

# THE COMMUTATION TEST AND MINIMAL PAIRS\*

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La prueba de la conmutación debería realizarse fundamentalmente sobre la base de un número de series conmutativas que se establecen de conformidad con el concepto de "oposición múltiple", no con el de "oposición simple", con el que sólo están asociados los pares mínimos. Una excesiva dependencia de los pares mínimos resulta perniciosa para los análisis fonológicos y puede conducir, entre otras cosas, a análisis problemáticos de la neutralización y del archifonema.

Palabras clave: prueba de la conmutación, oposición múltiple, oposición simple, pares mínimos, binarismo, neutralización, rasgo relevante.

Within the framework of functional phonology as practised by Martinet and his associates, the commutation test is undoubtedly the indispensable analytical procedure whereby, for a given language, the phonologist can identify the distinctive units of the second articulation (cf. double articulation<sup>1</sup>), i.e. phonemes and archiphonemes, together with their relevant features<sup>2</sup>, also tonemes and architonemes in the case of a tone language, and discover instances of neutralization (with which the archiphonemes and architonemes are necessarily associated)<sup>3</sup> and cases of

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\* The final version of the present paper has benefited from comments and criticisms kindly offered to me by A. Martinet. I should hasten to add, however, that Martinet remains in disagreement with the general tenor of this paper.

<sup>1</sup> For "double articulation" (which consists of the first articulation and the second articulation), see e.g. Martinet (1955: 4.2, 5.6), Martinet (1960: 1.9), Martinet (1962: 21-26), Martinet (1965: 1-35), and Martinet (1985: 2.17).

<sup>2</sup> It is worth warning right at the start that in no way should a relevant feature be confused with a distinctive feature with which the generative phonologist operates. A relevant feature and a distinctive feature have nothing to do, either conceptually or definitionally or operationally, with each other.

<sup>3</sup> The addition of the word "necessarily" here is intended to make sure that my own stand is that neutralization and the archiphoneme or the architoneme are inseparable.

systematic non-occurrence of some phonemes and tonemes in given contexts<sup>4</sup>. Tonemes and architonemes, eluding as they do the framework of double articulation, are nevertheless distinctive units and consequently elicited through the commutation test. The commutation test furthermore identifies variants (or realizations) – contextually determined or otherwise – of phonemes, archiphonemes, tonemes and architonemes<sup>5</sup>. I have recently made remarks at some length on the commutation test, both on the principles of the commutation test and how to perform it in Akamatsu (1992: 60-80) and do not need to repeat those remarks here. Note that Martinet<sup>6</sup> seems to understand the commutation test by definition in a sense less broad than I have indicated above and elsewhere (e.g. Akamatsu 1992: 60).

The commutation test is performed on several sets (associated with different phonetic contexts) of such different significant units as are phonetically minimally or near-minimally distinguished from each other. I have conveniently but unorthodoxically, for want of a better term, employed the expression “multiplets” (Akamatsu 1992: 52) to refer to the different significant units of a set of the type I have just described. Multiplets are associated with a multiple opposition (i.e. an opposition whose terms are three or more)<sup>7</sup>. What is widely known as a minimal pair

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<sup>4</sup> These last are generally known among many phonologists under the convenient distributionalist name of “defective distribution” or “limited distribution”.

<sup>5</sup> They are of course what are known as combinatory variants and free variants, respectively. I do not have in mind here, in connection with the commutation test, other sorts of variants like “stylistic variants” and “emotive (or expressive) variants”, as phonic material susceptible of containing such variants should not be used for the purpose of the commutation test. See in this connection Martinet (1960: 3.7) and Akamatsu (1992: 63-64).

<sup>6</sup> Cf. e.g. Martinet (1957: 74) and Martinet (1965: 127): “Le problème, non unique, mais central de la phonologie synchronique est le dégagement des unités distinctives et leur identification, notamment en termes de traits distinctifs.”

<sup>7</sup> “Multiple opposition” (my own coinage) should not be confused with “multilateral opposition” as defined and employed by Trubetzkoy (1939: 61). They are both conceptually and definitionally different from each other.

is, on the other hand, associated with a simple opposition (i.e. an opposition whose terms are two only) (Akamatsu 1992: 52, 64, 77, 159)<sup>8</sup>.

