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Artículos

Neutralization of phonological oppositions and Anglophone non-functionalists*

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Resumen

It is a fact that 'classic' books on English phonetics concentrated on the domain of phonetics proper, mainly articulatory phonetics. From early 1960s on, books on English phonetics started adding some information on chosen subjects of phonology. The notion of neutralization is one of such subjects. Functionalists are generally unacquainted with what Anglophone non-functionalists have been saying on neutralization, and Anglophone non-functionalists in turn scarcely realize what may be wrong with what they have been saying on neutralization. In this paper I will look at what a few chosen writers on English phonetics and phonology write about 'neutralization'. These writers are Gimson, Cruttenden, Roach, O'Connor, Collins, Mees & Carley, Wells, Bloch & Trager, Hockett, Joos, Hall, Hubbell, and Berger.

Palabras clave: functionalists; phonological opposition; exclusive opposition; neutralizable opposition; neutralization; context of relevance; context of neutralization; phoneme; relevant feature; common base; archiphoneme; di-phonemic analysis; limited distribution of phonemes; overlapping of allophones; merger; field of dispersion; linguistic sentiment.

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1.0. From late 19th century to early 20th century a fair number of books were published on English pronunciation (and also on French and German pronunciation in some of those books). Such books included Sweet (1877), Trautmann (1884), Viëtor (1884), Sweet (1885), Viëtor (1885), Sweet (1890a), Sweet (1890b), Soames (1891), Grandgent (1892), Viëtor (1893a), Viëtor (1893b), Viëtor (1893c), Viëtor (1899), Soames (1899), Trautmann (1901), Viëtor (1902), Scholle & Smith (1903), Sweet (1908), Ripman (1908), Viëtor (1915), Palmer (1917), Ripman (1922), etc. The publication dates refer to those of the first editions or, as may be the case, those of the single editions. Of the works cited above, the books whose titles already bore 'English phonetics' were, to my knowledge, only two, i.e. Palmer (1917) and Ripman (1922).

1.1. From early 20th century onward, there appeared several books on English phonetics written by Daniel Jones (1881-1967) but also other phoneticians who were associated with Jones either directly (by being his disciples) or otherwise (his associates). These books were —in chronological order— Jones (1908), Jones (1909) and Jones (1918), these being the first editions, Ward (1929), MacCarthy (1944), Christophersen (1956), etc.

What all the authors of the above-mentioned books did was to describe and classify the speech sounds and sound-attributes of English in terms of articulatory phonetics based on their knowledge of general phonetics.

1.2. None of those books are concerned with 'phonology' of English. They do not address, for instance, 'phonological opposition' (between phonemes), though 'phoneme' *is* mentioned in most of those books. 'Neutraliztion' of phonological oppositions is certainly not addressed. This is not surprising since the concept of 'neutralization' and other phonological concepts associated therewith, emerged from only around 1926 onward within the Prague School. These concepts were progressively expounded in articles written by Trubetzkoy such as Trubetzkoy (1933, 1936a, 1936b), and were finally presented in great detail in his magnus opus, *Grundzüge der Phonologie*, i.e. Trubetzkoy (1939).

1.3. Historically speaking, then, the concept of 'neutralization' is closely associated with functionalists represented by the Prague School of Linguists, widely known as the Prague School, in particular Nikolai Sergeyevich Trubetzkoy (1890-1938) and some of his contemporaries. This concept is equally closely associated with other functionalists, past and present, represented by the Paris School associated with André Martinet (1908-1999).

2.0. For the purpose of discussions in the present paper, I have chosen to examine writings by a few selected Anglophone phoneticians from both sides of the Atlantic. These writers analyze in their own ways certain cases of neutralization that occur in English. None of these writers are directly associated with the Prague School or the Paris School. This is why these writers may be, for convenience' sake, characterized globally as non-functionalists in the present paper. The writings by the Anglophone authors which I have chosen to discuss in this paper are for the most part books on English phonetics and phonology. All these books are well known and enjoy wide readership.

2.1. Those cases of neutralization in English which Anglophone non-functionalists regularly address to analyze are fairly limited. They are as follows. For each case of neutralization, these writers initially note relevant phonetic facts that they eventually relate to each specific neutralization.

2.2. (1a) In pairs of words like ***p****et* vs ***b****et*, ***t****in* vs ***d****in*, ***k****ill* vs ***g****ill*, the two members of each pair are phonetically distinguished from each other, that is, [p] and [b], [t] and [d], and [k] and [g]. Of these consonants, [p], [t] and [k] are said to be voiceless while [b], [d] and [g] are said to be voiced. In another pair of words like *ca****p*** vs *ca****b***, [p] and [b] are likewise distinguished from each other; so are [t] and [d] in *ba****t*** vs *ba****d***, and [k] and [g] in *sa****ck*** vs *sa****g***. Thus /p/ and /b/, /t/

and /d/, and /k/ and /g/ are said to be in opposition to each other both word-initially and word-finally. These three oppositions may be shown as /p/ vs /b/, /t/ vs /d/, and /k/ vs /g/.

2.3. (1b) In a trio of words like ***sp**y*, ***st**ye*, ***sk**y*, in which all three words start with [s], there is no distinction between [p] and [b], [t] and [d], and [k] and [g] since only [p], [t] and [k] occur following [s]. In other words, [sp-, st-, sk-] occur but not [sb-, sd-, sg-]. It is necessary to determine the phonological status of [p], [t] and [k] when preceded by word-initial [s]. Are [p], [t] and [k] preceded by word-initial [s] (which is a allophone of /s/) allophones or /p/, /t/ and /k/, or allophones of /b/, /d/ and /g/? These three oppositions, /p/ vs /b/, /t/ vs /d/, and /k/ vs /g/, seem not valid when preceded by word-initial /s/.

2.4. (2a) A pair of words like *mice* and *nice* are distinguished from each other since both [m] and [n] occurring word-initially are distinguished from each other. In another pair of words like *dim* and *din*, both [m] and [n] occur word-finally and are distinguished from each other. In short, /m/ and /n/ are in opposition to each other, i.e. /m/ vs /n/, both word-initially and word-finally. Lastly, in yet another pair of words like *hammer* and *Hannah*, both [m] and [n] occur word-medially and are distinguished from each other. Consequently, the phonological opposition /m/ vs /n/ occurs word-initially, word-medially, and word-finally.

2.5. (2b) It may happen in allegro speech that when [m] and [n] are followed by [f] or [v], [m] and [n] change into [ɱ], either word-medially as in *co**m**fy* [-ɱf-], *si**n**ful* [-ɱf-], *circu**m**vent* [-ɱv-], *co**n**vict* [-ɱv-], or word-finally as in *triumph* [ɱf]. The question is: [ɱ] which occurs followed by [f] or [v] in all these cases attributable to /m/ or to /n/?

2.6. (2c) The change from [m] and [n] into [ɱ] when followed by [f] or [v] also occurs when [m] and [n] occur word-finally and [f] or [v] occurs initially in the following word. Thus, [ɱf] or [ɱv] occurs across the junction between two contiguous words. For example, *ho**me f**ront* [-ɱf-] (< [-m f-]), *te**nf**oot* [-ɱf-] (< [-n f-]) , *cal**mv**oice* [-ɱv-] (< [-m v-]), *su**nv**isor* [-ɱv-] (< [-n v-]). In all such cases, is [ɱ] is ascrible to /m/ or to /n/? This is the same question as the one asked in (2b).

We shall know *further below* how, based on phonetic facts as presented above, Anglophone non-functionalists will arrive at their conclusions. But first of all, I will show how I myself analyze the phonetic facts from a functional point of view.

3.0. What is one to understand by 'neutralization'? In my view, neutralization is a phonological phenomenon in which an exclusive opposition[1] between two or more phonemes is valid in contexts of relevance but is invalid in those of neutralization. Neutralization occurs consequent upon cancellation of the opposition between those relevant features that serve to distinguish from each other the member phonemes of the neutralizable exclusive opposition. As a result, there occurs the archiphoneme in the contexts of neutralization in place of the member phonemes of the neutralizable[2] exclusive opposition. The phonological content of the archiphoneme is equivalent to the common base (in terms of relevant features) of the phonemes of the neutralizable exclusive oppositeion. For my formulation of the mutually related concepts of neutralization and the archiphoneme, see *inter alia* Akamatsu (1988: 111ff, 199ff; 1992: 47-8, 81-5).

3.1. Here is my own analysis of neutralization in English of /p/ vs /b/, /t/ vs /d/ and /k/ vs /g/, when following /s/. I will also show further below my own analysis of neutralization in English of /m/-/n/. The *phonetic facts* that are relevant to these neutralizations have been given above (**2.2** - **2.6**).

[1] For the notion of 'exclusive opposition', see *inter alia*Akamatsu (2015: 101-2).

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3.2. The definition of all 24 consonant phonemes of English in terms of relevant features is revealed as follows through a commutation test in Akamatsu (2017: 20-1; 2019: 405): /p/ "voiceless labial non-nasal plosive"; /b/ "voiced labial non-nasal plosive"; /t/ "voiceless apical non-nasal plosive"; /d/ "voiced apical non-nasal plosive"; /k/ "voiceless dorsal non-nasal"; and /g/ "voiced dorsal non-nasal". The definition of /m/ and /n/ will be given later (**3.4.**)

3.3. Neutralization of (i) /p/ vs /b/, (ii) /t/ vs /d/, and (iii) /k/ vs /g/ in English.

(1a) /p/ ("voiceless labial non-nasal plosive") vs /b/ ("voiced labial non-nasal plosive") is an exclusive opposition, the common base of /p/ and /b/ being "labial non-nasal plosive".

(1b) In a context of neutralization, i.e. after /s/, the common base of /p/ and /b/ occurs as the archiphoneme /p-b/ "labial non-nasal plosive" consequent on cancellation of the opposition "voiceless" (of /p/) vs "voiced" (of /b/).

(1c) , The context 'after /s/' refers to three different contexts, namely, 'after word-initial /s/' as in ***sp****it*, 'after word-medial /s/' as in *ve****sp****er*, and 'after word-pre-final /s/' as in *ga****sp***.

(2a) /t/ ("voiceless apical non-nasal plosive") vs /d/ ("voiced apical non-nasal plosive") is an exclusive opposition, the common base of /t/ and /d/ being "apical non-nasal plosive".

(2b) In a context of neutralization, i.e. after /s/, the common base of /t/ and /d/ occurs as the archiphoneme /t-d/ "apical non-nasal plosive" consequent on cancellation of the opposition "voiceless" (of /t/) vs "voiced" (of /d/).

(2c) The context 'after /s/' refers to three different contexts, namely, 'after word-initial /s/' as in ***st****ab*, 'after word-medial /s/' as in *Ju****st****in*, and 'after word-pre-final /s/' as in *ru****st***'.

(3a) /k/ ("voiceless dorsal non-nasal") vs /g/ ("voiced dorsal non-nasal") is an exclusive opposition, the common base of /k/ and /g/ being "dorsal non-nasal". Note that neither /k/ nor /g/ can be characterized as "plosive" as English has neither what might be /x/ nor /ɣ/.)

(3b) In a context of neutralizaion, i.e. 'after /s/', the common base of /k/ amd /g/ occurs as the archiphoneme /k-g/ "dorsal non-nasal" consequent on cancellation of the opposition "voiceless" (of /k/) vs "voiced" (of /g/).

(3c) The context 'after /s/' refers to three different contexts, namely, 'after word-initial /s/' as in ***sk****im*, 'after word-medial /s/' as in *hu****sk****y*, and 'after word-pre-final /s/' as in *ru****st***'.

What has been said above in (1a) to (3c) is summarized as follows.

After word-initial /s/: ***sp****it* /s p-b ɪt/
Word-medially: *ve****sp****er* /ves p-b ə/
Word-finally: *ga****sp*** /gɑːs p-b/
After word-initial /s/ : ***st****ab* /s t-d æb/
Word-medially: *Ju****st****in* /dʒʌs t-d ɪn/
word-finally: *ru****st*** /rʌs t-d/
After word-initial /s/: ***sk****im* /s k-g ɪm/
Word-medially: *hu****sk****y* /hʌs k-g ɪ/
Word-finally: *ma****sk*** /mɑːs k-g/

3.4. Neutralization of /m/ vs /n/ before /f v/ in English. English has three consonant phonemes, /m/ ("labial nasal"), /n/ ("apical nasal") and /ŋ/ ("dorsal nasal"). In word-final position, /m/ vs /n/ vs /ŋ/ is valid as in e.g. *Kim* /kɪm/, *kin* /kɪn/ and *king* /kɪŋ/, but is neutralized, for instance, before word-final /p/ as in *lump* /lʌ m-n-ŋ p/ where /m-n-ŋ/ is the archiphoneme "nasal". But none of the Anglophone non-functionalists I am concerned with in this paper deals with neutralization of /m/ vs /n/ vs /ŋ/, so I will leave it undiscussed.

Aside from the fact that /m/ vs /n/ is neutralized before /f, v/, we need to have confirmed that /m/ vs /n/ is valid in certain other contexts, i.e. context of relevance. This is not specifically mentioned by those non-functionalists we have examined. /m/ vs /n/ is valid word-initially (***m**ap* vs ***n**ap*); after word-initial /s/ (*s**m**ear* vs *s**n**eer*); word-medially (*si**mm**er* vs *si**nn**er*); and word-finally (*ca**m**e* vs *ca**n**e*).

It is indispensable, in determining the phonological content of the archiphoneme /m-n/, to take /ŋ/ into account. I have shown above that three phonemes are characterized as /m/ "labial nasal", /n/ "apical nasal" and "dorsal nasal". The common base of /m/ and /n/ is "non-dorsal nasal". which makes /m/ vs /n/ an exclusive opposition, and this opposition may be neutralized before /f, v/ in allegro speech. The common base of /m/ and /n/, "non-dorsal nasal", is the phonological content of the archiphoneme /m-n/, which is opposed to /ŋ/ "dorsal nasal". This archiphoneme is, before /f, v/, realized by [ɱ] (labio-dental nasal). In sequences like *long feast* and *long vacation* where [-ŋf-] and [-ŋv-] occur, [ŋ] is a realization of /ŋ/.

In arriving correctly at the common base of /m/ "labial nasal" and /n/ "apical nasal", as we have done above, some caution is necessary. It is wrong to identify the common base as "nasal" which is also found in /ŋ/ "dorsal nasal". It is imperative to understand that "labial" is equivalent to "non-apical non-dorsal" while "apical" is equivalent to "non-labial non-dorsal",[3] hence the common base of "non-apical non-dorsal" and "non-labial non-dorsal" is equal to "non-dorsal". As seen above, [ɱ] occurring before [f, v] is the realization of the archiphoneme /m-n/ "non-dorsal nasal".

Listed below is a complete statement of the occurrence of the archiphoneme /m-n/ "non-dorsal nasal" occurring before /f, v/. Note that this archiphoneme is always realized by [ɱ], not either [n] or [ŋ].

> Word-medial /m-n/ before /f/: *co**mf**y* /kʌ m-n **f**ɪ/, *si**nf**ul* /sɪ m-n **f**l/;
> Word-medial /m-n/: before /v/: *circu**mv**ent* /sɜːkə m-n **v**ent/; *co**nv**ict* /kə m-n **v**ɪkt/
> Word-final /m-n/ before word-initial /f/: *ho**me** **f**ront* /hʊu m-n **f**rʌnt/ Word-final /m-n/ before word-initial /v/: *cal**mv**oice* /kɑː m-n **v**ɔɪs/ Word-final /m-n/ before word-initial /f/: *te**nf**eet* /te m-n **f**iːt/
> Word-final /m-n/ before word-initial /v/: *su**nv**isor* /sʌ m-n **v**aɪzə/

4.0. The publication of A. C. Gimson (1962) changed the picture sketched further above in books on English phonetics published from late 19th century to mid-20th century. It must be considered significant as it is, to the best of my knowledge, the first among those books on English pronunciation/phonetics in which the term 'neutralization' occurred and was illustrated with examples from English. Note in this connection that Trubetzkoy (1949) is included in the Bibliography in Gimson (1962: 283). Gimson (1962: 48) provides a section (**5.3.5**) entitled 'Neutralization of Phonemes'. I hasten to point out that the idea 'phonemes are

[2] The term 'neutralizable' in the expression 'neutralizable exclusive opposition' is necessary since, in a given language, an exclusive opposition may be a constant opposition which is non-neutralizable. For example, in French, /e/ vs /ɛ/ is a neutralizable opposition while /i/ vs /e/ is a constant (i.e. non-neutralizable) opposition.

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neutralized/neutralizable' is unacceptable from a functional point of view. What is neutralized or neutralizable is a phonological opposition.

4.1. Gimson (1962: **5.3.5**) begins with the following words: 'It sometimes happens that a sound may be assigned to either of two phonemes with equal validity.' This brief sentence is *the* conclusion of Gimson's interpretation of certain cases which he regards as those of neutralization. Following some remarks about the phonetic nature of (the allophones of) three plosive phonemes occurring after 'initial /s/'[4], Gimson draws his conclusion as follows.

> ... in the case of such words as *spin*, *steam*, *scum*,[5] we have [the allophones of] three plosive phonemes which lack the aspiration often characteristic of /p, t, k/, but which do not have the voice which sometimes accompanies /b, d, g/. Since /p, t, k/ are never opposed to /b, d, g/ following /s/ in this position, the words might, therefore, be transcribed phonemically either as /spin, sti:m, skʌm/ or as /sbin, sdi:m, sgʌm/ without ambiguity.

4.2. As I have indicated by adding '[the allophones of]' in the above quotation, it is obvious that when Gimson mentions 'three plosive phonemes ...' above, he is actually alluding to 'the allophones' of the three phonemes. Gimson himself does not indicate by phonetic notation what the allophones of /p, t, k/ preceded by /s/ are like. These allophones are, in my phonetic notation, [p$^{=}$, t$^{=}$, k$^{=}$] (in *spin, steam, scum*) for /p, t, k/ where the diacritic ' $^{=}$ ' represents non-aspiration. The allophones of /b, d, g/ would be, again in my phonetic notation, [b̥, d̥, g̊], wherein the diacritic '̥' signifies devoiced, i.e. [b] > [b̥], [d] > [d̥], [g] > [g̊]. The sounds [b̥, d̥, g̊] are all devoiced and unaspirated plosives whereas [p$^{=}$, t$^{=}$, k$^{=}$] are inherently voiceless and unaspirated. I conveniently employ a third term 'unvoiced' here to cover both 'devoiced' and 'voiceless'.

4.3. Gimson is quite right to acknowledge that the oppositions /p/ vs /b/, /t/ vs /d/, and /k/ vs /g/ are non-existent following initial /s/. On the other hand, he proposes a phonemic transcription in which both /p/ and /b/, both /t/ and /d/, and both /k/ and /g/, are shown to occur after initial /s/.

4.4. Gimson is neither the first nor the only phonetician to propose that in some cases a sound may be ascribed to two different phonemes. Jones (1962: §§ 315-6) provides a chapter on what he calls 'di-phonemic sounds' in which he discusses a number of cases where di-phonemic analysis may be proposed. However, the case of [p$^{=}$, t$^{=}$, k$^{=}$] occurring after initial /s/ in English is not among the examples considered in that chapter. Jones says (*ibid.* § 317) that di-phonemic analysis may be allowed 'when there are equally good reasons for assigning a sound to either of two'. Earlier on, however, Jones says (*ibid.* § 35): 'It is to be taken as axiomatic that one sound cannot belong to two phonemes of a language. There are possibly some rare exceptions to this; they are dealt with in Chapters XIX and XX [The overlapping of phonemes. Di-phonemic sounds]'. Jones later reiterates (*ibid.* § 333) '... the fundamental principle that a sound cannot belong to two phonemes ...'.

