro-	G	pronoun
38	先	first	prot(o)-	G	protolanguage
39	記号	sign	semi(o)-[5]	G	semiotics
40	共	together	syn-/sym-/syl-/sy-[6]	G	syncope

Appendix B — Notes For Teachers on Appendix A

1. *a-* before consonants, *an-* before vowels.

2. *-eme* is not actually a ancient Greek root, but has become an established suffix in linguistic science through analogy with the final syllable of *phoneme*, derived from the ancient Greek *phōnēma* 'sound, speech' (cf. Quinion (2002: 68) for further details).

3. The sinograph compound 記器 does not actually exist. Since the suffixes *-graph* or *-graphy* are variously translated in Japanese as 描写器, 描記器 and 記録器 etc., 記器 has been chosen simply as the best 'fit', i.e. the most likely to summon to a Japanese student's mind the likely real translation. The original Greek root means *write* and, as a prefix, *graph*(o)- refers to writing rather than recording or copying (e.g. *graphomotor*).

4. Both [25] and [26] are derived from the same ancient Greek root, *logos*, meaning 'word' or 'speech'. However, over time, the root also came to take on the meaning 'a subject of study or interest' and is now more productive used in the sense of [26] than of [25]. Note that the suffix *-logy* is thus ambiguous.

5. Not to be confused with the Latin root *semi-* 'half'.

6. *Sym-* before bilabials (/b/, /p/, /m/) and the labiodental /f/ (written *ph*), *syl-* before /l/, and *sy-* before /s/.