The phonologist should be warned against excessive reliance on minimal pairs in connection with the commutation test in his task of correctly identifying the distinctive units of a language in terms of relevant features. Such distinctive units are phonemes, archiphonemes, tonemes, architonemes and relevant features. In the present paper, however, I intentionally limit myself to considering phonemes, archiphonemes and their relevant features. To return to the question of minimal pairs and the commutation test, /p/ in French, for example, cannot and should not be defined merely on the basis of, say, the minimal pair *pain* vs. *bain* or on the basis of the minimal pair *pain* vs. *main*. In order for /p/ (in *pain*) to be defined in terms of relevant features, i.e. as "voiceless bilabial non-nasal", we crucially require *pain*, *bain*, *main*, *fin*, *vain*, *teint*, *Quint*, *sein*, and (*ma*)*chin* out of a (longer) whole set of multiplets to which we refer as a commutative series associated with the phonetic context [-ē], i.e. *pain*, *bain*, *fin*, *vain*, *teint*, *daim*, *sein*, *zain*, (*ma*)*chin*, *geindre*, *Quint*, *gain*, *main*, *nain*, *rein*, and *lin*. This is because "bilabial" (of /p/) in French can only be established by virtue of its being opposed to all of "labiodental" (of /f/), "apical" (of /t/), "dorsal" (of /k/), "hissing" (of /s/), and "hushing" (of /ʃ/) in this language, and not merely by virtue of its being opposed to one of them, whichever it may be. In fact, it is necessary to pursue the commutation test on a few other commutative series associated with other phonetic contexts whereby /p/ in French will also be identified as the sum of "voiceless bilabial non-nasal" until we become aware of the consequence of diminishing returns. Even where a minimal pair might seem to suffice for establishing, for example in French, "voiceless" for /p/, or "voiced" for /b/, the phonologist should not intend, from the start, to resort to a minimal pair but confirm during

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<sup>8</sup> "Simple opposition" (also my own coinage) corresponds to the type of phonological opposition with which Trubetzkoy generally operates: the various types of phonological opposition he proposes, including "bilateral opposition" and "multilateral opposition", are simple oppositions.

the course of the commutation test for French that minimal pairs involving the opposition between /p/ and /b/ are really necessary and sufficient for establishing "voiceless" for /p/ or "voiced" for /b/. What has been said of "voiced" and "voiceless" in French can be said of "nasal" and "non-nasal" in that language. In other words, recourse to a minimal pair is incidental, not a matter of principle, in the commutation test. This is why I have recently deliberately played down the role of "(perfect or near) minimal pair" in connection with the commutation test (Akamatsu 1992: 64, 77, 159). I hasten to add that there are actually both the theoretical and practical aspects involved in the question of the scale (full or less than full?) of the commutation test; I return to this point at the end of this paper.

The commutation test is therefore basically founded on multiple oppositions, not simple oppositions. As I have pointed out recently (Akamatsu 1992: 52), the concept of "minimal pair" implies, and is based on, that of "simple opposition". I shall, in the context of the present discussion in this paper, conveniently characterize as a "full-scale" pattern of the commutation test the type of commutation device which involves a number of commutative series associated with different phonetic contexts, such as I myself have shown in a recent work (Akamatsu 1992: 65-66).

Martinet (1956: 56ff.)<sup>9</sup>, in his phonological analysis of a Franco-Provençal *patois* spoken at Hauteville (Savoy) in France<sup>10</sup>, shows the following "reduced" pattern of the commutation test whereby each of the phonemes of this *patois* is established. I shall quote partially from his work.

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<sup>9</sup> Martinet (1956) is an enlarged and revised version of Martinet (1945) which was written during the space of a fortnight in 1944 (cf. Akamatsu 1988: n. 138 on p. 445). Martinet's stance in Martinet (1956) which I take up for discussion in this paper should therefore be understood to date back to 1945, or more likely to early 1944 or perhaps even earlier (cf. Martinet 1993: 258). The simple reason why I consistently cite Martinet (1956) rather than Martinet (1945) is that the former is probably more easily accessible to the readers.

<sup>10</sup> For Martinet's own information about the Franco-Provençal *patois* spoken at Hauteville, see Martinet (1956: 51-54, as well as the Préface therein which is on p. 9).

Le phonème *p*.

L'identité phonologique de ce phonème ressort des rapprochements suivants :

1<sup>o</sup> *p/b* [...]

2<sup>o</sup> *p/f* [...]