5.0. It will be generally agreed among non-functionalists that in English, /sp-, st-, sk-/ are acceptable phonemic sequences whereas /sb-, sd-, sg-/ are not. English has no words whose phonological form starts with /sb-, sd-, sg-/. For this reason, it could be argued that /spin, sti:m, skʌm/ on the one hand and /sbin, sdi:m, sgʌm/ on the other are not equally acceptable.

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[3] This understanding on my part is in accordance with the principle of 'the functional equivalence of the relevant feature' which I explained in Akamatsu (1988: 108-10).

[4] 'Initial /s/' is the term Gimson uses by which he means 'word-initial /s/'. I too will use here and there Gimson's term 'Initial /s/' for convenience sake in this paper, though actually, /s/ need not necessarily be in word-initial position as can be seen in *hasty* and *cast*.

According to Gimson, the allophones of the three plosive phonemes in *spin*, *steam* and *scum* are [pʰ, tʰ, kʰ] as already indicated in my phonetic notation. How about the allophones of the three plosive phonemes in /sb-, sd-, sg-/? This may, however, be an academic question since /sb-, sd-, sg-/ do not occur in English. For the sake of argument, we can surmise that /b, d, g/ following initial /s/ is pronounced [b̥, d̥, g̊] as already indicated in my phonetic notation. It is more than probable that [b, d, g] become devoiced when they follow initial /s/, i.e. [b̥, d̥, g̊], through progressive assimilation. Comparing [pʰ] with [b̥], [tʰ] with [d̥], and [kʰ] with [g̊] would reasonably suggest that the members of each pair are minimally different and that the difference is due to the difference between 'lenis' (in [b̥, d̥, g̊]) and 'fortis' (in [pʰ, tʰ, kʰ]) as phoneticians would point out. However, any such difference may be disregarded as being below auditory threshold for both speaker and listener. It can then be argued that the 'unvoiced unaspirated plosives' after /s/ could be ascribed to either /p/ or /b/, either /t/ or /d/, and either /k/ or /g/, as suggested by Gimson.

5.1. Gimson would consequently be able to argue that when preceded by initial /s/, both [pʰ, tʰ, kʰ] for /p, t, k/ and [b̥ʰ, d̥ʰ, g̊ʰ][6] for /b, d, g/ would occur, in which case it would be impossible to decisively assign [pʰ, tʰ, kʰ] and [b̥ʰ, d̥ʰ, g̊ʰ] to either one or the other phoneme (i.e. /p/ or /b/, /t/ or /d/, /k/ or /g/). In Gimson's mind, it would be arbitrary to assign [pʰ, tʰ, kʰ] and [b̥ʰ, d̥ʰ, g̊ʰ] to one of the phonemes to the exclusion of the other. Consequently, Gimson arrives at his conclusion that *spin, steam and scar* could 'equally be transcribed with /b, d, g/ as well as with /p, t, k/', thus, /spɪn/ = /sbɪn/, /stiːm/ = /sdiːm/, /skɑː/ = /sgɑː/. This would lead him to conclude that the pairs /sp/ and /sb/, /st/ and /sd/, and /sk/ and /sg/, are equally valid.

5.2. Based on the *phonetic facts*, [pʰ], [tʰ], [kʰ] in *spin, steam, scum*, Gimson proposes that *a sound may be assigned to either of two phonemes with equal validity*. What he does not propose is to ascribe [pʰ], [tʰ] and [kʰ] to *both* /p/ and /b/, *both* /t/ and /d/, and *both* /k/ and /g/, respectively.

5.3. Here we bring back part of the earlier quoted passage by Gimson.

> ... in the case of such words as *spin, steam, scum*, we have [the allophones of] three plosive phonemes which lack the aspiration often characteristic of /p, t, k/, but which do not have the voice which sometimes accompanies /b, d, g/.

Gimson understands that both [pʰ, tʰ, kʰ] and [b̥ʰ, d̥ʰ, g̊ʰ] lack both aspiration and voice. He therefore thinks that, in *spin, steam* and *scum*, /p/ or /b/, /t/ or /d/, and /k/ or /g/ occur with equal validity 'after initial /s/ and followed by vowels'. In other words, he accepts both /sp-/ and /sb-/, both /st-/ and /sd-/, and both /sk-/ and /sg-/.

6.0. Having seen Gimson's presentation of what he believes is 'neutralization' with the examples of three pairs of English words, *spin/sbin*, *steam/sdeam*, and *scum/sgum*, I proceed now to offer a few critical comments specifically from *a point of view of functional phonology*.

6.1. Having presented *pin/vin*, *team/deem* and *come/gum* in **5.35**, nowhere does Gimson explicitly present three phonological oppositions, i.e. /p/ vs /b/, /t/ vs /d/ and /k/ vs /g/, which are neutralizable oppositions occurring *in word-initial position* which is a context of *relevance*. (Gimson is not to be blamed for not resorting to the concept and term 'context of

[5] I have a minor suggestion. Instead of Gimson's three examples, *spin, steam, scum*, in which three different vowels follow *sp-*, *st-*, *sc-* in the examples, it would be neater to cite three examples like *spa*, *star*, *scar*, in which one and the same vowel /ɑː/ follows *sp-* (/spɑː/), *st-* (/stɑː/) and *sc-* (/skɑː/). Another triplet could be *spy/sty/sky*. Further triplets like *pie/tie/Kai* and *buy/die/guy* could be used in connection with /p/ vs /t/ vs /k/ and /b/ vs /d/ vs /g/, though Gimson does not deal with an opposition with *three or more* terms.

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relevance'.) However, in any account of neutralization it is desirable to refer (if possible, at the outset) to additional contexts of relevance, e.g. word-medial (*caper*/*caber*, *writer*/*rider*, *bicker*/*bigger*) and word-final (*cap*/*cab*, *hit*/*hid*, *league*/*leak*).

Gimson launches into describing the phonetic nature of (allophones of) /p, t, k/ as 'aspirated' and (those of) /b, d, g/ as 'unaspirated' in the context of relevance. In fact, Gimson does not talk about phonological oppositions as such.

6.2. Gimson is quite right to observe that '... /p, t, k/ are never opposed to /b, d, g/ 'following initial /s/ ...' (**5.35**). By this statement Gimson means that /p/ vs /b/, /t/ vs /d/ and /k/ vs /g/ are dissolved 'following initial /s/'. The dissolution of the three phonological oppositions occurs as a consequence of neutralization, the context of neutralization being 'following initial /s/'.

6.3. However, Gimson misses the following crucial point. It will generally be agreed that, logically speaking, if any opposition is dissolved for whatever reason, the terms of the opposition are automatically nullified. Likewise, if a phonological opposition is dissolved through neutralization in a context of neutralization, the member phonemes of that phonological opposition are automatically nullified in that context.

Consequently, if /p/ vs /b/, /t/ vs /d/ and /k/ vs /d/ in English are dissolved through neutralization after initial /s/, then /p/ and /b/ (of /p/ vs /b/), /t/ and /d/ (of /t/ vs /d/), and /k/ and /g/ (of /k/ vs /g/) are automatically nullified in that context.

It is pointless for Gimson to envisage the presence of either /p/ or /b/, that of either /t/ or /d/, and that of either /k/ or /g/, after initial /s/. He says on the one hand that /p/ vs /b/, /t/ vs /d/ and /k/ vs /d/ do not exist after initial /s/ which is, though only implicitly, according to him, a context of neutralization but, on the other hand, that either /p/ or /b/, either /t/ or /d/, and either /k/ or /g/ can occur with equal validity in the context of neutralization. This is unacceptable.

6.4. Instead of definitively accepting that neither of the member phonemes occurs in a context of neutralization, i.e. after initial /s/, Gimson attempts to determine what phonemic entity occurs in the context of neutralization. In doing this, he first directs his attention to the phonetic reality, i.e. [p̄, t̄, k̄] or [b̥̄, d̥̄, g̊̄], which occur in the context of neutralization and he arrives at the occurrence of /p/ or /b/ in /sp-/ or /sb-/, that of /t/ or /d/ in /st-/ or /sd-/, and that of /k/ or /g/ in /sk-/ or /sg-/. Gimson endeavours to identify the phonological entities that occur on the basis of [p̄, t̄, k̄] or [b̥̄, d̥̄, g̊̄]. His conclusion is that /p/ or /b/, /t/ or /d/, and /k/ or /g/, occur in the context of neutralization. It is fallacious to propose, as does Gimson, that in the context of neutralization, one or the other phoneme of a neutralizable opposition continues to be valid.

6.5. We cannot help bringing to mind here what Martinet (1968: 5) says concisely as follows.

> *Fonctionnellement*, la façon dont se réalise la neutralisation n'importe pas [Martinet's italics].

The terse advice given above by Martinet can equally be valid even if we substitute *la neutralisation* by *l'archiphonème*. We certainly do not expect Gimson to operate with the notion of 'archiphoneme' but, all the same, his analytic procedure in the present case is 'putting the cart before the horse'. In the final analysis, according to Gimson, neutralization of phonological oppositions (/p/ vs /b/, /t/ vs /d/, /k/ vs /g/) in a context of neutralization (after initial /s/) results in a non-neutralization of the same phonological oppositions as all of /p/, /b/, /t/, /d/, /k/ and /g/ are supposed to remain occurring after word-initial /s/, i.e. in the context of neutralization.

Gimson is exclusively preoccupied with phonetic entities occurring after initial /s/. These phonetic entities are, according to him, attributable to /p/ or /b/, /t/ or /d/, and /k/ or /g/ with equal validity even in the context of neutralization. However, these phonetic entities should actually be considered, from a functional point of view, as realizations of three archiphonemes, /p-b/, /t-d/ and /k-g/. In Gimson's hands, however, they cannot possibly be these archiphonemes at all. The reason is obvious. The phoneme, as operated with by Gimson, is not *a sum of relevant features* (this is of paramount importance), so that it is impossible to conceive of an archiphoneme as a consequence.

6.6. It is necessary to pause here to see how Gimson defines the phoneme. Gimson (1962: 44) writes:

> A phoneme may, therefore, be thought of as the smallest contrastive linguistic unit which may bring about a change of meaning.

It is obvious that Gimson's concept of 'phoneme' is incompatible with the functionalist concept of 'phoneme' which implies that the phoneme is a sum of relevant features. It is true that Gimson (*ibid.*: 46) provides a section entitled 'Relevant Features of Phonemes', but this is a different concept from the functionalist one. Relevant features as meant by Gimson are *phonetic* features, not phonological features which should fulfil a distinctive function. He says that, for instance, /p/ is characterized as fortis and voiceless compared with /b/ which is lenis and voiced, bilabial compared with /t/ or /k/, oral compared with /m/ of /n/, and a stop or plosive compared with /l/ or /r/ or /f/. His words 'compared with' are important for it simply means *phonetically* different, not *distinctively* different. Gimson goes on to say (*ibid.*: 46):

> The /p/ phoneme may, therefore, be identified positively by stating the combination of features, which are significant within the English system: fortis, voiceless, bilabial, oral stop.

Gimson refers to fortis, voiceless, bilabial, oral stop as 'positive information of a phonetic type'. On the other hand, he refers to '/p/' as being 'not /t/ or /k/ or /s/, etc.' as a negative information. His term 'negative information' is liable to be misunderstood. Gimson's /p/ being 'not /t/ or /k/ or /s/, etc.' is different from e.g. '/p/ distinct from /f/, /t/, /k/, /m/, etc.' where 'distinct' means 'distinctively different'.

6.7. Gimson never mentions how the pairs /p/ and /b/, /t/ and /d/, and /k/ and /g/, are distinguished from each other in contexts of relevance. To characterize /p/, /t/ and /k/ as 'voiceless' and /b/, /d/ and /g/ as 'voiced' as many might do is not what Gimson chooses to. Here below is what he writes (*ibid.*: 48).

> The main contrastive feature between the pairs *pin/bin*, *team/deem*, *come/gum* resides in the presence of aspiration in /p, t, k/ and its absence in /b, d, g/, presence or absence of voice being usually irrelevant in this initial, accented position ...

However, in his references to /p, b/, /t, d/, /k, g/, /f, v/, /s, z/, etc. Gimson (*op cit.*: **8.06**, **8.07**, **8.08**, **8.15**, **8.17**, etc.) describes them in terms of 'fortis' vs 'lenis'.[7]

6.8. Gimson does not mention how /p/ and /b/, /t/ and /d/, and /g/ and /k/, are distinguished from each other after word-initial /s/, i.e. in a context of neutralization where, strangely, according to him, both /p/ and /b/, both /t/ and /d/, and both /k/ and /g/, are said to occur.

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[6] I am aware that the diacritic mark ' ˭ ' is superfluous here as [b, d, g] are supposed to be inherently unaspirated. My use of this diacritical mark in these cases is merely meant to be overprecise.

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6.9. What seems to be the upshot of Gimson's analysis of what he considers as neutralization of /p/ vs /b/, /t/ vs /d/ and /k/ vs /g/ after word-initial /s/ with the examples *spin*, *steam* and *scum* coupled with *pin/bin*, *team/deem* and *come/gum* may be expressed as follows.

/s p|b t|d k|g/

where /p|b/ is to be understood 'either /p/ (to the exclusion of /b/) or /b/ (to the exclusion of /p/)'. Likewise with regard to /t|d/ and /k|g/. /s p|b/ is a conflation of /sp/ and /sb/, /s t|d/ is a conflation of /st/ and /sd/, and /s k|g/ is a conflation of /sk/ and /sg/. According to Gimson's phonemic analysis, /p/ and /b/, /t/ and /d/, and /k/ and /g/ are in what post-Bloomfieldians called 'contrastive distribution' but with an anomaly that this distribution is not a 'distinctive distribution', as /spin/ and /sbin/ relate to one and the same word *spin*. At any rate, there takes place neutralization of /p/ vs /b/ because, curiously, both /p/ and /b/ are supposed to occur in what is said to be a context of neutralization. The same can be said of /stiːm/ and /sdiːm/, and /skʌm/ and /sgʌm/.

6.10. Gimson happens to mention 'after initial /s/' as a context (of neutralization) in which what he thinks neutralization of /p/ vs /b/, of /t/ vs /d/, and of /k/ vs /g/, takes place. Two other contexts (of neutralization) should be added. One is 'word-final' and the other is 'word-medial'. Examples of the first context are e.g. *gasp, rust, tusk*, and those of the second context are e.g. *aspect*, *custom*, *basket*.

6.11. It will have become clear that Gimson's phonemic analysis we have seen has nothing to do with neutralization, specifically neutralization of a phonological opposition (Gimson will say 'phonemic contrast'.). Gimson's inappropriate term 'neutralization of phonemes' as the title of the section **5.3.5** in Gimson (1962: 48; 1970: 48; 1980: 53; 1989: 50) is subsequently replaced by Cruttenden by a correct term 'neutralization' in Gimson (1994: 46; 2001: 46; 2008: 45; 2014: 47). Gimson's term 'neutralization of phonemes' corresponds in no way to what I showed above, that is, 'neutralization of phonological oppositions'.

6.12. Gimson discusses cases where what he calls 'neutralization' concerns two phonemes, /p/ and /b/, /t/ and /d/, and /k/ and /g/. But, as is well known, neutralization may also affect phonological oppositions between *more than two* phonemes (the type of opposition I call 'multiple opposition'), for example, /m/ vs /n/ vs /ŋ/ in English. (I call 'simple opposition' an opposition between *two* phonemes.) Gimson's approach to what he calls 'neutralization' cannot cope with such cases.

7.0. Gimson (1962) introduces in the following manner a novel and bizarre way of employing the term 'neutralization'. Section 11.02 which runs on pp. 263-5 is entitled 'Neutralization of Weak Forms'. According to Gimson, this type of neutralization occurs in what he calls (the pronunciations of) *Unaccented words*. Such words are those that have strong forms (accented) and weak forms (unaccented). He writes: '... words which are phonetically and phonemically separate when said in isolation may be neutralized under weak accent.'

7.1. One of his examples is what he indicates as /ə/ which is the unaccented form of *are*, *a*, *her*, *or* and *of*. As I understand, what Gimson means is that, for example, all of /ɑː/ (*are*),/eɪ/ (*a*), /hɜː/ (*her*), /ɔː/ (*or*) and /ɔv/ (*of*) when accented, have unaccented forms /ə/ which is the neutralized form. Gimson seems to say that neutralization occurs between different strong forms (phonetic/phonemic) as they lose their distinction by changing into an identical (phonetic/phonemic) weak form. Another example he gives is as follows. In *two books are mine* and *two books of mine*, the distinction between *are* (/ɑː/) and *of* (/ɔv/) is lost,

i.e. neutralized, as both *are* and *of* are identically changed into (/ə/), the unaccented weak forms of the two words.[8] If my understanding is right, Gimson's title 'Neutralization of the distinction [opposition?]' concerns Strong Forms (always accented) and Weak Forms (always unaccented). Thus, 'being accented' is the context of relevance and 'being unaccented' is the context of neutralization.

7.2. Rich examples of such cases that Gimson shows are interesting as such, particularly in teaching weak forms of these words to foreign learners of English. What I query concerns the necessity or otherwise of employing the term 'neutralization' in this novel (even new-fangled) manner, which deviates from the 'normal, well-known' sense in which the notion and term of 'neutralization' is put to use in the literature. Would such an innocuous term as 'non-distinction' do for all these examples adduced by Gimson?

'Neutralization of Weak Forms' was deleted by Alan Cruttenden, the reviser in Gimson (1994, 2001, 2008, 2014).

8.0. Gimson (1962: 48) turns to another case of neutralization, i.e. neutralization of /m/ vs /n/ before /f/ or /v/ in English. He writes as follows.

> Another case concerns the allophones of /m/ and /n/ before /f/ or /v/, in words like *symphony* and *infant*. The nasal consonant in each case is likely to be [ɱ] in rapid speech ... anticipating ... [f]. Here again, /m/ and /n/ are not opposed, so that the sound [ɱ] could be allocated to either the /m/ or the /n/ phoneme.

Gimson does not present /m/ and /n/ as two phonemes of an *opposition*, i.e. /m/ vs /n/. He later says that 'Here ... /m/ and /n/ are not opposed', implying that /m/ and /n/ *are opposed* to each other *elsewhere* [i.e. in the context of relevance; as in e.g. *moat* vs *note*, *same* vs *sane*]. He does not say *in what way* /m/ and /n/ are opposed to each other. He will probably say 'thanks to 'bilabial' of /m/ and 'apical' of /n/' but perhaps not 'because of the *opposition* between 'bilabial' and 'apical'.

In Gimson's account of supposed neutralization of /m/ vs /n/, what he does is to ascribe [ɱ] to either /m/ or /n/ but has nothing to do with neutralization of /m/ vs /n/. Neither opposition nor neutralization is involved in his account. [ɱ] is said to occur before /f, v/ but nothing is said that /m/ vs /n/ is actually neutralized before /f, v/.

What Gimson does next is to consider the occurrence —(overlapping occurrence)— of [ɱ] as an allophone of /m/ as well as of /n/, and this overlapping justifies him to conclude that there is no opposition between /m/ and /n/ before /f, v/ where both /m/ and /n/ have the identical allophone [ɱ]. Here Gimson suggests the attribution of [ɱ] to either /m/ or /n/, though short of saying that either attribution is equally valid.

8.1. Gimson (1962: 48-9) specifies the phenomenon described above as occurring in allegro speech. He says that the occurrence of [ɱ] before /f/ or /v/ would not happen in lento speech, in which case /m/ vs /n/ is likely to be preserved with [m] as the allophone of/ m/ and [n] as that of /n/.