3<sup>o</sup> *p/m* [...]

[...] (Martinet 1956: 56)

Le phonème *b*.

L'identité phonologique de ce phonème ressort de certains rapprochements indiqués ci-dessus à propos de *p* [...] et de ceux qui suivent :

1<sup>o</sup> *b/v* [...]

2<sup>o</sup> *b/m* [...]

[...] (Martinet 1956: 56-57)

Le phonème *m*.

L'identité phonologique de *m* ressort de rapprochements déjà indiqués ci-dessus à propos de *p* et de *b* [...], ainsi que de ceux qui suivent :

*m/n* [...]

[...] (Martinet 1956: 62-63)

I should mention straightaway in order to obviate any possible misunderstanding that what I have omitted quoting in full by putting [...] above does not list further phonemes on Martinet's part but a few examples he adduces of pairs of words of Hauteville *patois* distinguished by virtue of the opposition between the two phonemes in question. What is striking in the presentation above is that Martinet consistently resorts to simple oppositions, on which minimal pairs are based, namely *p/b*, *p/f*, *p/m*, *b/v*, *b/m*, and *m/n*. His practice here is compatible with his statement made a few pages earlier (Martinet 1956: 41) that "En pratique, il suffit de montrer par la commutation que [š] [in French] est distinct des phonèmes dont les réalisations sont les plus nettement apparentées, c'est-à-dire en français /s/ et /ž/ [...]." In other words, he suggests recourse to

the simple opposition /š/ - /s/ on the one hand and the simple opposition /š/ - /ž/ on the other. There is a further and related point I wish to make. I cannot agree with his specification "... phonèmes dont les réalisations sont les plus nettement apparentées [my italics]"; this specification seems to me inappropriate<sup>11</sup>. I would rather talk about "the phonemes which are "direct neighbours in the system"; each of /p/, /f/, /t/, /s/ and /k/ is equally a direct neighbour of /š/ in the French consonant system (regardless of degrees of similarity or dissimilarity among the realizations of these consonant phonemes). These phonemes are in the same series, i.e. the "voiceless" series, in French (Martinet 1960: 3.14, 3.15). With regard to Martinet's reference to /š/ - /ž/ in French above, these two phonemes are direct neighbours in the phonological system – they are in the same order, i.e. the "hissing" order (Martinet 1960: 3.14, 3.15) – and constitute the necessary and sufficient simple opposition for us to establish "voiceless" of /š/ and "voiced" of /ž/. As for his reference to /š/ - /s/, this simple opposition is, in my view, necessary but not sufficient since, in order to establish "hushing" of /š/, we need not only /s/ but also /p/, /f/, /t/ and /k/ to compare /š/ with<sup>12</sup>. Recourse to minimal pairs, which are

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<sup>11</sup> Martinet's specification in question might at first sight seem to reflect the stance expressed in Trubetzkoy's (1939: 59) following lines: "Unter phonologischem Gehalt verstehen wir den Inbegriff aller phonologisch relevanten Eigenschaften eines Phonems, d. i. jener Eigenschaften, die allen Varianten dieses Phonems gemeinsam sind und es von allen anderen, vor allem von den nächstverwandten Phonemen derselben Sprache unterscheiden [my italics]", provided that "nächstverwandte Phoneme" in the above passage are to be taken in a phonetic sense (i.e. in terms of their phonetic realizations). Actually, that Trubetzkoy means otherwise by "nächstverwandte Phoneme" is evident in the exemplification he immediately goes on to provide in connection with the characterization of /k/ in German in terms of relevant features. Trubetzkoy, in his passage quoted above, actually refers to "direct neighbours in the system". Trubetzkoy (1939: 60) himself writes: "Die Definition des Gehaltes eines Phonems hängt davon ab, [...] welchen anderen Phonemen es entgegengestellt wird."

<sup>12</sup> What I have been saying in these several lines in connection with "direct neighbours in the system" actually illustrates what I wrote earlier as follows (Akamatsu 1988: 68): "... immediate neighbours in the same phonological system, i.e. those which are in the same series or in the same order." What I particularly wish to emphasize is that my insistence on "direct neighbours in the system" relates intimately to the nature of the relevant feature I believe in and point out here and there in this paper.

obligatorily based on simple oppositions, in the course of the commutation test by Martinet (1956), reminds us of his earlier preferential reference to *two* phonemes in connection with the concept of "exclusive relation" (Martinet 1945: 13). His recourse to minimal pairs in connection with the commutation test is also found later in Martinet (1956: 56ff) even though he also takes account of *three* (and by implication, more) phonemes, though still giving priority to two phonemes, in connection with the concept of "exclusive relation" he himself proposes (Martinet 1956: 42).