Later on, Gimson (*ibid.*: **8.22**) writes:

[7] Here are some relevant remarks about the use by phoneticians of 'fortis' and 'lenis' in articulations of consonants. Ashby (2011: 120-1; 123): '... fortis and lenis are convenient (and widely used) terms. ... Labels that avoid mentioning voice overtly are therefore useful — fortis and lenis are two such terms ... the terms voiceless and voiced are not always the most appropriate way to describe these particular sounds. Accordingly, phoneticians often refer to them by the names fortis and lenis instead.'

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> The articulation of /n/ is particularly liable to be influenced by that of the following consonant, e.g. when by a labio-dental sound, e.g. when followed by a labio-dental sound /f,v/[9] as in *infant, invoice, on fire, in vain,* /n/ may be realized as [ɱ] –– thus overlapping with realizations[10] of the /m/ phoneme[11] ...

The word 'overlapping' is another way of describing the occurrence of [ɱ], consequently the overlapping of /m/ and /n/ before /f, v/. Schematically,

/m/ before /f, v/
/n/ before /f, v/ [ɱ] before /f, v/
[ɱ] before /f, v/

If, as Gimson says, /m/ and /n/ overlap before /f, v/, there is certainly no neutralization of /m/ vs /n/ in that context.

8.2. Nowhere in sections **5.35** and **8.22** does Gimson (1962) make any clear statement that there is neutralization of /m/ vs /n/ before /f/ or /v/. What he does say (**5.35**) is that /m/ and /n/ are not opposed to each other; that [ɱ] could be ascribed to either /m/ or /n/; and that there is 'overlapping between allophones of /m/ and those of /n/. It seems possible to understand that in Gimson's view both /m/ and /n/ occur —not together but either one or the other— before /f, v/. But is this *neutralization* of /m/ vs /n/? The answer must be in the negative.

8.3. Unlike in the case of *spin*, *stem* and *scum*, Gimson fails to mention contexts of relevance where /m/ vs /n/ is *valid*, for example, in word-initially (e.g. *map* vs *nap*), word-medially (e.g. *simmer* vs *sinner*), and word-finally (e.g. *sum* vs *son*). The validity of /m/ vs /n/ in the above-mentioned contexts of relevance concern both lento speech and allegro speech.

8.4. The whole section (1962: **5.35**) is repeated in Gimson (1970: **5.35**) but a footnote is added at the end of the first graph.[12] The first paragraph of the section (**5.35**) including the footnote reappears verbatim in Gimson (1980: **5.35**; 1989: **5.3.5.**)[13]

8.5. Gimson (1994, 2001, 2008, 2014) are revised versions of the whole of Gimson (1962, 1970, 1980, 1989) following Gimson's death ((1917)-1985). The reviser is Alan Cruttenden (1936-). The fact that Gimson (1994, 2001, 2008, 2014) are revised editions suggests that both Gimson's and Cruttenden's views on the concept of neutralization are basically alike. Their views will be the object of my critical discussions in what follows.

9.0. In Gimson (1994: **5.3.4**), Cruttenden begins his explanation about neutralization by quoting Gimson's words, though not exactly verbatim:

> It sometimes happens that a sound may be assigned to either of two phonemes [e.g. /p/ and /b/] with equal validity. ... The contrast [opposition] between English /p,t,k/ and /b,d,g/ is shown in word-initial

[8] Gimson in section**11.02** gives such examples as /ən/ (*and*, *an*), /n/ (*and*, *not*) and /d/ (*had*, *would*).

[9] Why not [f, v]?

[10] Gimson uses the term 'realization' here instead of 'allophone'. Gimson's concept of the phoneme is in reality like the one known from Jones's, i.e. a family of sounds. Jones (1957: § 190).

[11] Previously Gimson (**8.21**) says in connection with /m/ that [ɱ] rather than [m] occurs before /f, v/./m/ before /f, v/

[12] The whole of the footnote reads as follows. 'Experimental investigations suggest that perceptually and, to some extent, acoustically /p, t, k/ following /s/ have more in common with initial /b, d, g/ than with initial /p, t, k/ (see N. Davidsen-Nielsen, 'English Stops after initial /s/', *English Studies*, no. 4, August, 1969).

> position by pairs like *pin/bin*, *team/deem*, *come/gum*. However, following /s/ there is no such contrast [opposition]. Words beginning /sp-, st-, sk-/ are not contrasted [opposed] with words beginning /sb-, sd-, sg-/ ... In such circumstances we say that the contrast [opposition] between /p,t,k/ and /b,d,g/, the contrast [opposition] between voiceless and voiced is neutralized following /s/ in word-initial position.

The passage above reads as if Cruttenden believed that English words existed which are phonemically /sb-, sd-, sg-/ in current English. (Writing */sb-, sd-, sg-/ with an asterisk would obviate such a reading.) If so, there would be no problem involving neutralization [i.e. of /p/ vs /b/, /t/ vs /d/, /k/ vs /g/] since he would be implying that /sp-, st-, sk-/ are instances of limited distribution of /b/, /d/ and /g/ after initial /s/.

9.1. There thus seems to be a fundamental flaw on Cruttenden's part in misunderstanding the very concept of *neutralization of a phonological opposition*. This concerns the question of what happens to the member phonemes of a phonological opposition when neutralization does take place. The question to be posed is the following: In the present case, what happens to /p, b/ (of /p/ vs /b/), /t, d/ (of /t/ vs /d/), and /k, g/ (of /k/ vs /g/) when the three phonological oppositions are neutralized? It will undoubtedly be agreed that when /p/ vs /b/, /t/ vs /d/ and /k/ vs /g/ are neutralized, the member phonemes of the respective opposition, i.e. /p, b/, /t, d/ and /k, g/, do *not* occur in the position of neutralization.

9.2. There are moreover two further problems in Cruttenden's wording in the above quoted passage. Firstly, it is not clear whether he means 'the contrast [opposition]' between 'voiceless' and 'voiced' is neutralized or 'the contrast [opposition]' between voiced phonemes and voiceless phonemes is *neutralized* following /s/ in word-initial position. If the former is meant, it is not correct because 'the contrast [opposition]' between 'voiceless' and 'voiced' is *not neutralized* but *cancelled* (annulled, nullified).

9.3. Secondly, it must be pointed out that the term *contrast* (and other associated forms), *employed in the way as in the above quotation*, is unacceptable in functional phonology. It is obvious that the concept and term to be correctly employed should be *opposition* (and other associated forms). The common Anglo-American recourse to the term 'contrast' need to be avoided in connection with the notion of neutralization. Here below are two passages which I have already quoted in some past articles of mine but bear re-quoting. The first passage to be quoted is as follows.

> On aperçoit que les unités linguistiques, qu'elles soient signes ou phonèmes, sont entre elles dans deux types distincts de rapport: on a, d'une part, les rapports dans l'énoncé qui sont dits syntagmatiques et sont directement observables; ... on a intérêt à réserver, pour désigner ces rapports, le terme de contrastes. On a, d'autre part, les rapports que l'on conçoit entre des unités qui peuvent figurer dans un même contexte et qui, au moins dans ce contexte, s'excluent mutuellement; ces rapports sont dits paradigmatiques et on les désigne comme des oppositions. Martinet (1960: I-20)

9.4. Here is another, somewhat longer, passage to be quoted.

> Dans la terminologie phonologique la plus répandue dans le cadre théorique de la linguistique structurelle européenne on nomme *contraste* le rapport syntagmatique que toute unité effectivement présente dans un texte établit avec d'autres unités présentes aussi dans ce même texte. ... Contrairement à la relation d'opposition, la relation de contraste est une relation *in praesentia* et, de ce fait, elle exige la co-apparition des termes entre lesquels elle s'établit dans la même séquence ... Si dans la tradition phonologique européenne ... la différenciation entre les concepts *d'opposition* et de *contraste* est bien connue en tant que relations paradigmatique et syntagmatique, respectivement, d'autres courants linguistiques se sont également préoccupés d'établir cette distinction, l'emploi général du terme *contraste* étant spécialement remarquable parmi les linguistes américains, ce qui implique la non différenciation ...

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> derrière les imprécisions terminologiques entre les deux concepts se cachent tôt ou tard des imprécisions conceptuelles ... Veiga (2004: 61-2)

This is a sensible and welcome exhortation to those who, whilst accepting syntagmatic-paradigmatic distinction, nevertheless employ the term 'contrast' for both 'opposition' and 'contrast' or synonymously for the notion 'opposition'.

9.5. Cruttenden writes as follows (these are Gimson's words) which indicates that Cruttenden fails to comprehend the concept of neutralization: 'Words like *spin*, *steam*, and *scar* could equally well be transcribed with /b,d,g/ as with /p,t,k/.'

In other words, Cruttenden means that, contrary to what I have said, /p, b/, /t, d/ and /k, g/ occur in spite of neutralization of /p/ vs /b/, /t/ vs /d/ and /k/ vs /g/. His words (as well as Gimson's) 'be transcribed' should be taken to suggest that eventually he accepts the occurrence of /p, b/, /t, d/ and /k, g/. This is unacceptable since, on the other hand, Cruttenden does recognize neutralization of /p/ vs /b/, /t/ vs /d/ and /k/ vs /g/ as we have seen above.

9.6. Cruttenden repeats a footnote which first appeared in Gimson (1970: 49) and was repeated in Gimson (1980: 53; 1989: 50). Cruttenden incorporated the said footnote into the text itself in Gimson (1980: 46; 2001: 46; 2008: 45; 2014: 47) without, however, mentioning the source of the footnote, i.e. Davidson-Nielsen (1969), but modifying the original phraseology. Davidson-Nielsen (1969) *is* acknowledged in the Bibliography in all of Gimson (1980, 2001, 2008, 2014). The footnote in question concerns the phonetic nature of the sounds that occur after word-initial /s/ in the context of neutralization (of /p/ vs /b/, /t/ vs /d/, /k/ vs /g/).

9.7. Gimson (1962, 1970, 1980, 1989) in **3.3** mention both the presence of aspiration and the absence of voice in /p, t, k/ when preceded by word-initial /s/, but this is changed by Cruttenden in Gimson (1994, 2001, 2008, 2014) in **5.3.4** who writes as follows, mentioning aspiration but not the absence of voice.

> ... the sounds which actually occur following /s/ [i.e. [sp$^{=}$-, st$^{=}$-, sk$^{=}$-]] can in some respects be considered closer to /b,d,g/, since the aspiration which generally accompanies /p,t,k/ in initial position is not present after /s/ ...

Cruttenden in Gimson (2008: 45) repeats almost verbatim the first paragraph we looked at in Gimson (1994: 46; 2001: 46), but brings in two phraseological changes at two points. In Gimson (1994: 46; 2001: 46), the first sentence of the first paragraph, as we have seen, runs as follows: 'It sometimes happens that a sound may be assigned to either of two phonemes with equal validity'. In Gimson (2008: 45), however, this sentence reads as follows: 'It sometimes happens that a sound may *appear to belong to* [my italics] either of two phonemes.' Thus, 'may be assigned to either of two phonemes with equal validity' is changed to 'may appear to belong to either of two phonemes.' In addition, another phraseological change at another point consists in removing the phrase 'with equal validity' at the end of the sentence. It seems that Cruttenden in Gimson (2008: 45) is somewhat cautious for some reason or other when writing 'may appear to belong to' instead of 'may be assigned to', and omitting the phrase 'with equal validity'. What is the implication that seems to signify Cruttenden's apparent understatement? However, there seems to be in the final analysis no change in Cruttenden's view in Gimson (2008: 45). He previously writes in Gimson (1994: 46; 2001: 46) that 'Words like *spin*, *steam* and *scar* could *equally well* [my italics] be transcribed with /b,d,g/ as with /p,t,k/', that is, that the sound in question can be assigned to one of the phonemes as

much as the other. It is my understanding that the phrase 'be transcribed with' presupposes 'be identified as'. The omission of the phrase 'with equal validity' in Gimson (2008: 45) in the first sentence does not mean that Cruttenden has abandoned the idea of 'with equal validity' since the removal of the phrase is compensated by the presence of the phrase 'could equally well be transcribed with /b,d,g/ as with /p,t,k/' also in Gimson (2008: 45).

9.8. The all-important factor that the sounds preceded by word-initial /s/ in *spin*, *steam* and *scum* are unaspirated leads Cruttenden to crucially consider the sounds in question as allophones of /p/ and /b/, those of /t/ and /d/, and those of /k/ and /g/, respectively. All this in spite of the fact that Cruttenden in Gimson (2008: 45) continues to maintain that '... the contrast [opposition] between /p,t,k/ and /b,d,g/, the contrast [opposition] between voiceless and voiced plosives, is neutralized following /s/ in word-initial position.' We note, incidentally, that Cruttenden in the sentence just quoted replaces '... between voiceless and voiced' which previously appeared in Gimson (1994: 46; 2001: 46) by '... between voiceless and voiced plosives'. This new phraseology is an improvement in that, in Gimson (2008: 45), 'the contrast [opposition] between /p,t,k/ and /b,d,g/' and 'the contrast [opposition] between voiceless and voiced plosives' are in apposition with each other. Cruttenden's new phraseology makes it irrelevant what I called 'two problems' in the paragraph following the passage 'In such circumstances ...'. The 'two problems', is now solved as irrelevant, that is, the two problems which arose in connection with Cruttenden's wording '... between voiceless and voiced'.

Cruttenden, in Gimson (2014: 47) repeats verbatim the passage we have seen in Gimson (2008: 45).

9.9. Neither Gimson nor Cruttenden provides phonemic transcriptions which reflect their analysis according to which [p̄, t̄, k̄]/[b̥̄, d̥̄, g̊̄] may be ascribed with equal validity to either /p/ or /b/, /t/ or /d/, or /k/ or /g/, respectively. In a phonemic transcription it is normal that each (phonemic) symbol corresponds to a single phoneme. Phonemic transcriptions /s p|b i n/, /s t|d i n/, and /s k|g in/ would be unacceptable since /p|b/, /t|d/, and /k|g/ are supposed to mean either /p/ or /b/, either /t/ or /d/, and either /k/ or /g/, but do not correspond to three single phonemes. Alternative phonemic transcriptions of the three examples words would be:

/spɪn/ or /sbɪn/ for *spin*; /stiːm/ or /sdiːm/ for *steam*; /skʌm/ or /sgʌm/ for *scum*.

However, /sbɪn/, /sdiːm/ and /sgʌm/ should be disallowed simply because /#sb-/, /#sd- / and /#sg-/ are non-occurrent in English. Therefore, only /spɪn/, /stiːm/ and /skʌm/ are acceptable. It is clearly non-sensical to say that *spin*, *steam* and *scum* have each two equally admissible phonemic form, i.e. /spɪn/ and /sbɪn/, /stiːm/ and /sdiːm/, and /skʌm/ and /sgʌm/, respectively. In the final analysis, then, there can be no neutralization of /p/ vs /b/, /t/ vs /d/ and /k/ vs /g/. Instead, there is limited distribution of /b/, /d/ and /g/ after word-initial /s/. As for the allophones of /p/, /t/ and /k/ occurring after word-initial /s/, only [p̄, t̄, k̄] are to be retained, without [b̥̄, d̥̄, g̊̄].

10.0. The second paragraph of section **5.35** in Gimson (1962: 48-9) which we have discussed (*supra***9.0**-**9.3**) reappears verbatim in Gimson (1970: 49; 1980: 50-1; 1989: 50-1). We read: 'Another case [of neutralization] concerns the allophones of /m/ and /n/ before /f/ or /v/, in words like *symphony* and *infant*.'

So Gimson continues to mention neutralization of /m/ vs /n/ before /f, v/. He refers to allegro speech and says that [ɱ] (labio-dental nasal) is the allophones of both /m/ and /n/ before /f, v/, that is, [-ɱf] occurs in both *symphony* and *infant*. He does not mention if, in

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allegro speech, [m͡ɱn] which is a double articulation, also occurs in addition to [ɱ] in e.g. *infant*.[14]

10.1. Gimson is of the view that, since the allophones of /m/ and /n/ before /f, v/ are identically [ɱ] in allegro speech, there is no opposition between /m/ and /n/. He does not say explicitly, however, that /m/ vs /n/ is consequently neutralized. In connection with [ɱ] in [-ɱf] and [-ɱv]. Gimson says that [ɱ] is assignable to either /m/ or /n/ but does *not* add his earlier phrase 'with equal validity'. He provides no phonemic transcription for *symphony* and *infant*, i.e. /sɪmfənɪ/ and /sɪnfənɪ/, and /ɪnfənt/ and /ɪmfənt/.

10.2. In the second paragraph in Gimson (1962: 48-9; 1970: 49; 1980: 53; 1989: 51), we read: '... in a slow pronunciation the [m] sound would tend to be used in *symphony* and the [n] sound in *infant*, a phonemic differentiation is usually made.'

This passage is repeated with a minor phraseological difference in Gimson (1994: 46) which reads: '... since in a slow pronunciation an [m] would tend to be used in *symphony* and an [n] in *infant*, the [ɱ] is usually regarded as an allophone of /m/ in the one case and of /n/ in the other.'

Note that Cruttenden's passage quoted just above deletes 'a phonemic differentiation is usually made' found early in Gimson (1989: 51) and newly adds 'the [ɱ] is usually regarded as an allophone of /m/ in the one case and of /n/ in the other.' in its place.

We thus understand that, in lento speech, there is no neutralization of /m/ vs /n/ before /f/ or /v/. This is mentioned in Gimson (1980: 53; 1989: 51; 1994: 46; 2001: 46; 2008: 45; 2014: 47), that is, excepting Gimson (1962: 49; 1970: 48-9) where he clearly says that '... a phonemic differentiation is usually made.'

10.3. Having surveyed Gimson (1962: 48) through Gimson (2014: 47), it would seem that, according to Gimson and Cruttenden, 'neutralization of phonemes' as Gimson puts it, or 'neutralization' as Cruttenden puts it, *it is the result of the phenomenon in which two phonemes share their allophones in the same phonemic context*.

10.4. According to both Gimson and Cruttenden, 'a sound may be assigned to, or may appear to belong to, either of two phonemes with equal validity'. For example, [p̄-]/[d̥-] which is a bilabial plosive without glottal vibration[15] will be assigned to either /p/ or /b/, or [ɱ] which is a labio-dental nasal is assigned to either /m/ or /n/. If [p̄]/[d̥] is assigned to /p/, it remains unassigned to /b/, but if it is assigned to /b/, it remains unassigned to /p/. It is imperative that [p̄-]/[d̥-] should be assigned to both /p/ and /b/ but only one by one, not simultaneously. Likewise, if [ɱ] is assigned to /m/, it remains unassigned to /n/, but if it is assigned to /n/, it remains unassigned to /m/. [ɱ] should be assigned to both /m/ and /n/ but only one by one, not both simultaneously. 'Either of two phonemes' requires pre-establishing 'both phonemes'. The analysis shown here may be characterized as 'di-phonemic', which means that a sound occurring in a specific context is considered to be the same allophones of two different phonemes.

10.5. I have borrowed the term 'di-phonemic' from Jones who used it in Jones (1962: §§ 315 ff) in Chapter XX entitled DI-PHONEMIC SOUNDS. He says in § 316: 'If a sound is assigned to two phonemes, it may be termed "di-phonemic".' He also says, in § 317, '... The cases of di-phonemic sounds fall under two heads: ... (2) when there are equally good reasons for assigning *a sound to either of two phonemes* [my italics].'

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[13] Gimson (1980) had been revised by Susan Ramsaran.

[14] This a fanciful query I raised in Akamatsu (1973).

The analysis proposed by Gimson and Cruttenden in connection with [p$^{=}$-]/[b̥-] which is assigned to either of /p/ and /b/, and [ɱ] which is assigned to either of /m/ and /n/, fits in with what Jones says in the passage quoted immediately above. As to what are 'equally good reasons', it has to be that allophones of /p/ and /b/ occurring after /s/ are identical and that allophones of /m/ and /n/ occurring before /f/ or /v/ are identical. It recalled, however, that the allophones of /p/ and /b/ are in fact assigned to *both* p/ *and* /b/ and likewise, the allophones of /m/ and /n/ are in fact assigned to *both* /m/ *and* /n/.

10.6. In connection with neutralization of /m/ vs /n/ before /f/ or /v/, here are a few interesting examples for consideration, namely, *Stamford* ['stæmpfəd] and *Stanford* ['stænfəd]. The optional epenthetic [p] between [m] and [f] in *Stamford* ['stæmpfəd] suggests that [m], not [ɱ], occurs, at least in lento speech, therefore no neutralization of /m/ vs /n/. When pronounced ['stæmfəd] without the optional epenthetic [p], there is again no neutralization of /m/ vs /n/ and, in addition, [-mf-] with bilabial [m] may well change into labiodental [ɱ] in [-ɱf-] in allegro speech. As for *Stanford* ['stænfəd], the sequence [-nf-] may be possible in lento speech but may well change into [-ɱf-]. Thus, the chances are that, in allegro speech, *Stamford* and *Stanford* may both be pronounced [-ɱf-] showing neutralization of /m/ vs /n/ before /f/.

10.7. It should not be forgotten that, although not mentioned either by Gimson or by Cruttenden, that /ŋ/, the third 'nasal' phoneme, is not involved in the neutralization of /m/ vs /n/ in English. One should be aware that, though [ɱ] occurs before /f/ or /v/, [ŋ] also occurs before /f/ or /v/. A few examples words like the following clearly show that /ŋ/ remains [ŋ] before /f/ or /v/, e.g. *Lingfield, wrongful, kingfisher*.

10.8. So, in the final analysis, what is it that Gimson and Cruttenden have achieved to show in discussing what they believe is neutralization of /p/ vs /b/, /t/ vs /d/ and /k/ vs /g/ after word-initial /s/ in English? In my view, they show that, phonotactically, word-initial /s/ is followed by either /p/ or /b/, either /t/ or /d/, or either /k/ or /g/.

11.0. Gimson (1962) is, so far as I know, the first book on English pronunciation to have incorporated a limited amount of English phonology in addition to English phonetics proper. Comparison between Gimson (1962) with classic books published earlier in the first half of the 20th century on English phonetics by e.g. Jones, Ward, MacCarthy and Christophersen easily reveals this fact, even if it is true that even classic books on English phonetics already deal at least with the concepts of 'phoneme' and 'allophone', if not that of 'phonological opposition' and certainly not that of 'neutralization'. Gimson brings in a minimum of phonology by the backdoor, as it were, and without entitling his book something like *English phonetics and phonology*. Since Gimson (1962) was published, there have appeared a number of books written by other English phoneticians. The majority of these books are entitled *English phonetics and phonology* in which a limited and selected amount of English phonology is presented.

11.1. No British phonetician before Gimson (1962) seems to be known to have dealt with the concept of neutralization and, for that matter, with neutralization of /p/ vs /b/, /t/ vs /d/ and /k/ vs/g/ when preceded by /s/, or that of /m/ vs /n/ before /f/ or /v/, in English. One may just wonder if Gimson's (1962: 48) account of the neutralization of /p/ vs /b/ (if not that of /m/ vs /n/) was inspired by Trubetzkoy's (1949: 82-3, 83) account of neutralization of /p/ vs /b/ after /s/. Trubetzkoy (1949) is listed in the 'Bibliography' in Gimson (1962) through Gimson (1989) and continues to be listed also in Gimson (1994) through Gimson (2014).[16] No other works by Trubetzkoy are listed anywhere in Gimson (1962) through Gimson (2014).

[15] Fortisness or lenisness is, in connection with [p$^{=}$-]/[b-], not mentioned by Gimson or Cruttenden.

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Bloch & Trager (1942: 81) which is included in Gimson (1962) through Gimson (1989) is dropped by Cruttenden the reviser in Gimson (1994) onward.

11.2. How come that both Gimson and Cruttenden misrepresent neutralization in English of /p/ vs /b/, /t/ vs /d/ and /k/ vs /g/ when preceded by word-initial /s/?

Gimson and Cruttenden do not seem to see that, logically, where any opposition (phonological or otherwise) between two (or more) terms is neutralized, those terms disappear. In the case of neutralization of a phonological opposition in a context of neutralization, the said phonological opposition is dissolved and concomitantly the member terms of the opposition disappear from that context. Therefore, for example, in English, when /p/ vs /b/ is neutralized when preceded by word-initial /s/, /p/ vs /b/ is dissolved and concomitantly neither /p/ nor /b/ occurs in this context. The corollary of this logical truth is that it is meaningless to attempt to attribute the phonetic entities [p$^{=}$-]/[b̥-] occurring in the context of neutralization to either /p/ or /b/, as neither phoneme occurs in this context.

12.0. We will next look at what P. Roach has to say.

Since the publication of Gimson (1962), neutralizations of /p/ vs /b/, /t/ vs /d/ and/k/ vs /g/ after word-initial /s/ have become the popular examples in the (mis)presentation of neutralization in English. Roach, however chooses to discuss what he regards as neutralization of /iː/-/ɪ/, instead of those of /p/ vs /b/, /t/ vs /d/ and /k/ vs /g/.

Roach (2009a: 100) refers to 'neutralization' as follows.

> We use the term neutralisation for cases where contrasts [oppositions] between phonemes which *exist* [italics added] in other places in the language *disappear* [italics added] in particular contexts.

Roach does mean correctly that the opposition is valid in the context of relevance while this opposition does not exist in the context of neutralization. It is clearly meant that, in the context of neutralization, the member phonemes of the neutralizable opposition are annulled because of the neutralization of the opposition. This is a merit on Roach's part. This understanding on Roach's part is not shared by Gimson and Cruttenden, among others. Another merit in Roach's reference to 'neutralization' above is his mention of 'phonemes' rather than 'two phonemes' which many including Gimson and Cruttenden chhoose to mention. The member phonemes of neutralizable oppositions may in fact be *two or more*.

12.1. Roach (1983: 66-7, 100-1; 1991: 77-2, 115-6; 2000: 84-5, 125-6; 2009a: 66-8, 100) cites, in referring to neutralization, the occurrence of /iː/ (note, not [iː]) and /ɪ/ (note, not [ɪ]) in unaccented syllable (which he calls weak syllable). Unfortunately Roach's consistent *non* use of square brackets for indicating phonetic units and of oblique bars for indicating phonological units renders his accounts of neutralization occasionally ambiguous and potentially incomprehensible. A clear distinction between phonetics and phonology is vital for correct understanding of neutralization of phonological oppositions. For his account of neutralization Roach cites two English words whose phonological signifiers involves /iː/ and /ɪ/.

12.2. Roach's presentation of neutralization of /iː/ vs /ɪ/ in English begins with the following remarks in which he refers to the occurrence of /iː/ and /ɪ/ with the examples of *easy* and *busy*. Roach (2009a: 66) writes as follows.

> There are accents of English (e.g. Welsh accents) in which the second syllable sounds most like the iː [i.e. [iː]] in the first syllable of 'easy', and others (e.g. Yorkshire accents) in which it sounds more like the ɪ [i.e. [ɪ]] in the first syllable of 'busy'.

This information concerns the occurrence of /iː/ and /ɪ/ in two region-specific types of English. This information is likely to be useful to many British residents but not so to non-Anglophone foreign learners of English outside the UK. Roach goes on to specify what he calls 'present-day BBC pronunciation' in connection with neutralization of /iː/ vs /ɪ/.

12.3. Any proper presentation of neutralization of a given phonological opposition must start with an indication of contexts of relevance where the neutralizable opposition is valid.

Roach (2009b: 66) writes:

> In strong syllables it is comparatively easy to distinguish iː from ɪ or uː from ʊ ... it is easy enough to decide which vowel one hears in 'beat' or 'bit' ...

The passage just quoted shows that Roach considers 'accented syllable' as the context of relevance of /iː/ vs /ɪ/ or that of /uː/ vs /uː/ and 'unaccented syllable' as the context of neutralization. Therefore, in e.g. *beat* /ˈ(b)iː(t)/ vs *bit* /ˈ(b)ɪ(t)/, /iː/ vs /ɪ/ is valid, and in e.g. in *suit* /ˈ(s)uː(t)/ vs *soot* /ˈ(s)ʊ(t)/, /uː/-/ʊ/ are valid.[17] Some other examples can be *keel* vs *kill*, *meal* vs *mill*, *reel* vs *rill*, *seat* vs *sit*, *team* vs *Tim*, etc.; and *pool* vs *pull*, *fool* vs *full*, *Luke* vs *look*, *soot* vs *suit*, etc.

12.4. Roach (2009a: 67) writes:

> ... there is really no possibility in these contexts [in weak syllables] of a phonemic contrast [opposition] between iː [/iː/] and ɪ [/ɪ/] or between uː [/uː/] and ʊ [/ʊ/]. Effectively, then, the two distinctions, which undoubtedly exist within strong syllables [accented syllables] are **neutralised** [Roach's boldface] in weak syllables [unaccented syllables]... The possibilities, using our phoneme symbols, are the following:

and provides the following table (let it be called Table A) which I present exactly as Roach does and in which he shows neutralization of /iː/ vs /ɪ/. Roach says that the following table is presented by 'using our [Roach's] phoneme symbols', by which I understand that he presents 'phonemic transcriptions' (not phonetic transcriptions) for the two examples, *easy* and *busy*, even though Roach himself does not employ diagonal bars (/.../).

	'easy'	'busy'
i)	iːziː	bɪziː
ii)	iːzɪ	bɪzɪ

Table A

There are no diagonal bars in Roach's table (i.e. Table A) and I will add them in Table B below in order to clarify that the transcriptions Roach provides in Table A are meant by him to be not phonetic but phonological ones. I will also add four accent marks in Table B to show that the first syllable in both *easy* and *busy* are accented and the second syllable in them are unaccented. Here is Table B which consists of Table A plus certain indications I will add.

[16] Instead of, or in addition to, Trubetzkoy (1949), Cruttenden in Gimson (1994) through Gimson (2014) should have listed Trubetzkoy (1969) in the Bibliography, all the more so as Trubetzkoy (1969) is an English translation of Trubetzkoy (1939). After all, between Trubetzkoy (1949) and Gimson (1994), as long as 45 years had already elapsed.

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	‘easy’	‘busy’
i)	/'iːziː/	/'bɪziː/
ii)	/'iːzɪ/	/'bɪzɪ/

Table B

What Table B means is that /'iːziː/ and /'iːzɪ/ (for *easy*) and /'bɪziː/ and /'bɪzɪ/ (for *busy*) represent two alternative pronunciations of the two words. However, this can easily be disproved by consulting Jones (1977, viz. *EPD* 14th ed.) which indicates ['iːzɪ] and ['bɪzɪ], that is, each word has a single pronunciation and the vowel in the second syllable is [ɪ] only. In other words, each of the two words does not have two alternative pronunciations, one with [iː] and the other with [ɪ], as Roach suggests, that is, as if /'iːziː/ and /'iːzɪ/ (for *easy*) and /'bɪziː/ and /'bɪzɪ/ (for *busy*) were comparable to e.g. *Aegean* which genuinely has two alternative pronunciations with [ɪ] and [iː] in the first, unaccented, syllable, i.e. [ɪ 'dʒiːən, iː-]. It is certain that Roach will, rightly, disagree. All this confirms that what Roach suggests in Tables A and B in no way represents, as he himself says, neutralization in weak syllables of /iː/ vs /ɪ/ is valid in strong syllables.

12.5. Roach himself rejects Table A (consequently Table B as well) for a reason unscientific. Roach (1983: 66; 1991: 77; 2000: 85; 2009a: 67) writes that ‘Few speakers with a BBC accent seem to feel satisfied with any of these transcriptions [in Tables A and B].’ Where is empirical evidence Roach can offer that may allow this statement to be made by him? Who are what Roach refers to as ‘few speakers with a BBC accent’? What is the numerical data (a few?) which he may have that can justify his conclusion? Were ‘the few speakers ...’ shown the phonemic transcriptions or did they listen to the phonetic rendition of the phonemic transcriptions in order to pass their judgment? In the final analysis, what Roach presents as indicating neutralization of /iː/ vs /ɪ/ in weak syllables which I copied in Tables A and B should be rejected.

12.6. Roach immediately proposes a solution which has been suggested by other phoneticians. Instead of Table A (and Table B), he proposes another ‘phonemic solution’ which is

iːzi	bɪzi

In a complete presentation, it will be Table C as follows.

easy	*busy*
/'iːzi/	/'bɪzi/

Table C

The three symbols involved in Table C are <iː>, <ɪ>, and <i>, of which the first two are phonemes but not the third. What is presented in Table C would be suggestive of neutralization of /iː/-/ɪ/ in weak syllables. This neutralization is indirectly indicated by

the use of the symbol <i>. Roach considers a transcription in which the symbol <i> (as well as <iː>, <ɪ>) appears as in /'iːzi/ and /'bɪzi/ fails to be 'a true traditional phonemic transcription', for the reason that <i> does not stand for a phoneme. Roach might perhaps call such a non-traditional phonemic transcription a *hybrid* transcription.

12.7. Roach says that non-traditional phonemic transcriptions like /'iːzi/ and /'bɪzi/ *are* nevertheless justifiable without serious objection. What is surprising is a reasoning for which he justifies such non-traditional phonemic transcriptions. Roach (1983: 66; 1991: 77; 2000: 85; 2009a: 67) says:

> ... the fact that native speakers seem to think that this transcription fits better with their feelings about the language is a good argument in its favour.

Roach seems to rely on what native speakers *feel* about the language in order to justify the validity of the non-traditional phonemic transcriptions in question. In other words, it is native speakers' 'sentiment linguistique' that Roach thinks decides the acceptability or otherwise of non-traditional phonemic transcriptions like /'iːzi/ and /'bɪzi/. One cannot help being reminded in this connection of a pertinent passage like the following attributable to Martinet (1949: 5).

> ... a recourse to the linguistic feelings of the natives should be the decisive test of the excellence of phonological methods and solutions? Certainly not.

and also Martinet (1965: 96) where we read:

> ... l'absence de valeur scientifique des crite res psychologiques, et sur les dangers auxquelss'exposent les chercheurs qui font confiance a la conscience linguistique.

12.8. Who are 'native speakers' whose feelings Roach is referring to? He explains that they are 'the native speakers of English I have taught in practical classes on transcription over many years.'

12.9. In fairness to Roach, the following lines he writes should be quoted from Roach (1983[18]; 1991: 83; 2000: 91; 2009a: 71).

> Since I mention native speakers' feelings in this connection, and since I am elsewhere [he does not say where] rather sceptical about appeals to native speakers' feelings, I had better explain that in this case my evidence comes from the native speakers of English I have taught in practical classes on transcription over many years. ...

The passage just quoted does clarify what exactly Roach means by 'native speakers of English'. and theur 'feeling'.

12.10. As for his native speakers' reaction to the symbol < ɪ >, Roach writes.

> ... their usual reaction to being told to use ɪ for the vowel at the end of 'easy'. 'busy' has been one of puzzlement and frustration; like them, I cannot equate this vowel with the vowel of 'bit'.

12.11. Precisely what <i> as in /'iːzi/ and /'bɪzi/ stands for, Roach neither says nor is interested in. All he says is that < i > is 'a weak vowel that shares the characteristics of both

[17] I have deliberately put accent marks in these phonemic transcriptions to clearly show that the example words *are* accented. Cf. Martinet (1960: III-31): 'Lorsque le mot est isolé, la mise en valeur accentuelle est toujours réalisée.'

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(i.e. iː and ɪ) or 'close front unrounded vowels', by which Roach seems to mean [iː] and [ɪ], not /iː/ and /ɪ/.

The symbol <i> (employed by Roach and some other English phoneticians) is neither <iː> (for [iː] as in *beat*) nor <ɪ> (for [ɪ] as in *bit*) and concomitantly refers to both [iː] and [ɪ] neither of which occurs in weak syllables as in *easy* and *busy*.

12.12. Roach makes no attempt to identify a unit, phonemic or otherwise, to which [iː] and [ɪ] in weak syllables can be attributed. Within his theoretical framework of phonology (phonemics to him), it would be inadmissible to envisage a *phonemic unit* to which [iː] and [ɪ] can be attributed. The symbol < i > is therefore essentially a *transcriptional device* which indicates that there is neutralization of /iː/ vs /ɪ/.

12.13. Another instance of neutralization of a phonological opposition that Roach addresses, if only scarcely, is that of /uː/ vs /ʊ/ in English. He only spends five lines beginning with 'Weak syllables [unaccented syllables] with close back rounded vowels [[ʊ]'s] are not so commonly found' and he launches straight into listing a number of English words in which [ʊ] is found in specific phonetic contexts. For example, [ʊ] is found in *you*, *to*, *into*, *do*, when not occurring immediately before consonants.

12.14. We immediately notice that Roach employs the symbol < u > (not to be confused with < ʊ >) which has been set up in parallel with the symbol < i >. He says that u 'is neither uː of 'shoe' nor the ʊ of 'book' but a weak vowel that shares the characteristics of both. We also notice that Roach's sole interest is in the occurrence of < u > which is associated with that of [ʊ].

12.15. What is noticeable above all is that nowhere does Roach directly address neutralization of /uː/ vs /ʊ/. He does not cite even a few pairs of words which exhibit the neutralizable opposition /uː/ vs /ʊ/ in English in contexts of relevance which he will say are accented syllables or strong syllables. Pairs of words susceptible of occurring in contexts of relevance may be *fool* vs *full*, *Luke* vs *look*, *pool* vs *pull*, *suit* vs *soot*, etc. which he should cite among others. Roach should then mention neutralization of /uː/ vs /ʊ/ in contexts of neutralization, which Roach says are unaccented syllables or weak syllables. This is where we understand he turns his attention to the occurrence of [ʊ] in a number of contexts of relevance in detail. He will refer to the symbol < u > in connection with [ʊ]. The symbol < u > is the very symbol which he employs in transcriptions.

12.16. One will have seen that Roach makes no statements about neutralization of /uː/ vs /ʊ/ in English. Incidentally, He says that weak syllables with close back rounded vowels [ʊ]s are not so commonly found, but this should not mean that neutralization of /uː/ vs /ʊ/ is any less important than that of /iː/ vs /ɪ/.

12.17. Neutralization of /p/ vs /b/, /t/ vs /d/ and /k/ vs /g/, following word-initial /s/, is summarily treated by Roach (2009a: 101), unlike most other non-functionalists, as what he calls 'clusters of s with plosives'. He says that 'Words like 'spill', 'still', 'skill' are usually represented with the phonemes p, t, k following the s.'

On the other hand, Roach considers that it is reasonable to transcribe *spill, still* and *skill* as either /sp-, st-, sk-/ or /sb-, sd-, sg-/ for phonetic reasons, i.e. /b, d, g/ are unaspirated while /p, t, k/ are also unaspirated when following word-initial /s/. He finally chooses not to transcribe sb-, sd-, sg-, saying 'perhaps because of the spelling', a feeble reason.