Martinet (1956: 80ff.) subsequently presents all the phonemes of the Hauteville *patois* (both the consonants and the vowels) *defined in terms of the relevant features*. This is how Martinet (1956: 80) presents *p*, *b*, and *m*, for example. To my mind, Martinet's mention of "bilabial (*p/f*, *p/t*, etc.)", for example, is quite satisfactory, but neither "bilabial (*b/v*)" nor "bilabial (*m/n*)".

*p* : sourd (*p/b*), bilabial (*p/f*, *p/t*, etc.) [...].

*b* : sonore (*p/b*), bilabial (*b/v*), non nasal (*b/m*).

*m* : bilabial (*m/n*), nasal (*m/b*).

A few remarks are called for in this connection.

(1) Martinet is undoubtedly right to put "(*p/f*, *p/t*, etc.)" here, but he does not previously (Martinet 1956: 56) specifically put "*p/f*, etc" during the course of the commutation test itself as I believe he should. There is therefore some ambiguity on this point. I believe that he should put either "*p/t*, etc" (rather than just "*p/f*"), or all of *p/f*, *p/b*, *p/t*, *p/ɥ*<sup>13</sup>, *p/s*, *p/ʃ*, and *p/k* precisely because "bilabial" in the Hauteville *patois* can only justifiably be established in opposition to all the other relevant features concerned, namely "labiodental" (of *f*), "interdental" (of *p*<sup>14</sup>), "palatal" (of

<sup>13</sup> By the symbol *ɥ* Martinet means "voiceless palatal non-nasal".

<sup>14</sup> This symbol is known as "thorn" and familiar to students of Old English. It is not in the stock of the IPA, and many contemporary scholars may prefer to use the symbol *θ* (known as "theta") for English phonology as well.

ʝ, "hissing" (of *s*), "hushing" (of *ʃ*), and "dorsal" (of *k*). That is to say, "bilabial" here should not be considered to be identified by virtue of a simple opposition, say *p/f*. It might be objected that *p/f* is mentioned merely as one example of the necessary oppositions<sup>15</sup>, but in that case it would be better to explicitly indicate this by adding the expression "etc.". What I have just said applies, *mutatis mutandis*, to "bilabial" of *b*; in other words, more than just a simple opposition *b/v* should be involved, either explicitly or implicitly.

(2) Under *p*, Martinet (1956: 80) puts "non nasal (*p/m*)", and under *b* "non nasal (*b/m*)". This is fair enough because these two minimal pairs are necessary and sufficient to establish "non-nasal" of *p*.

(3) Martinet (1956: 80) puts, under *m*, "nasal (*m/b*)", which is really a repetition of Martinet's (1956: 57) previous indication of *b/m*. However, what is necessary here from the standpoint of *m* is the indication of both *m/b* and *m/p* at the same time.

(4) Martinet (1956: 80) puts, also under *m*, "bilabial (*m/n*)". This is inadequate. We should have instead "bilabial (*m/n/ŋ*)", with the addition of the last-mentioned nasal consonant which is a palatal one<sup>16</sup>. My objection is for a reason similar to the one mentioned above in connection with *p/f*. "Bilabial" (of *m*) in the Hauteville *patois* can only be established in opposition to both the relevant features "dental" (of *n*) and "palatal" (of *ŋ*). What is really involved here is a multiple opposition *m/n/ŋ*, on which a minimal triplet would be based, not a simple opposition *m/n* or *m/ŋ*, or even both the simple oppositions *m/n* and *m/ŋ* at the same time. Splitting the multiple opposition *m/n/ŋ* into two simple oppositions *m/n* and *n/ŋ* (as is done by Martinet who, incidentally, fails to put *m/ŋ* at all) must be considered undesirable. It may not be useless at this point for me to emphasize that, in a given phonological system, a relevant feature may be what I call a bi-oppositional relevant feature which is opposable to only one other relevant feature in a given language while another relevant

<sup>15</sup> As a matter of fact, even the concept of "the necessary oppositions" seems wrong to me, as what is actually involved is a single multiple opposition, *p/f/t/s/ʃ/k*.