12.18. Clearly, the symbols <i> and <u> which are said to be associated with neutralization of /iː/ vs /ɪ/ and that of /uː/ vs /ʊ/ represent, in fact, phenomena which are phonetic rather than phonological. These symbols find their principal use as two transcriptional devices which indicate the occurrences in weak syllables of an ensemble of close front unrounded vowels ranging from [iː] to [ɪ], and [uː] to [ʊ], respectively.[19]

That the symbols <i> and <u> find their use in transcriptions, in phonetic transcriptions in particular, can be seen by the fact that the two symbols in question are widely used in a few well-known English pronouncing dictionaries such as Windsor Lewis (1972),[20] Wells (1990, 2000, 2008), Jones (1997, 2003, 2006, 2011) and Upton (2001-2003).

12.19. In Jones (1997: 2.9; 2003: 2.9; 2006: 2.9; 2011: 3.11), edited by Roach *et al.*, in the section 'Use of /i/ and /u/' or 'Use of the symbols i and u', Roach provides extensive information about the symbols < i > and < u > with additional reference to GA (General American) as well as BBC (BBC pronunciation).

12.20. It should be noted that, in the above-mentioned pronouncing dictionaries, < i > and < u > are the only symbols associated with neutralizations (that of /iː/ vs /ɪ/, and that of /uː/ vs /ʊ/). No attempts are made to create other symbols associated with other neutralizations in English, for instance, those of /p/ vs /b/, /t/ vs /d/, /k/ vs /g/ and /m/ vs /n/ which have been mentioned by Gimson, Cruttenden, and Roach (though this last does not mention neutralization of /m/ vs /n/). For example, *spin*, *stem*, *scum*, *symphony* and *infant* are transcribed /spɪn, stem, skʌm, ˈsɪmᵖfənl̩i, ˈɪnᵗfənt/ in Wells (2008). This is undoubtedly because of practical impossibility of creating single symbols in such respective cases. It is interesting all the same that only neutralizations of /iː/ vs /ɪ/ and of /uː/ vs /ʊ/ have attracted English phoneticians' notable interest in recent past.

12.21. Close to the publication of Roach (1991), there appeared Roach (1992). In it, there is a short mention of 'neutralization' (p. 74). Roach confuses phonetic entities and phonological entities. He writes,

> ... two sounds [sounds?] that are in opposition to each other (e.g. /t/ and /d/ in English) are in this relationship in all contexts [all?] throughout the language ... however ... there are some contexts where the opposition no longer [no longer?] functions ... in a word like *still* /stɪl/, the /t/ is in a position (following /s/ and preceding a vowel) where voiced (lenis) plosives [/d/ and some others?] do not occur. There is no possibility in English of the existence of a pair of words such as /stɪl/ and */sdɪl/, so in this context the opposition between /t/ and /d/ is 'neutralized'. One consequence of this is that one could equally well claim that the plosive in this word is a /d/, not a /t/.

It seems that, to Roach, neutralization of an opposition between two phonemes in the context of neutralization results in the occurrence of either phoneme to the exclusion of the other. In the passage quoted above, neutralization of /t/ vs /d/ following /s/ in English consists in the occurrence in that context of only /t/ (/d/ does not occur) or, alternatively, only /d/ (/t/ does not occur). However, it is illogical for Roach to say that, instead of (correctly) neither /t/ nor /d/ occurring in the context of neutralization, either /t/ or /d/ occurs.

12.22. A dozen or so years later, **i**n the same year as the publication of Roach (2009a), there appeared Roach (2009b) which is a slightly revised and practically verbatim version in PDF of Roach (1992). Roach (2009b) is a glossary of terms used in phonetics and phonology. On p. 59, he explains 'neutralisation' in 12 lines almost verbatim as in Roach (1992). The

[18] If not in Roach (1983: 9) where he refers to native speakers' feelings without yet expressing his reservation about 'appeals to native speakers' feelings'.

[19] I am here essentially borrowing Wells's (2008: 539) relevant passage that runs as follows. 'In these positions the vowel is traditionally identified with ɪ. But in fact some speakers use ɪ, some use iː, some use something intermediate or indeterminate, and some fluctuate between the two possibilities. Modern pronunciation dictionaries use the symbol i, which reflects this.'

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differences in his comparable explanations between Roach (1992) and Roach (2009b) are as follows.

Roach (1992)	Roach (2009b)
e.g. /t/ and /d/ in English	e.g. **t** and **d** in English
still /stɪl/	'still' s**t**ɪl
the /t/	the **t**
following /s/	following **s**
/stɪl/ and */sdɪl/	s**t**ɪl and s**d**ɪl
the opposition between /t/ and /d/	the opposition between **t** and **d**
a /d/, not a /t/	a **d**, not a **t**

12.23. There is, in Roach (2009b), a significant addition to Roach's explanation on 'neutralisation'. This addition which is copied below calls for some remarks.

> Common sense tells us that it is neither [neither /t/ nor /d/], but a different phonological unit combining the characteristics of both. Some phonologists have suggested the word[!]'archiphoneme' for such a unit. The **i** vowel that we use to represent the vowel at the end of the word 'happy' could thus be called an archiphoneme.

Roach's recourse to what he calls 'common sense' in the above quoted passage is not altogether clear-cut. Presumably Roach has in mind 'common sense' possessed by native speakers of English through their long use of English. It is obvious that Roach does not mean common sense possessed by, say, native speakers of Chinese.

12.24. Roach means in his statement quoted above that a person with common sense actually identifies the apico-alveolar plosive after /s/ as neither /t/ nor /d/. Roach further observes that the person with common sense believes that the apico-alveolar plosive in question is 'a different phonological unit combining the characteristics of both [/t/ and /d/]'. Roach's words 'a ... phonological unit combining the characteristics of both' calls for clarification as it is important to know *which*, *not all*, of 'the characteristics of both phonemes [/t/ and /d/]' are meant.

12.25. The closest approximation to 'archiphoneme' that Roach finds is, for instance, an entity which he exemplifies by what he calls 'the **i** vowel', which corresponds to an archiphoneme consequent on neutralizatioin of /iː/ vs /ɪ/. The occurrence of 'the i vowel', signalled by the symbol <i> in English pronouncing dictionaries (e.g. /'hæpi/, /ri'siːt/, /ˈtʃæriət/) implies information about its varied phonetic realizations, which is appropriately described as follows by Well (2008: 539): '... some speakers use ɪ, some use iː, some use something intermediate or indeterminate, and some fluctuate between the two possibilities'. These varied realizations may be expressed in terms of [iː ~ ɪ], which is a case of the 'field of dispersion' (F *champ de dispersion*) of realizations of the archiphoneme /iː-ɪ/.

12.26. What has been said above about <i> can be said, *mutatis mutandis*, of <u> used in English pronouncing dictionaries to indicate the places in words where neutralization of /uː/ vs /ʊ/ takes place (e.g. /luˈiːz/, /'sæmjuəl/, /'tenuɪs/) and at the same shows realizations, i.e. [uː ~ uː], of the archiphoneme /uː-ʊ/.

12.27. It is noticeable that, unlike all other Anglophone non-functionalist phoneticians (at least so far as I know), Roach stands alone in not dealing with the case of neutralization of /m/ vs /n/ before /f, v/.

13.0. We will now turn to J. D. O'Connor (1973: 183) to see what he has to say about neutralization in English. He writes: '... the opposition between /p/ and /b/ in English is neutralized after /s/ where only what we agree to call /p/ occurs.'

It comes as a surprise that O'Connor believes without hesitation that neutralization of /p/ vs /b/ results in one of the phonemes, in this case /p/, which he says continues to be in the context of neutralization, i.e. after /s/. This interpretation of neutralization is illogical as, I have emphasized here and there, neutralization logically results in the disappearance of the terms of the neutralizable opposition in contexts of neutralization.

13.1. O'Connor elsewhere (*op. cit.*: 178) writes:

> ... because whatever you do you are left with one phoneme which does not occur after /s/, /p/ in Danish and /b/ in English; it would be necessary to bear this in mind, however, in making any comparison of the distribution of /p/ and /b/ in English and Danish.

The above quoted passage is interesting as (1) this confirms O'Connor's understanding that, in English, neutralization of /p/ vs /b/ after /s/ results in the continued occurrence of /p/ to the exclusion of /b/ while, in Danish, neutralization of /p/ vs /b/ after /s/ results in the continued occurrence of /b/ to the exclusion of /p/; and (2) the said occurrence of /p/ to the exclusion of /b/ after /s/ and that of /b/ to the exclusion of /p/ after /s/ are in fact a matter of distribution (in the present case, limited distribution) of the said consonant phonemes in the two respective languages and that the notion of neutralization of /p/ vs /b/ in the two languages is therefore unnecessary.

13.2. O'Connor refers to an example from German, i.e. neutralization of /t/ vs /d/, by saying first that

> In German, /t/ and /d/ are in opposition at the beginning of words but not at the end, so *Deich* ('dyke') and *Teich* ('pond') are distinguished ...

O'Connor is right to refer, first of all, to the context of relevance in which /t/ vs /d/ is valid. O'Connor directly continues:

> but not *Rad* ('wheel') and *Rat* ('advice') which, despite their spelling, are both /ra:t/, and the opposition is neutralized.

Does the occurrence of only /t/ (but not /d/) in /ra:t/ (for both *Rad* and *Rat*) mean /t/ vs /d/ is neutralized? The answer will be in the negative. Two points should be mentioned against O'Connor's statement. Firstly, it is neither here nor there that the orthographical difference exists between *d* (in *Rad*) and *t* (in *Rat*) in connection with neutralization of /t/ vs /d/ in German. Secondly, it is wrong to consider that the phonological form of both *Rad* and *Rat* is /ra:t/, that is, /t/ at the end of both words.

O'Connor seems to say that there takes place neutralization of /t/ vs /d/ because the phonological opposition between /t/ and /d/ word-initially is replaced by the occurrence only /t/ word-finally, so that, says O'Connor, /t/ vs /d/ is neutralized.

13.3. O'Connor's view that *Rad* and *Rat* are phonologically both /ra:t/ in the context of neutralization is clearly mistaken. It seems that the non-distinction between /t/ and /d/ in the context of neutralization induces him to misunderstand that /t/ occurs at the end of both *Rat* and *Rad*. The phonological entity that occurs at the end of both *Rat* and *Rad* is not /t/. I am

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fully aware that the concept of 'archiphoneme' is irrelevant to the theory that O'Connor and other Anglophone non-functionalists operate with, but I am obliged to mention all the same at this juncture that both *Rat* and *Rad* ends not with /t/ but with the archiphoneme /t-d/ (or /T/ as some symbolize). Correctly, then, both *Rat* and *Rad* are phonologically /raː t-d/ (/raːT/). It seems anyway that O'Connor suggests here that /t/ occurs to the exclusion of /d/ word-finally in both *Rat* and *Rad*. This would be a case of limited distribution of /d/.

13.4. O'Connor (*op. cit.*: 181-2) also refers to neutralization, in Cockney, of /iː/ vs /ɪ/ before [ɬ] (velarized lateral), as he puts it. This is what he writes (*ibid.*):

> ... both RP and Cockney have an opposition between /iː/ and /ɪ/ in most positions, i.e. the replacement of /iː/ by /ɪ/ would cause a change in meaning (*seal*/*sit*, *deed*/*did*, etc.), but in Cockney the opposition is *neutralized* [O'Connor's italics] before [ɬ] since *only one of the two vowels occurs* [my italics] and therefore no possibilities of a distinction in meaning between *field*/*filled*, *heel*/*hill*, etc.

O'Connor continues to believe that neutralization of /iː/-/ɪ/ results in limited distribution of one of /iː/ and /ɪ/. He does not tell us *which* one of the two vowels occurs before [ɬ], in the position of neutralization.

Another example (not O'Connor's) of /iː/-/ɪ/ when occurring before 'clear [l]' ('palatalized [l]), i.e. in the context of relevance, may be *ceiling* pronounced ['siːlɪn] and *silly* pronounced ['sɪliː]. It is not immediately clear whether O'Connor's saying 'one of the two vowels' means 'one of the two vowel phonemes' or 'one of the vowel sounds' occurs before [ɬ], the context of neutralization. The vowel in question seems to be [ɪ], judging from the fact that in Cockney, as, for example, *rill* and *reel* are pronounced [ɹɪɥ] with L-vocalization of [ɬ].

13.5. O'Connor (*op. cit*: 182) turns to a well-known case, in American English, of neutralization of /e/ vs /æ/ vs /eɪ/ (in *merry* vs *marry* vs *Mary*) before /r/. He first mentions that /e/ vs /æ/ vs /eɪ/ is valid in *bet*, *bat*, *bait*, which means that the context of relevance in question is 'preceded by /b/ and followed by /t/'. However, preferably and more appropriately, O'Connor could alternatively cite *met*, *mat*, *mate*, in which another context of relevance is 'preceded by /m/ and followed by /t/'. The opposition /e/ vs /æ/ vs /eɪ/, if preceded by /m/ and followed by /r/, as can be seen in *merry* vs *marry* vs *Mary*, is said to be neutralized. He says that, as a result of neutralization of /e/ vs /æ/ vs /eɪ/ in the above-mentioned context of neutralization, only /e/ occurs before /r/, that is, as O'Connor puts it, '... only one vowel /e/ is used in all three words.' It is obvious that, whereas /e/ vs /æ/ vs /eɪ/ is valid in *bet*, *bat*, *bait*, 'before /r/' is the context of neutralization where /e/ vs /æ/ vs /eɪ/ is neutralized. O'Connor does not talk about the archiphoneme /e-æ-eɪ/. He will probably say that only /e/ occur to the exclusion of /æ/ and /eɪ/ before /r/, a case of limited distribution of /æ/ and /eɪ/.

13.6. The neutralization of /e/ vs /æ/ vs /eɪ/ occurs, conceivably, in e.g. *berry* vs *Barry* vs *Bailey* as well. If so, we can retain O'Connor's example, *bet*, *bat*, *bait*, in the context of relevance, for /e/ vs /æ/ vs /eɪ/.

14.0. I will turn next to B. Collins, I. M. Mees & P. Carley. They deal with what they refer to as 'phoneme neutralization'[21] (2019: 114, 212, 267) and cite three cases of what they consider neutralization, i.e. that of /m/ vs /n/ before /f/ or /v/ in English, that of /a/ vs /ɑ/ in French, and that of /p/ vs /b/, /t/ vs /d/ and /k/ vs /g/, after syllable-initial /s/ in English. Notice immediately that they do not mention 'context of neutralization' for /a/ vs /ɑ/.

[20] Roach's omission of mentioning Windsor Lewis' s pronouncing dictionary, i.e. Windsor Lewis (1972), is regrettable.

14.1. According to the three authors, the fundamental manifestation of (phoneme) neutralization is *overlapping of allophones* of two different phonemes the opposition between which is valid elsewhere. In the authors' words (*op. cit.*: 114), 'Sometimes two phonemes may show overlap in phonetic realizations'. An example they give is neutralization of /m/ vs /n/ before /f/ or /v/ (the context of neutralization) where the allophones of both /m/ and /n/, i.e. [ɱ] (labiodental nasal), overlap, and therefore the distinction between /m/ and /n/ is lost. Put another way, it is impossible to assign [ɱ] definitively to either /m/ or /n/. However, this understanding of neutralization on their part is mistaken. The opposition between /m/ and /n/ does not exist in the context of neutralization where neither /m/ nor /n/ occurs, but the three authors appear to think otherwise. To partially repeat here what I already said here and there, if a phonological opposition is dissolved through neutralization in a context of neutralization, the member phonemes of that phonological opposition are automatically nullified in that context.

14.2. What the three authors should begin with is to present /m/ and /n/ as forming an *opposition*, that is, as /m/ vs /n/. They never say *how* /m/ and /n/ are distinguished from each other, either. They would probably mention 'bilabial' of /m/ and 'apical' of /n/ but not necessarily the *opposition* 'bilabial' (of /m/) vs 'apical' (of /n/)'. Instead, they first mention the occurrence before /f, v/ of [ɱ] which is an allophone of /m/ as well as of /n/, and this leads them to say that the distinction between /m/ and /n/ is lost, and say that /m/ vs /n/ (the opposition they have not already mentioned) is neutralized. If asked *how* /m/ vs /n/ is neutralized before /f, v/, it is not certain whether they will say that 'bilabial' (of /m/) vs 'apical' (of /n/) is cancelled with the result that /m/ and /n/ are no longer opposed to each other. In summary, the three authors explicate the phenomenon of neutralization without talking about a neutralizable opposition at all.

14.3. The second case of a neutralization the three authors cite is that of /a/ vs /ɑ/ in French. This, unfortunately, is a wrong example altogether as /a/ vs /ɑ/ in French does not undergo neutralization. There are among French speakers those who observe /a/ vs /ɑ/, i.e. /a/ (e.g. *patte*, *moi*) vs /ɑ/ (e.g. *pâte*, *mois*). Those French speakers who do *not* observe /a/ vs /ɑ/ pronounce a single open vowel which is not quite the same as either /a/ or /ɑ/. This phenomenon has nothing to do with neutralization (of /a/-/ɑ/) in a given context (context of neutralization). This phenomenon is what is known as 'merger'. Coveney (2001: 93) writes that those who do not observe /a/ vs /ɑ/ pronounce a centralized open vowel (i.e. the 4th degree of opening) which can be notated [ä]. Another example of merger is /œ̃/ (brun, emprunt) vs /ɛ̃/ (brin, empreint), in which case /œ̃/merges into /ɛ̃/, so that brun and brin, and emprunt and empreint, are all pronounced with/ɛ̃/. Be that as it may, cases of merger are not those of neutralization.

14.4. The third and last example of neutralization the three authors bring up is that of /p/ vs /b/, /t/ vs /d/ and /k/ vs /g/ in English after syllable-initial /s/. The authors give the examples of *spar* /spɑː/, *star* /stɑː/ and *scar* /skɑː/. The post-/s/ plosives are said to be less-than fortis and unaspirated stops and are also said to be close to the allophones of /b, d, g/ some of which are lenis and unaspirated (though the authors do not mention 'lenis'). Note that the authors do not say 'unvoiced' (or 'voiceless') because they would rather operate with fortis/lenis. Since, in English, there is no possibility of /spɑː – *sbɑː/ (their own notation, with the asterisk), the authors say that it would be perfectly reasonable to consider these allophones as those of /b, d, g/ and symbolize them */sbɑː, sdɑː, sdɑː/. They attribute the customary non-acceptance of this last notation to the orthographic tradition which ultimately favours /spɑː, stɑː, skɑː/. It seems that the authors accept both /spɑː, stɑː, skɑː/ and /sbɑː, sdɑː, sdɑː/. This would mean after all that the allophone occurring after /s/ can be assigned

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to either /p/ or /b/, /t/ or /d/, and /k/ or /g/ which, however, do not occur in the context of neutralization, i.e. after /s/. The three authors fall into the error, the same error committed by many other non-functionalists, of not seeing that the member phonemes of a neutralizable opposition are nullified in the position of neutralization. All three authors end their analysis of the neutralization of /p/ vs /b/, /t/ vs /d/ and /k/ vs /g/ after syllable-initial /s/ by referring to Welsh orthographic tradition in which [sp] and [sk] are spelt by the letter combinations *sb* and *sg*, but this is a red herring.

14.5. If they want an appropriate case of *neutralization* in French, the three authors could suitably cite e.g. /e/ vs /ɛ/, which is valid word-finally as in *pré* vs *prêt*, *ré* vs *raie*, etc. but is neutralized word-medially in open syllables as in *maison*, *fêter*, *crémeux*, etc.

Neutralization of /e/ vs /ɛ/ in French results in the occurrence of the archiphoneme /e-ɛ/ (oftener symbolized as /E/) whose realizations occur in the field of dispersion (F *champ de dispersion*) whose periphery is limited by [e] and [ɛ] but are dispersed anywhere between these two vowels.

15.0. J. C. Wells.

Wells mentions neutralization of /iː/ vs /ɪ/ in Cockney as does O'Connor (1973). We recall that O'Connor speaks of neutralization of /iː/ vs /ɪ/ before [ɬ] in Cockney. Wells (1982: 315) writes: 'The clearest and best-established neutralizations are those of /ɪ ~ ɪi~ iə/ and /ʊ ~ ʉ ~ uə/.'

> N.B.1 Wells's /ɪi/ corresponds to O'Connor's /iː/.
>
> N.B.2 What corresponds to Wells's /iə/ is not mentioned by O'Connor.
>
> N.B.3 The symbol < i > of < iə > as used by Wells has a special meaning and denotes an entity which is different from the one denoted by O'Connor.

I would hesitate to agree with Wells when he says the neutralizations of /ɪ ~ ɪi ~ iə/ and /ʊ ~ ʉ ~ uə/ 'are the clearest and best-established neutralizations' unless his reference here is to different instances of neutralization in Cockney only.

15.1. The information given by Wells in the above quoted single-line passage is inadequate since, unlike O'Connor, Wells fails to refer to the context of relevance in addition. Any proper mention of an instance of neutralization should refer to the context of relevance (first of all) as well as that of neutralization, as O'Connor does, but Wells fails to do so. Wells indicates that *reel* and *real* are both homophonically pronounced [rɪɤ], that *will* and *wheel* are both pronounced [wɪɤ], and that *hills* and *heels* are both pronounced [(h)ɪɤz]. It is only after giving these three pairs of example words that Wells says that 'Before clear (i.e. prevocalic) /l/ the neutralizations do not usually apply, thus ['sɪli] *silly* but ['sɪilɪn] *ceiling-sealing* ...'

The context 'before clear /l/' is the context of relevance to which O'Connor appropriately refers before mentioning the context of neutralization and the neutralization itself of /iː/ vs /ɪ/.

15.2. What is above all important to note in Wells's analysis of what he calls neutralization of /iː/ vs /ɪ/ is that he says that, in the homophonic pronunciations [rɪɤ], [wɪɤ] and [(h)ɪɤz], it is [ɪ] to the exclusion of [iː] that occurs in the context of neutralization. His analysis of neutralization is still along the idea that *only one* of the two phonemes of a neutralizable opposition occurs in the context of neutralization. We recall O'Connor writing (as was quoted above) that 'before [ɬ] ... only one of the two vowels occurs', the only one vowel being [ɪ]. We further recall O'Connor saying that only /p/ (not /b/) occurs after /s/ in (British/American) English, and only /e/ occurs before /r/ in American English, and only /t/ occurs at the end of words in German. All these ideas boil down to statements of distribution of phonemes (limited

distribution in these cases), or phonotactics in the respective languages, nothing to do with neutralizations.

15.3. Wells (2008: 539) refers to neutralization of /t/ vs /d/ after /s/ in English. Part of what he says is quoted below.

> Two PHONEMES [Wells's capitals] may, in certain phonetic environments, not be distinguishable. We say the **opposition** [Wells's boldface] between them is **neutralized** [Wells's boldface]. ... After /s/, however, the opposition is neutralized (since p here has no ASPIRATION [Wells's capitals]). Conventionally, we write **spin** [Wells's boldface] phonemically as spɪn; but since there is no possible difference between p and b here we could just as well write sbɪn.

Wells first refers to contexts of neutralization of /p/ vs /b/ as *phonetic* environments but recognizes them later as *phonological* environments when he refers to /s/. The phonetic nature of (realization of) /p/ is important to him when he characterizes it as *unaspirated*. It seems that when he says that 'there is no possible difference between p and b', (the realization of) /b/ too is unaspirated. This leads him to equate the phonological notations /spɪn/ and /sbɪn/. Note that Wells does not mention 'voiced' vs 'voiceless' or 'lenis' vs 'fortis'. Note also that, unlike Gimson, Wells does not stress that both /spɪn/ and /sbɪn/ are of equal validity. At any rate, Wells too does not realize that neither /p/ nor /b/ occurs after /s/ when /p/ vs /b/ is, as he himself says, neutralized after /s/.

15.4. Wells gives a better account of neutralization in connection with the phonetic symbol < i >. Wells (2008: xxxii) mentions 'close front unrounded vowel ... English neutralization of iː-ɪ, *happy* ...'

Wells (2008: 539) writes three passages which I quote. The first of the three passages to be quoted concerns /iː/ vs /ɪ/ in the context of relevance. The second passage is about the occurrence of /i/ in the context of neutralization. The third passage is of special importance in that it describes the varying phonetic realizations of /i/.

> One type of neutralization is symbolised explicitly in LPD by the use of the symbols i and u. The opposition between iː and ɪ operates in most environments, as seen in **green** griːn and **grin** grɪn, **leap** liːp and **lip** lɪp. But there are two environments in which it is neutralized.
>
> When the vowel is in a WEAK [Wells's capitals] syllable at the end of a word (or at the end of part of compound word or of a stem), as in **happy** ˈhæp i, **valley** ˈvæl i, **babies** ˈbeɪb iz. ...
>
> In these positions the vowel is traditionally identified with ɪ. But in fact some speakers use ɪ, some others use iː, some use something intermediate or indeterminate, and some fluctuate between the two possibilities. Modern dictionaries use the symbol i, which reflects this.

15.5. The last of the quoted passages quoted above is interesting. Wells is alluding to the concept of what is known among functionalists as 'field of dispersion' (F *champ de dispersion*) which concerns the area within which all varied realizations of a phoneme or archiphoneme happen. The distinctive unit whose varied realizations Wells appropriately describes in terms of field of dispersion is not a phoneme but is actually an archiphoneme /iː-ɪ/, though he himself does not mention it by name.

16.0. At this point we turn our attention to what certain post-Bloomfieldian linguists jointly said nearly eight decades ago on the question of neutralization of /p/ vs /b/, /t/ vs /d/ and /k/ vs /g/ in (both American and British) English. Their joint work in question is B. Bloch & G. L. Trager (1942), a treatise which is mentioned in the Bibliography in Gimson (1962, 1970, 1980, 1989). One may wonder if Gimson's account of the neutralization of /p/ vs /b/, /t/ vs /d/ and /k/ vs /g/ after word-initial /s/ is inspired in any way by Bloch & Trager (1942: 44). Here is what Bloch & Trager write:

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> In view of this lack of contrast between [t] and [d] after [s], and of the difficulty of deciding whether the stop in this position is unambiguously fortis or lenis, it may seem arbitrary to assign the stop to either of the two possible phonemes.

This view agrees with that of Gimson who allows the stop, for example, [t], to either /t/ or /d/ with equal validity. Here we see a similarity of view between Gimson on the one hand and Bloch & Trager on the other.

16.1. By 'contrast between [t] and [d]', Bloch & Trager refer mainly to the contrast between 'fortis' vs 'lenis'. Note that, in the above quoted passage, Bloch & Trager write '... contrast between [t] and [d]', and not '/t/ and /d/'. Incidentally, Bloch & Trager do symbolize phonemes by enclosing them by pairs of diagonal bars;[22] see Bloch & Trager (*op. cit.* : 48) where they give a list of English consonant phonemes. They write e.g. /t/ *tin*, *better*, *bit* and /d/ *din*, *rudder*, *sad*.

16.2. Bloch & Trager (*op. cit.*: 44) go on:

> ... we assign it [i.e. [t] occurring after [s]] — arbitrarily perhaps — to the same phoneme as the stop in *tin*, simply because we find it an advantage to keep the number of separate phonemes as small as possible.

An economical setup of the phonemes of a language is insisted upon among post-Bloomfieldians. Post-Bloomfieldian phonemicists are consequently encouraged to establish a list of the phonemes of a given language that is as small as possible.

Bloch & Trager continue (*op. cit.*: 44) write:

> ... the positions where particular contrasts are suspended ... If it were for any reason more convenient, we could just as well class this stop with the [d] in *din* ... Whichever choice we make, the suspension of contrast between [t] [not /t/?] and [d] [not /d/?] after [s] will appear from our description ...

Bloch & Trager's use of the phrases 'contrasts are suspended' and 'the suspension of contrast' in the second passage quoted above is interesting. The term 'suspension' is sometimes used by linguists as a synonym of 'neutralization' and '(contrasts are) suspended' as a synonym of 'neutralized'. In the Reading List in Bloch & Trager (1942: 81) no writings by the Prague School linguists including Trubetzkoy (1939) appear. Trubetzkoy (1949) was not yet available for Bloch & Trager (1942) to consult. On the other hand, the List includes Twaddell (1942). It is worth noting that Twaddell (1939) reviewed Trubetzkoy (1939), one of the earliest reviews.

However, Bloch & Trager's negative stance to establishing something like an archiphoneme associated with neutralization is clearly shown when they (*op. cit.*: 44) say as follows.

> Some phonemicists refuse to make a choice, and instead set up an independent phoneme for any sound that is in complementary distribution with two or more other sounds and phonetically similar to both or all of them.

17.0. Nearly all post-Bloomfieldians are vigorously opposed to the concepts of 'neutralization' and 'archiphoneme'. There are a few exceptions whom I shall have occasion to

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[21] It is not clear to me why the three authors mention the term 'phoneme neutralization', using specifically 'phoneme'. Is it to differentiate 'phoneme neutralization' from 'tone neutralization'? The authors do not mention or deal with 'tone neutralization' on pp. 114, 212, 267 where only 'phoneme neutralization' is treated. The terms 'toneme' and 'allotone' are mentioned on p. 141, but anything like 'toneme neutralization' is not mentioned.

mention later. But first here follow examples of what a few of the post-Bloomfieldian objectors have to say.

17.1. C. F. Hockett (1942: 10) minces no words.

> [in Spanish] In the position where there is no contrast, the type of trill is in each case more similar to [r] or to [r̄] of the contrasting positions, and the phonemic membership is determined accordingly. The simple statement of distribution made above gives the facts without any complications; any talk of neutralization or cancellation or archiphonemes confuses the facts without adding anything.

The above quotation is taken from *A glossary of American linguistic usage 1925 - 1950*, p. 44. The quoted passage appears under the headword **partial complementation**.

17.2. M. Joos (1957: 419).

The following is Joos's comment in his capacity as Editor of *RIL* (1966) and appears on *RIL*: 419., as follows: 'ARCHIPHONEME: European (Prague School &c) term usually rejected in America as obfuscation ...'

17.3. R. A. Hall Jr.

Hall (1964: 121-3) gives some space to the subject of 'neutralization' and 'archiphoneme', citing a few relevant examples from American English.

17.4. In east of the Alleghenies, Hall says, there are contrasts [oppositions] /æ/ vs /ɛ/ vs /e/ as in /bǽt/ (*bat*) vs /bét/ (*bet*) vs /bét/ (*bait*), and also before /r/ as in /kǽri/ (*carry*) vs /kéri/ (*kerry*) vs /kéri/ (*Carey*); the phonemic transcriptions are his.

However, says he, in west of the Alleghenies, only one of the three vowels, /ɛ/, occurs before /r/ in *carry*, *kerry* and *Carey*. Hall says that /æ/ vs /ɛ/ vs /e/ which is significant [i.e. relevant] is *neutralized* [Hall's italics] before /r/ and only /ɛ/ occurs in this position where /æ/ vs /ɛ/ vs /e/ is not significant [not relevant].

Notice Hall does employ the term 'neutralized'. Notice also that neutralization of /æ/ vs /ɛ/ vs /e/ results in this opposition being 'not significant' which seems to mean 'neutralized'. Notice lastly that according to Hall, neutralization of /æ/ vs /ɛ/ vs /e/ before /r/ results in the occurrence of /ɛ/ to the exclusion of /æ/ and /e/.

We have seen that the one vowel phoneme that occurs before /r/ is said to be /e/ by O'Connor but /ɛ/ by Hall. This disagreement between them is curious. One may wonder what makes the identity of the one vowel phoneme to be /e/ to the exclusion of /æ/ and /eɪ/ in *merry*, *marry*, and *Mary* (O'Connor) but /ɛ/ to the exclusion of /æ/ and /e/ in *carry*, *kerry* and *Carey* (Hall).

17.5. Another of Hall's examples comes from German where /t/ vs /d/ is said to be significant in /búnte/ *bunte* 'varicoloured' vs /búnde/ *Bunde* 'leagues' but not in /búnt/ (*bunt*/*Bund*) as /t/ vs /d/ is neutralized here, and, as a result, Hall considers that /t/ occurs in /búnt/.

17.6. Subsequently (*op. cit.*: 122), Hall writes that '... the Prague phonologists ... would set up a special phonemic entity called an *archiphoneme* [Hall's italics] to cover ranges of sound where phonological contrast is neutralized.'

Hall says that an archiphoneme is customarily indicated by a capital letter, and transcribes the archiphoneme /æ-ɛ-e/ before /r/ in American English by /E/; hence *Carry* /kÉri/; /T/ as in *bunt*/*bund* /búnT/ in German.

17.7. Hall's decisively negative view of neutralization and the archiphoneme is well expressed in the following long quotation which includes a rather picturesque imagery (*op. cit.*: 122).

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> This solution [by resorting to neutralization and archiphoneme] provides ample representation for such instances of absence of contrast, and is sufficiently ambiguous to cover situation where the phonetic facts themselves are ambiguous. However, it can be objected that too many archiphonemes spoil the broth, in that a flock of archiphonemic symbols complicates transcription and serves a basically negative, rather positive, purpose, in symbolizing absence rather than presence of contrast.

18.0. At the other end of post-Bloomfieldians' attitudes toward (or rather, against) neutralization and the archiphoneme are a few who embrace both these related concepts, as expressed in their publications. I will mention just two such American linguists here.

18.1. M. D. Berger.

At the outset of his article entitled 'Neutralization in American English Vowels' (1949), Berger quotes some words from Martinet (1949: 13) which run as follows:

> ... it can hardly be a mere chance that English-speaking scholars, whatever language they study, feel so little tempted to make use of *the concept of neutralization* [italics added], whereas French or Russian linguists, whose mother tongues show such frequent instances of the situation which elicited the concept, usually make an extensive use of it.

Berger (1949: 255) points out that there *are* many cases of neutralization in American English but that they are waiting to be properly investigated and analyzed. By way of responding to Martinet's view seen in the above quoted passage, Berger expresses his own view as follows.

> It is interesting to note ... that there are not few, but many examples of neutralization in American dialects ... The facts which I am about to present are not original with me. On the contrary, they are very well known; they have simply never been properly evaluated.

Two points to be noted in the passage quoted above are as follows: (i) Berger consistently and properly employs the term (phonemic) 'opposition', not the term 'contrast' which was prevalently in use among post-Bloomfieldians; (ii) in his presentation of cases of neutralization of vowel phonemes, Berger represents the archiphonemes by capital letters.

18.2. Berger presents the first examples of neutralization of oppositions in the following way. We quote his own words.

> ... widespread neutralization of phonemic oppositions before r (including the [ə] which is often a positional variant for [r] ... We have, therefore, neither [ʊ] [ɛ] [ɪ] nor [u] [e] [i] in such words as *poor*, *mare*, and *spear*, but archiphonemes representing the suspension of these oppositions.

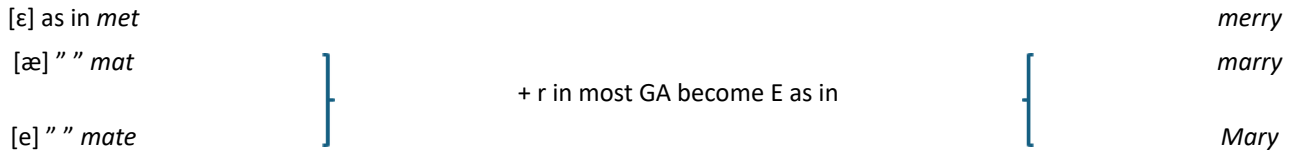
Berger's phonetic representations, i.e. [ʊ], [ɛ], [ɪ], [u], [e] and [i], rather than the phonological (phonemic to Berger) representations, /ʊ/, /ɛ/, /ɪ/, /u/, /e/ and /i/, seem idiosyncratic. Berger should be talking about the oppositions /ʊ/ vs /u/, /ɛ/ vs /e/, and /ɪ/ vs /i/, the three oppositions which he considers are neutralized before word-final

/r/ in *poor*, *mare*, and *spear*. It is the neutralization of the three oppositions which gives rise to three archiphonemes which he says 'represent[ing] the suspension of these oppositions'. He does not actually provide any symbols for the three archiphonemes for the purpose of phonological transcription. For convenience' sake I may propose /U/, /E/ and /I/, respectively.

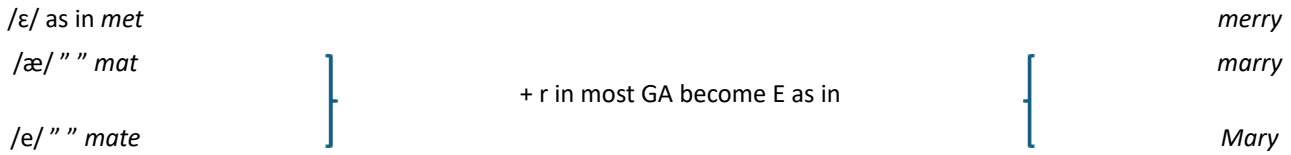
18.3. Berger's consistent use of square brackets as in [ʊ], [ɛ], [ɪ], [u], [e] and [i], even in mentioning neutralization of /ʊ/ vs /u/, that of /ɛ/ vs /e/, and that of /ɪ/ vs /i/ renders his presentation somewhat confusing. It is highly advisable to resort to the use of diagonal bars

when indicating those segments which are phonological, like phonemes and archiphonemes. After all, to repeat what I already said *supra* in fn 22, the first use in print of diagonal bars to indicate phonemes goes back to 1941, i.e. in Trager & Bloch (1941: fn 9), eight years before the publication of Berger's article in 1949.

18.4. Berger reminds us that the above-mentioned cases of neutralization, i.e. that of /ʊ/ vs /u/, /ɛ/ vs /e/ and /ɪ/ vs /i/, takes place before word-**final** /r/ as in *poor*, *mare* and *spear*. He goes on to show some cases in which /r/ occurs **intervocalically**. He provides the following relevant cases.



or correctly, as I think,



The part of the diagram lying on the left of the plus sign shows that /ɛ/ vs /æ/ vs /e/ is valid in *met* /mɛt/ vs *mat* /mæt/ vs *mate* /e/. The context in which this opposition is valid is a context of relevance for /ɛ/ vs /æ/ vs /e/, i.e. when followed by /t/ (/d/, /s/, /k/, etc. but not /r/) **word-finally**. The part lying on the right of the plus sign shows the context of neutralization of /ɛ/ vs /æ/ vs /e/, i.e. when followed by **intervocalic** /r/, in *merry*, *marry* and *Mary*. The result of this neutralization in the latter context is the occurrence of the archiphoneme which Berger symbolizes by E. He does not indicate by what specific vowel sound(s) the archiphoneme E is realized in *merry*, *marry* and *Mary*. Are all three words pronounced with one of [ɛ], [æ] and [e]? Or indiscriminately with [e] or [æ] or [ɛ]? This seems little important to Berger.

18.5. Berger makes an interesting reference here to Swadesh (1947:142) who, treating also the case of *merry*, *marry* and *Mary*, mentions the occurrence of [ɛ] and [æ] in connection with what corresponds to what Berger presents as E. Berger notes that Swadesh considers the occurrence of [ɛ] and [æ] in free variation. Berger says that [ɛ] and [æ] is both phonetically in 'free variation' but phonemically concerns 'neutralization'. What he means here is presumably that the occurrence of [ɛ] and [æ] before intervocalic /r/ is directly associated with the neutralization of /ɛ/ vs /æ/ vs /e/ while [ɛ] and [æ] are the realizations of the archiphoneme /E/ (= the archiphoneme /ɛ-æ-e/).

18.6. Berger compares the problem of [ɛ] and [æ] and /E/ mentioned above with that of [ɛ] and [e] (or, in fact, any vowel sounds lying between [ɛ] and [e] as well) which are realizations of the archiphoneme /E/ (/ɛ-e/) associated with the neutralization of /ɛ/ vs /e/

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as in *maison* in French. This of course is about what is known as 'F *champ de dispersion*' (Martinet 1964: 47).

18.7. Neutralization of /ɛ/ vs /æ/ vs /e/ is not observed universally in the United States. Berger points out that, (i) in some GA and Southern dialects, only the opposition /ɛ/ vs /e/ is neutralized, so that *marry* and *Mary* are homophones (though Berger does not say by what vowel(s) the archiphoneme E is realized), while *marry* retains its /æ/. (ii) In most Eastern and Southern speech, /ɛ/ vs /æ/ is not neutralizable, which means that *merry* and *marry* are distinguished from each other while the vowels in *Mary* are unstable, with [æ] in New York City but with [e] in many Southern coastal dialects.

18.8. Berger additionally writes on some more cases of neutralization of oppositions between vowel phonemes, e.g. /i/ vs /ɪ/ before /r/, /ɔ/ vs /o/ before /r/, and /ɛ/ vs /ɪ/ before /n/. However, it is not imperatively necessary to go over these cases of neutralization as well because what we have seen above in connection with Berger's analysis of the neutralization of /ɛ/ vs /æ/ vs /e/ sufficiently proves his basically functionalist stance.

18.9. It is unfortunate that clarity of Berger's presentation of neutralization of /ɛ/ vs /æ/ vs /e/ before intervocalic /r/ suffers from his consistent non-use of diagonal bars (//) in his article in question. The transcription symbols [ɛ] vs [æ] and [e] which Berger employs seem to refer now to vowel sounds and now to vowel phonemes.

18.10. The case of *merry*, *marry*, *Mary* in American English has always been a well-known topic among phonologists for many years. An extensive survey was conducted in 2003 in America by B. Vaux (11,422 respondents). The survey gave the following percentage figures.

		Mary/*merry*/*marry*	
1.	all 3 same		(56.88%)
2.	all 3 different		(17.34%)
3.	*Mary merry*	different from *marry*	(8.97%)
4.	*merry marry*	different from *Mary*	(0.96%)
5.	*Mary marry*	different from *merry*	(15.84%)

The total percentage figures is 99.99%, not 100%, so that the five figures are to be taken as approximative.

18.11. At any rate, it is abundantly clear that, in 2003 or thereabouts in America, the neutralization of /ɛ/ vs /æ/ vs /e/ predominantly occurred, but not universally. Partial neutralization[23] i.e. that of /e/ vs /ɛ/, that of /ɛ/ vs /æ/ and that of /e/ vs /æ/, account for 25.77%, and non-neutralization of /ɛ/ vs /æ/ vs /e/ for 17.34%. This means that so far as *Mary*/*merry*/*marry* are concerned, the total of 82.65%, i.e. 56.88% (complete neutralization) + 25.77% (partial neutralization), of the total 11,422 responders in Vaux's survey, practise neutralization as against 17.34% who do not. The major percentage difference between 82.65% and 17.34% is highly significant. It is no surprise that phonologists are understandably interested in the phenomenon of neutralization vs non-neutralization in

[22] Bloch & Trager (1942: 47) write as follows: 'In order to distinguish phonemic symbols from phonetic, we enclose the former between diagonals: [p] = a voiceless unaspirated bilabial stop; /p/ = any phoneme in a particular language that we have agreed to write in this way.' This is not surprising because it was indeed in Trager & Bloch (1941: fn 9) that they initiated in print the now universal practice among linguists to symbolize phonemes between pairs of oblique bars, / /.

Mary/*merry*/*marry*. It would be very interesting if another new large-scale survey of *Mary*/*merry*/*marry* were conducted in America some time in future.

In the table shown above, the identities of the resultant neutralizations and the corresponding archiphonemes in 1, 3, 4 and 5 are as follows.

1. *merry*, *marry*, *Mary* are all pronounced the same > The archiphoneme /e-æ-ɛ/ results.
3. *Mary* and *merry* pronounced the same > neutralization of /ɛ/ vs /e/.
The archiphoneme /ɛ-e/ is realized differently from /æ/ of *marry*.
4. *merry* and *marry* pronounced the same > neutralization of /e/ vs /æ/.
The archiphoneme /e-æ/ is realized differently from /ɛ/ of *Mary*.
5. *Mary* and *marry* pronounced the same > neutralization of /ɛ/ vs /æ/.
The archiphoneme /ɛ-æ/ is realized differently from /e/ of *merry*.

18.12. *Neutralization* of /ɛ/ vs /æ/ and /e/ (*merry*, *marry*, *Mary*), as seen above, is often misinterpreted as an instance of *merger* of /ɛ/, /æ/ and /e/, resulting in the merger of *merry*, *marry* and *Mary* themselves. Likewise, *neutralization* of /ɛ/ vs /e/, that of /e/ vs /æ/, that of /ɛ/ vs /æ/, also seen above, is misinterpreted as the *merger* of /ɛ/ and /e/, that of /e/ and /æ/, and that of /ɛ/ and /æ/. The term 'merger' is often used in this way instead of the term 'neutralization'.

Quite rightly, Berger, in addressing the question of *Mary*/*merry*/*marry*, does not resort to the concept of 'merger' because his sole intention is to look at the question by resorting to the concepts of 'phonological opposition' and 'archiphoneme'.

Interested readers in the question of merger being different from neutralization may wish to look at Chapter 5 entitled Neutralization and Merger in Akamatsu (1988: 151-6) which was written as a general discussion, not specifically in connection with *merry*, *marry*, *Mary* in American English. Here below I will quote a few of key passages from what I wrote therein.

> Unlike in the case of neutralization, merger is irrelevant to any specific context in which it takes place, if 'any specific context' is to be taken to correspond to the context of merger or the context of non-merger; there is no such specific context conceivable. (p. 154-5)
>
> ... merger has the effect of changing both the stock of the phonological oppositions available in the language and that of the distinctive units in the phonological system concerned. (p. 155)
>
> ... neutralization changes neither the stock of the phonological oppositions available in the language nor that of the distinctive units in the phonological system. (p. 155)
>
> Merger is a process phenomenon. This is compatible with the fact that merger necessarily requires two successive different usages which spell out a process. The stage of non-merger is followed by the stage of merger. Neutralization, on the other hand, is a non-process phenomenon. The relevance and neutralization of a neutralizable opposition are not two successive events; they are simultaneously co-present in the language. (p. 155)

19.0. A. F. Hubbell.

Hubbell was another American linguist active in the heyday of post-Bloomfieldianism who espoused both the concept of neutralization ('suspension' as he called it) and that of the archiphoneme. His PhD thesis, completed in 1948, was first published as Hubbell (1950), and was reprinted in 1972, as Hubbell (1972). The date of 1950 is contemporaneous with the publication date of Berger (1949) which we have looked at above. Even their dates of birth (Berger, 1920; Hubbell, 1914) and their dates of death (Berger, 1997; Hubbell, 1976) place them nearly contemporaneous with each other. Berger and Hubbell were probably not personally acquainted with each other. All this may just be a mere coincidence. Yet the fact is

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that Berger and Hubbell benefited from a common factor, the same academic association, be it direct or indirect, with Andre Martinet while Martinet was teaching at Columbia University (1947-1955), New York City.[24] We are not surprised by the positive acceptance by both Berger and Hubbell of neutralization and the archiphoneme.

19.1. In dealing with stops, i.e. plosives, Hubbell (1972: 20-33) writes as follows.

> When preceded by /s/ and followed by a vowel ... a lax unaspirated bilateral stop occurs, whose phonemic classification has frequently been discussed. A similar problem arises in the classification of the alveolar and velar stops ... similar stops may be observed in words like *whisper*, *boasting*, and *whiskers* ... *wisp*, *cost*, *risk*.

He emphasizes, as seen in the passage quoted above, the context of neutralization,

i.e. following /s/. Hubbell only implicitly alludes to the occurrence of 'a lax unaspirated bilateral', 'a lax unaspirated apical stop', and 'a lax unaspirated velar stop'. He additionally mentions, as seen in the passage quoted above, the occurrence of the same three 'lax unaspirated stops' when followed by unaccented vowels word-medially as in *whi<u>s</u>per*, *boa<u>s</u>ting*, *whi<u>s</u>kers*, and word-finally as in *wi<u>s</u>p*, *co<u>s</u>t*, *ri<u>s</u>k*. It is not clear to me whether Hubbell means [b̥⁼], [d̥⁼] and [g̊⁼] by 'lax unaspirated bilateral stop', 'lax unaspirated apical stop' and 'lax unaspirated velar stop'.

Hubbell rightly also mentions those cases in which a labiodental fricative [f] as in *sphere* and a palato-alveolar affricate [tʃ] as in *question* occur after /s/.

19.2. Referring to all such cases we have been mentioned above, Hubbell says that 'Under these conditions the oppositions /p/-/b/, /t/-/d/, /k/-/g/, /f/-/v/, and /tʃ/-/dʒ/ do not occur.[25]

This statement is certainly to be taken to mean that /p/ vs /b/, /t/ vs /d/, /k/ vs /g/, /f/ vs /v/, and /tʃ/ vs /dʒ/ are neutralized after /s/, and not that /p/, /t/, /k/, /f/ or /tʃ/ occurs to the exclusion of /b/, /d/, /g/, /v/ or /dʒ/, respectively, that is, limited distribution of the latter groups of voiced consonants. Indeed, Hubbell says as follows.

> Whenever an opposition is suspended in a particular position, the question how one is to classify the phones arises. To label them archiphonemes or to establish a separate phonemic category in each instance of the sort is undoubtedly the procedure *least open to attack* [emphasis added].

This is the first time that Hubbell (1972) mentions 'archiphoneme' in connection with 'neutralization (suspension)' and 'position of neutralization (suspension)'. Hubbell's words 'to

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[23] I am using here the term 'partial neutralization' in the following sense. In Akamatsu (1988: 135-6), I wrote as follows in order to explain 'partial neutralization': 'Complete neutralization may presumably be exemplified by neutralization of /p/-/b/ in German, /m/-/n/-/ŋ/ in English, /m/-/m'/-/n/-/n'/ in Japanese, etc., while partial neutralization may be exemplifieid by neutralization of /m/-/n/ in English, /é/-/è/ in French, /i/-/e/ in Bulgarian, etc. As can be seen from these examples, the distinction between complete neutralization and partial neutralization consists in whether *all* or *only some* of the phonemes of an order or a series are the terms of a neutralizable opposition.

[24] In the Acknowledgments in his PhD thesis, Hubbell writes: 'Professor Elliott V[an]. K[irk]. Dobbie and André Martinet were kind enough to read the early drafts and I have incorporated many of their suggestions in the final form.' Also, Martinet (1993: 265) has this to say: 'Bien avant Labov, est sortie, vers 1950, une thèse sur les prononciations new-yorkaises, par Alan Hubbell, avec qui je me suis longuement entretenu. La dynamique que relève Labov n'y apparaissait pas. Hubbell était lui-même new-yorkais, mais il n'etait pas, à l'époque, sensibilisé à la pression exercée sur New York par l'américain général.' As for Berger, it is easy to imagine that not only, as we already saw, does he refer to Martinet (1949: 13) at the outset of Berger (1949: 255) but, we assume he was a regular reader of *Word* whose Editor Martinet was (1947-1955).

label them archiphonemes ...' must be taken as a bold statement to have been made during the heyday of post-Bloomfieldian era.

19.3. However, it is somewhat surprising that Hubbell wrote '*least open to attack*'. At the time when Hubbell (1950) was published and was reprinted as Hubbell (1972), in the heyday of post-Bloomfieldian era (1940s – 1950s), antagonism in America to concepts like 'neutralization' and 'archiphoneme' was so powerful and widespread that it is inconceivable that the concept of 'archiphoneme' would have been accepted at all by post-Bloomfieldians. This is not at all surprising because, fundamentally, European linguistics was rooted ultimately on writings of Ferdinand de Saussure (1857-1913) whereas American linguistics developed on works of Leonard Bloomfield (1887-1949) and others, and their theoretical frameworks, European and American, were distinctly different from each other.

19.4. Having presented /p/ vs /b/, /t/ vs /d/, /k/ vs /g/, /f/ vs /v/ and /tʃ/ vs /dʒ/ in English as neutralizable oppositions, Hubbell does not propose to represent the archiphoneme in transcriptions by means of a capital letter, e.g. P, hence /P/, as Berger (1949) earlier would have done if he had mentioned these neutralizable oppositions. As a matter of fact, there is no need for Hubbell to do so because, as we see below, Hubbell does not after all bring in the archiphoneme in his solution of neutralization.

19.5. While Hubbell does endorse the concept of the archiphoneme, he immediately writes as follows.

> But most phoneticians, desiring for one reason or another to work with the smallest possible number of categories, assign the phones in the position of suspension to one member of the suspended pair. This procedure seems to me defensible enough so long as one recognises it as arbitrary and makes no exaggerated claims for its rigidly scientific character. In the case of the stops, almost all writers agree in assigning the phones in *spill*, *still*, and *skill* to /p/, /t/, and /k/, respectively. I have followed the usual practice here ...

Furthermore, right at the end of the section where he deals with vowels (pp. 58-90), Hubbell repeats (p. 90) the above quoted stand of his defending the arbitrariness of his procedure, using the words *legitimate enough* and *arbitrary*.

19.6. Hubbell consistently emphasizes *arbitrariness* in assigning phones after /s/ to one of the pair of the phonemes of each neutralizable opposition, i.e. /p/, /t/, /k/, /f/, /tʃ/. From a functionalist viewpoint, what Hubbell does so represents a step back from his proclaimed assertion in favour of both 'neutralization' and 'archiphoneme'. From a functionalist viewpoint, it is unacceptable to assign the phones in the position of suspension to one or the other of the pair of phonemes of the neutralizable opposition, whether it be /p/ or /b/, /t/ or /d/, /k/ or /g/, /f/ or /v/, and /tʃ/ or /dʒ/ because all these phonemes are annulled in neutralization.

19.7. From a functionalist point of view, it is untenable that Hubbell (1972: 21, 23, 29) chooses to assign the phones after /s/ in *spill*, *still* and *skill* to /p/, /t/ and /k/, respectively. Nowhere does Hubble attribute the phones in question to the three archiphonemes which could be shown as /P/ or /T/ or /K/. Hubbell (*op. cit.*: 20) mentions the oppositions /f/ vs /v/ and /tʃ/ vs /dʒ/ and their being neutralizable oppositions after /s/, but he does not specifically mention on any later page how he assigns the phone occurring after /s/ in *sphere* and the phone occurring after /s/ in *question*. Undoubtedly he will assign them to /f/ and /tʃ/, rather than /F/ and /Č/.

19.8. Hubbell (*op. cit.* 90) mentions another kind of neutralization, that of /t/ vs /d/ (not preceded by /s/) in English by saying '... the alveolar stops in the type of pronunciation that does not distinguish *bitter* from *bidder*'.

Hubbell (*op. cit.*: 23-4) writes,

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> The assignment of what is ordinarily called "voiced *t*" to the phoneme /d/ may require some justification. When a voiced tap is used in *atom*, *latter*, or *kitty*, the words become homonyms of *Adam*, *ladder*, and *kiddie*, which are also most commonly pronounced with a voiced tap. *The /t/-/d/ opposition is thus suspended in this position* [emphasis added]. One might of course establish a separate phonemic category to include these phones, but assigning them arbitrarily to /d/ seems the simplest and most reasonable procedure.

I am highly sceptical of Hubbell's analysis of the so-called 'voiced t' in *atom*, *latter*, *kitty*, etc. Why does he say that /t/ vs /d/ is neutralized on the one hand but ascribes 'voiced t' occurring on the context of neutralization to /d/ on the other. At any rate, we have amply seen that, despite his accepting 'archiphoneme' as well as 'neutralization', Hubbell ultimately settles for non-recourse to them and agrees with post-Bloomfieldians' widespread practice of rejecting both 'neutralization' and 'archiphoneme'. Interested readers may wish to look at Akamatsu (1988: 188-91) where I discussed Hubbell's (1972) ultimately non-functionalist analysis of neutralizations of /p/-/b/, /t/-/d/ and /k/-/g/ after /s/ in English.

20.0. I have examined in the foregoing parts of this article how a few chosen Anglophone non-functionalists comprehend the concepts of 'neutralization' and, specifically, how they analyzed the phenomenon of neutralization in their own way.

20.1. I have noted that the concept of 'archiphoneme' has no place at all in the non-functionalists' own analyses of 'neutralization'. (The two exceptions, however, are Berger and Hubbell). In fact, the archiphoneme is irrelevant to the generality of non-functionalists for a variety of reasons.

> 1) The entity to which non-functionalists attempt to ascribe sounds in the position of neutralization is anything but the archiphoneme.
>
> 2) The concept of the phoneme with which non-functioinalists operate is such that it does not lead to identifying the archiphoneme.
>
> 3) The concept of 'exclusive relation' is unknown to non-functionalists but is necessary in connection with the phonological content of the archiphoneme. The member phonemes (two or more, as the case may be) of a neutralizable opposition should be in exclusive relation and consequently form an exclusive opposition.

I will discuss these three points in turn.

20.2. 1) With the sole exception of Berger, all the non-functionalists (Hubbell ultimately joins them) we have seen, say that there are cases of neutralization in the position of neutralization between two phonemes, but then seek to assign the sounds occurring in that position to either of the two phonemes. Their favourite examples are neutralization of /p/ vs /b/, /t/ vs /d/ and /k/ vs /g/[26] after word-initial /s/ in English[27] Let's take the example of /p/ vs /b/. A number of non-functionalists examine the phonetic nature of the sounds occurring in the position of neutralization and conclude that the sounds are assigned to /p/ or /b/ with equal validity. They fail to understand the fundamental fact that neutralization of /p/ vs /b/ means that *both /p/ and /b/ are annulled in the position of neutralization*. It is perfectly clear that, in the case of neutralization of /p/ vs /b/ in English, any phonological

[25] Mention of /tʃ/-/dʒ/ as one of the neutralizable oppositions in English is often forgotten by a number of writers. Hubbell is one of those who do not fail in this. See Akamatsu (2022a: 178-80).

[26] Additionally /tʃ/-/dʒ/ and /f/-/v/ as well are dealt with by Hubbell.

entity to which the sounds should be assigned is neither /p/ nor /b/. The phonological entity in question is an archiphoneme.

2) It is necessary to know first the concepts of 'phoneme' with which post-Bloomfieldians operated. *A Glossary of American Technical Linguistic Usage 1925-1950*, p. 46, under the headword **phoneme**, gives bewilderingly diverse quotations from post-Bloomfieldians about 'phoneme'. Here is just one of the quotations.

> *a **phoneme** is a class of phonetically similar sounds, contrasting and mutually exclusive with all similar classes in the language*. BT42.53 [Bloch & Trager 1942: 53]

This definition of the phoneme is basically the same as Jones (1962: § 31) which runs as follows.

> ... a phoneme is A FAMILY OF SOUNDS IN A GIVEN LANGUAGE WHICH ARE RELATED IN CHARACTER AND ARE USED IN SUCH A WAY THAT NO ONE MEMBER EVER OCCURS IN A WORD IN THE SAME PHONETIC CONTEXT AS ANY OTHER MEMBER [Jones's capitals].

20.3. It is impossible for non-functionalists who operate with their concept of the phoneme to identify an archiphoneme which ensues from neutralization of a phonological opposition. It is necessary, first of all, for non-functionalists to comprehend the concept of the phoneme with which functionalists operate. One functionalist aspect of the phoneme is concisely mentioned as follows.

> Un **phonème** peut être considéré comme un ensemble de traits pertinents qui se réalisent simultanément [Martinet's boldface]. (Martinet 1956. 3:13)

The phrase 'un ensemble de traits pertinents' is what I have personally translated into English as 'a complex of multiple non-dissociable distinctive phonic features' in Akamatsu (1988: 100). Incidentally, I emphasize that by 'non-dissociable' is meant that a relevant feature is *a functionally single entity, a phonologically global entity*.

20.4. The phrase '*traits pertinents qui se réalisent simultanément*' may require clarification. In Martinet's theory of 'double articulation' of language, the first articulation is at the level of monemes; monemes occur successively, and the second articulation concerns the level of the signifier (F *signifiant*) at which level elements of distinctive units, i.e. phonemes and archiphonemes, occur also successively. On the other hand, relevant features (of which phonemes and archiphonemes consist of) occur simultaneously, *not successively*. This is why the concept and term of 'third articulation' are inappropriate in reference to relevant features.

20.5. One functionalist aspect of the archiphoneme is given below.

> L'ensemble de traits pertinents communs a des phonèmes qui sont dans un rapport exclusif est appelé **archiphonème** [Martinet's boldface]. (Martinet 1956: 3:19)

It is clearly stated that an archiphoneme is a complex of relevant features. This concept of an archiphoneme cannot be arrived at through non-functionalists' concept of a phoneme which itself does not consist of a complex of relevant features. It should be warned immediately that non-functionalists' occasional or persistent presentation of a phoneme in terms of *soi-disant* 'distinctive features'[28] has nothing to do with functionalists' notion of a phoneme.

Here is another functional aspect of the archiphoneme.

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> The archiphoneme is the common base of the phonemes of a neutralizable opposition which occurs in the position of neutralization.

The difference between the two aspects of the archiphoneme is as follows. The first aspect unspecified the necessary linke between the archiphoneme and neutralization and thus leaves the possibility that the archiphoneme may reside in the member phonemes of a neutralizable opposition *even in the position of relevance as well*. The second definition precludes such a possibility. I personally prefer, and operate with, the latter definition. For my discussion on this issue, see Akamatsu (1988: 247-51).

It is clear that an archiphoneme can only be identified as a sum of relevant features which is equal to the common base of the member phonemes of a neutralizable opposition. This is only possible if the member phonemes themselves consist of a sum of relevant features in the first place. None of this is possible if one is to operates with post-Bloomfieldians' or Jones's concepts of the phoneme to which the idea of a sum of relevant features is inapplicable.

The concept of 'exclusive relation' is requisite for that of the archiphoneme. Here first is a definition of exclusive relation.

> Deux phonèmes[29] sont dits dans un **rapport exclusif** lorsqu'ils ne se distinguent que par un seul trait pertinent[30] et qu'ils sont seuls à présenter tous les traits qu'ils ont en commun ... [Martinet's boldface]. (Martinet 1956: 3-17)

In my writings about neutralization and the archiphoneme, I conveniently employ a short term, 'exclusive opposition', which is synonymous with 'opposition whose member phonemes (which may be two or more) are in an exclusive relation'. Moreover, what is meant by 'tous les traits qu'ils ont en commun' can be concisely called 'common base' following the term 'Vergleichsgrundlage' employed by Trubetzkoy (1939: 60, 70). The common base is crucially important as we shall see briefly below. An exclusive opposition is such that the common base of the member phonemes of an exclusive opposition is not found in any other phoneme of the same phonological system. A neutralizable opposition is bound to be an exclusive opposition. But an exclusive opposition can be either a neutralizable opposition or a constant opposition.

It is easily seen that 'L'ensemble de traits pertinents communs à des phonèmes qui sont dans un rapport exclusif' corresponds to what has just been mentioned above in (3), the common base. In other words, the common base (of the phonemes of an exclusive neutralizable opposition) corresponds to the archiphoneme.

21.0. I have had several occasions above to refer to the concept of 'relevant features' in connection with the concepts of 'phoneme' and 'archiphoneme'. A few more words seem to be in order. (Interested readers may wish to have a look at Akamatsu (1988: 77-110) where I have extensively treated the subject of relevant features.)

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[27] Berger alone deals with neutralization of /ɛ/ vs /æ/ vs /e/ *and* that of /ɛ/ vs /e/, in American pronunciation. He does not mention the sounds occurring in the position of neutralization, nor does he attemp to assign those sounds to the relevant archiphonemes.

[28] I have in mind 'distinctive features' used in generative phonology and, equally, so-called 'distinctive features' presented by some phoneticians including Cruttenden in (Gimson 2014: 44-5), Roach (2009a: 102-3), etc. Theirs are *phonetic* features and not distinctive ones, and not phonological features. See further what Baltaxe (1978: 15-6) has to say.

[29] In fact, two or more can be the case.

21.1. It is important to emphasize that the idea of a phoneme being a sum of relevant features goes originally back to N. S. Trubetzkoy. Trubetzkoy (1939: 35) writes as follows.

> Man darf sagen, daß *das Phonem die Gesamtheit der phonologisch relevanten Eigenschaften eines Lautgebildes ist*.

Martinet (1964: 67) appropriately says:

> L'idée que le phonème peut se définir comme un ensemble de caractéristiques phoniques distinctives qui se réalisent simultanément se trouvait en germe dans l'enseignement de Troubetzkoy, et a été dégagée indépendamment par différents linguistes au cours de la seconde guerre mondiale.

At a subsequent date Martinet (1965: 127) writes:

> Troubetzkoy est mort avant d'avoir put formuler une théorie des traits distinctifs qui était latente dans son œuvre.

Earlier, Trubetzkoy (1939: 35) adds the following in a footnote,

> Vgl. eine ähnliche Definition bei R. Jakobson in der tschechisehen Enzyklopädie *Ottův Slovník Naučný*, Dodatky II, 1, 608 (s. v. fonéma).

21.2. Trubetzkoy's nascent idea of *phonologisch relevanten Eigenschaften* has developed in two separate streams of different concepts of distinctive feature, i.e. Jakobson's on the one hand (binarism, apriorism, universalism) and Martinet's on the other (which rejects the characteristics just mentioned). It is easy to see how significant and far-reaching the divergence is between the relevant feature (Martinet) and the (distinctive) feature (Jakobson & Halle).

The credit is entirely due to Martinet who, following Trubezkoy's nascent idea, has in subsequent years developed and perfected the concept of the relevant feature such as we know today in functional phonology.

21.3. When functionalists consider that the phoneme consists in a sum of relevant features, the concept of the relevant feature is what Martinet and his functionalist associates mean and operate with, not the one with which generative phonologists do. There are crucial differences between relevant features with which functionalists operate on the one hand and distinctive features (or just 'features') with which non-functionalists operate. (The difference in terms between 'relevant' and 'distinctive' is of no importance at all.)[31] The difference is so significant and far-reaching that some space is necessary here to show the difference. First here is what Martinet (1964: § 3.7) has to say.

> ... Tandis que nous [functionalists] avons toujours tendu à éliminer ce qu'il pouvait y avoir de subjectif dans l'analyse troubetzkoyenne et à ne jamais sacrifier l'originalité de chaque système, le binarisme a, au contraire, procédé par affirmations de caractère général et recherché à faire entrer toute réalité phonologique dans des cadres préétablis.

Distinctive feature theory establishes a pre-established universal set of a fixed number of distinctive features out of which individual languages choose some or others. In other words,

[30] The expression 'par un seul trait pertinent' here seems problematical to me. See Akamatsu (1988: 55-6) for my discussion on this point. I would prefer to say 'par deux ou plus traits pertinents' or even 'par deux ou plus traits pertinents en opposition'; for instance, /p/ and /b/ in French are distinguished through the opposition between "voiceless" and "voiced" which are two relevant features.

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distinctive features are set up irrespective of different phonological systems of any individual languages. On the contrary, functionalists establish the relevant features of an individual language by means of the commutation test. All the relevant features thus established entertain their mutual relationship within that specific language.

Criticism such as the above from functionalists is duly directed against distinctive feature theories which R. O. Jakobson & C. G. M. Fant & M. Halle (1952), A. N. Chomsky & M. Halle (1968) and those working in generative phonology operate with. Jakobson's emerging interest in what was to develop much later into a full-fledged 'theories of distinctive features' can be glimpsed as early as in Jakobson (1941).

21.4. Here are a few quotations from Martinet (1965: 138-9) which indicate, with a few concrete examples, what relevant features are like and how they totally differ from (distinctive) features.

> ... un trait pertinent est un *ensemble* [Martinet's italics] de caractéristiques phoniques qui ne se trouvent dissociées nulle part dans le système.
>
> « Bilabialité » suppose non seulement une occlusion réalisée au moyen des deux lèvres, mais tout un jeu de l'ensemble des organes buccaux et pharyngaux; « sonorité » ... comporte non seulement des vibrations glottales, mais un certain degré de rigueur articulatoire et probablement d'autres charactéristiques qui pourraient être décisives, au moins dans certains contextes.
>
> ... « sonorité » désigne ce qu'il y a de commun dans le comportment de /b/, /v/, /d/, etc., et qui les distingue des non-sonores correspondantes, et n'implique pas nécessairement, dans toutes les réalisations, des vibrations de la glotte. *Le terme qui désigne un trait distinctif doit toujours être compris comme conventionnel et non descriptif* [Martinet's italics].

21.5. As pointed out by C. A. M. Baltaxe (1978: 15-6), distinctive features, developed by and attributable to Chomsky & Halle (1968), have nothing to do with the distinction between phonologically distinctive features and phonologically irrelevant features and, consequently, distinctive features simply stand for and are (to be) known as 'features'. I go along with Baltaxe on this point. On the other hand, the validity of the relevant feature rests with the function it fulfils, i.e. distinctive function. The relevant feature is sustained by the function it fulfils and the notion of opposition (as is that of the phoneme) on which it is based and is a distinctive unit itself (as is the phoneme). Not so the (distinctive) feature in generative phonology.

21.6. On the contrary, distinctive features, or rather features, fulfil no distinctive function. For example, the feature 'voice' is used with two values, [+voice] and [-voice], where the feature 'voice' itself plays no distinctive function. On the contrary, a relevant feature functions distinctively, so that, for instance, /p/ and /b/ in English are opposed to each other through two relevant features "voiced" and "voiceless" which are opposed to each other. The concept of "voiced" and that of [+voice] on the one hand and the concept of "voiceless" and that of [-voice] on the other are totally different. Every distinctive feature is, unlike every relevant feature, binary, [+/- voice], [+/- nasal], [+/- lateral], etc.

22.0. Neutralization of /t/ vs /d/ in word-final position in German is frequently mentioned in the literature, by both functionalists and non-functionalists. O'Connor chooses this neutralization to explain it in his own way. He mentions the case of neutralization of /t/ vs /d/. He first refers to the context of relevance of /t/ vs /d/ in German, i.e. word-initial position, his examples being *Deich* and *Teich*. Where he then goes wrong is to believe that *Rad* and *Rat* are phonologically both /raːt/ where /t/ is a phoneme and says that the phonological opposition /t/ vs /d/ word-initially (*Teich* vs *Deich*) is replaced by /t/ word-finally and, consequently(?), that /t/ vs /d/ is neutralized in that context. O'Connor's view that *Rad* and

Rat are phonologically both /ra:t/ in the context of neutralization is clearly mistaken. It seems anyway that O'Connor suggests here that /t/ occurs to the exclusion of /d/ word-finally in both *Rat* and *Rad*. This would be a case of limited distribution of /d/.

22.1. Here is how I myself explain neutralization of /t/ vs /d/ in German. According to my own analysis of the German consonant phonemes, /t/ is definable in terms of relevant features "voiceless apical nasal" and /d/ "voiced apical nasal". The pair of words, *Tank* and *Dank*, for example, are distinguished from each other word-initially through the difference between /t/ and /d/. Word-initial context is therefore a context of relevance of /t/ vs /d/. The common base of /t/ and /d/ is "apical non-nasal", and /t/ vs /d/ is an exclusive opposition. In contexts of neutralization, the opposition "voiceless" vs "voiced" is cancelled, leaving only "apical non-nasal" (i.e. the common base) being relevant, which is the archiphoneme "apical non-nasal". /t/ vs /d/ is neutralized word-finally. For example, the word *und* is phonologically /ʊn t-d/ (/ʊnT/), not /ʊnt/. Another example w ll be a pair of words, *tot* and *Tod*, which are phonologically both /to: t-d/ (/to:T/), not /to:t/. Another context of neutralization of /t/ vs /d/ is moneme-finally in compounds, as in *Land̲wasser*, *Mond̲see*, *Hand̲schrift*, etc.

22.2. It has been frequenly customary to give as an example of neutralization of /t/ vs /d/ in German such a case as the following.

The opposition /t/ vs /d/ ([t]) vs [d]) is valid word-medially, but this opposition is neutralized word-finally where the archiphoneme /t-d/ (/T/) occurs. (Each line below is to be read from left to right. /t-d/ can be alternatively symbolized by /T/.)

*Ra**t**es* /t/ [t] *Ra**t*** ... /t-d/ [t]
*Ra**d**es* /d/ [d] *Ra**d*** .../t-d/ [t]

The presentation above which represents the customary practice implies grammatical informnation about declension in addition to a phonetic/phonological facts. Tyros in phonology might be led to misunderstand that some grammatical fact *may* be fundamentally implicated in /t/ vs /d/ (on the left) > /t-d/ (on the right)'. The fact is that neutralization is a phonological phenomenon without intervention of grammatical phenomenon.

22.3.

T**eich* ... /t/ [t] *Ra**t ... /t-d/ [t]
D**eich* ... /d/ [d] *Ra**d ... /t-d/ [t]

The presentation above shows how O'Connor envisages /t/ vs /d/ on the left and /t-d/ on the right without resorting to grammatical information, the fact of declension; see ***T**eich* ..... *Rat* and ***D**eich* ..... ***R**ad*. In this sense I believe that O'Connor's presentation is less misleading.

Unfortunately, O'Connor's analysis is in fact as follows, which is less acceptable.

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T**eich* ... /t/ [t] *Ra**t ... /t/ [t]
Deich ... /d/ [d] *Ra**d*** ... /t/ [t]

Here below is another presentation I personally propose.

***T**ank* ... /t/ [t]
*to**t**/To**d*** ..... /t-d/ [t] / /t-d/ [t]
***D**ank* ... /d/ [d]

The mid position at which *to**t**/To**d***..... /t-d/ [t] / /t-d/ [t] is placed is deliberate, that is, between the level of ***T**ank* ... /t/ [t] and that of ***D**ank* ... /d/ [d].

22.4. I can propose yet another presentation as follows.

***T**ank* ... /t/ [t]
*an**d*** /t-d/ [t]
***D**ank* ... /d/ [d]

In this last presentation, there is no grammatical informatioin at all about declension among the three German words, ***T**ank*, ***D**ank*, *an**d***, so that this presentation exclusively shows neutralization as a phonological phenomenon, in this case neutralization of /t/ vs /d/. This last presentatioin simply shows that (i) /t/ vs /d/ is valid word-initially and (ii) /t/ vs /d/ is neutralized word-finally. I personally considers this presentation as the best.

23.0. In bringing this article to an end, here are my concluding remarks in **23.1** to **23.9**.

23.1. I have shown that non-functionalists (specifically, Anglophone non-functionalists, in this paper) misapprehend and consequently misrepresent the concept of neutralization in various manners. Non-functionalists fail to understand the fundamental fact that not only the concept of neutralization itself but all concepts directly associated with it derive basically from the concept of opposition, or to be precise, that of phonological opposition. Opposition pervades at every stage of neutralization of a phonological opposition.

23.2. Non-functionalists fail to realize that, in the context of neutralization, the member phonemes of a neutralizable opposition do not occur simply because, if the opposition is neutralized, the terms of the opposition are annulled. What occurs in the context of neutralization is the *archiphoneme*.

23.3. Non-functionalists are exclusively preoccupied with the phonetic facts occurring in the context of neutralization and attempt to ascribe it to one or the other, or to both, of the member phonemes, of the neutralizable opposition. This is doomed to failure because in fact none of the member phonemes occurs in the context of neutralization. The phonological entity occurring in the context of neutralization is obviously the archiphoneme, but the theoretical framework in which non-functionalists operate does not allow them to arrive at the archiphoneme.

23.4. What prevents non-functionalists from arriving at the concept of archiphoneme is that the phonemes with which they operate are not conceived in terms of sums of relevant features. Among the consequences this brings about is that the concept of 'exclusive opposition' which is required if the archiphoneme is to be identified in terms of relevant features is extraneous to non-functionalists.

23.5. Faced with a problem which need to be solved in terms of neutralization of a phonological opposition, non-functionalists find themselves abandoning any idea of neutralization, and instead, have recourse to the concept of 'limited distribution' of one or the other of the member phonemes of the neutralizable opposition.

23.6. The concept of 'neutralization' would seem to be irrelevant to those non-functionalists we have looked at except for Wells, Berger and Hubbell. It is more than likely that a growing number of newcomers to phonology who uncritically read about neutralization in books like the ones we have examined in this paper, will continue with mistaken ideas about neutralization.

23.7. The term 'neutralization' seems to have acquired a novel concept of 'neutralization' which deviates from the original concept and term of 'neutralization'. In the new so-called concept of 'neutralization', the concept of 'phonological opposition' and that of 'neutralization' are extraneous factors. In what is now alleged to be 'neutralization', 'phonological opposition' is bypassed, and the essential task seems to consist in determining which phoneme(s) (of a neutralizable opposition) phonetic entities (occurring in the context of neutralization) can be attributed to.

23.8. It will have been noticed that those non-functionalists we have mentioned above attempt to analysis only some cases of 'neutralization' (as they understand it) of oppositions between only *two* phonemes in English. None of them refer to and analyze neutralization of /m/ vs /n/ vs /ŋ/ as in *lump* /lʌ m-n-ŋ p/ ([m]), *hint* /hɪ m-n-ŋ t/ ([n]), *rank* /ræ m-n-ŋ k/ ([ŋ]), *iamb* /aɪ æ m-n-ŋ b/ ([m]), *hand* /hæ m-n-ŋ d/ ([n]), *ink* /ɪ m-n-ŋ k/ ([ŋ]), etc. (I indicated within square brackets various realizations of the archiphoneme /m-n- ŋ/ which is definable as "nasal".) How would the non-functionalists analyze these cases of neutralization is not immediately clear. Would they ascribe [m] in *lump* to /m/ on the grounds of phonetic similarity rathern than /n/ or /ŋ/? Would they ascribe [ŋ] in *ink* to /n/ ([ŋ] < [n]) or perhaps directly to /[ŋ/? Would they ascribe [m] in *iamb* to /m/rather than /n/ or /ŋ/? Such attributions of [m, n, ŋ] to /m/, /n/ or /ŋ/ are only speculative and anyway phonetic procedures rather than phonological ones.

23.9. It is probable that there are few (in fact, fewer and fewer) readers of functional phonology in which the concept of neutralization is correctly presented. Books entitled *Introduction to (English) phonetics and phonology* in our days hardly ever correctly present 'phonological opposition' and 'neutralization' as being practised in functional phonology.

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