<sup>16</sup> By the symbol *ŋ* Martinet means "palatal nasal". Many contemporary scholars may prefer to use the symbol *ɲ*.



feature may be what I call a multi-oppositional relevant feature which is opposable to two or more relevant features in a given language (Akamatsu 1988: 275, 276, & nn. 400, 401; Akamatsu 1992: 38, 162). In the Hauteville *patois*, "voiceless", "voiced", "nasal", and "non-nasal", among others, are bi-oppositional relevant features, while "bilabial", among others, is a multi-oppositional relevant feature. A bi-oppositional relevant feature is based on a simple opposition and relates to a minimal pair, while a multi-oppositional relevant feature is based on a multiple opposition and relates to a set of multiplets.

Recourse to minimal pairs should be neither presented nor considered as *the* normal procedure, or *always* necessary and sufficient, in performing the commutation test. Consideration should be given equally to minimal pairs and sets of multiplets, as necessary.

The reduced pattern of the commutation test shown by Martinet (1956: 56ff) which I have discussed above and which is largely binaristic has been used and continues to be used, rather naïvely, by a number of his associates in the task of establishing the phonemes of different languages in terms of relevant features. However, when employed for other tasks than this, the reduced pattern of the commutation test is liable to lead unwary phonologists to a problematic, even an erroneous, phonological analysis. This is a hidden pitfall which awaits them and which results from their strict recourse to minimal pairs. I shall discuss this point in the remainder of the present paper.

One recent book that I have read with much pleasure and which I have reviewed (Akamatsu 1994) is Staudacher-Valliamée (1992), which offers, within the framework of functional linguistics, an analysis of the phonological systems of different speakers of the Réunion creole (*le créole réunionnais*). Staudacher-Valliamée's phonological investigation is conducted in the spirit of dynamic synchrony and based on a substantial corpus of tape-recorded data (totalling 27 hours' duration) of 18 informants' spontaneous utterances in the Réunion creole which she collected during the period of 1980-1988 on the Island of La Réunion. The results of this pioneering phonological investigation are undoubtedly fruitful and highly informative. What particularly interests me for the

purpose of writing the present paper, however, is a few aspects of the straightforward use of Martinet's above-mentioned reduced pattern of the commutation test by Staudacher-Valliamée (hereafter S-V.). I shall concentrate on this particular problem in what follows.

S-V. presents the following phonological system of consonants for one of her informants (p. 25) and repeats it later (p. 42). What is relevant to my present discussion is limited to those pairs of consonant phonemes whose two members are long (e.g. /p:/) and short (/p/)<sup>17</sup>. I omit the rest of the consonant system, as it is of no direct relevance to my discussion in this paper. The following are the consonants in question, which I reproduce below as presented by S-V.

p/p:	f/f:	t/t:	s/s:	k/k:
b/b:	v/v:	d/d:	z	g/[g: ǰ]/ <sup>18</sup>
m/m:		n/n:		

As can be easily seen, the particularity of these consonant phonemes which come in pairs is that one of the members of the pair can be

<sup>17</sup> To judge from S-V.'s description, the long (as against short) consonant phoneme in the Réunion creole is such that the long is, in its realization, double the short. This is rather like what we see in Late Old English as in *cinn* [tʃinn] "chin" or *cynn* [kynn] "kin" as against e.g. *bringan* ["bringan] "to bring".

<sup>18</sup> But see below, in the next paragraph, where I refer to the existence of /g/-/g:/ in the Réunion creole, as S-V. herself reveals. Incidentally, what S-V. means by [ǰ:] is not clear to me. Nowhere does she explain adequately the phonetic nature of either [ǰ:] or /ǰ:/. S-V. (p. 37) does mention [ǰ:] and writes as follows: "Après voyelle nasale, l'opposition /g/-/g:/ est neutralisée. L'archiphonème se réalise /ǰ:/ en finale absolue. Cette réalisation nasale de la consonne longue [my italics] est très fréquente: /mǰ:/ "mangue" ... /zǰ:/ "épingle". We are left no wiser as to what is meant by "réalisation nasale de la consonne longue". And, on another point, what are we to understand by /ǰ:/? Is this a phonetic entity or a phonological entity? See also fn. 30 below.

characterized by the relevant feature "short" (e.g. /p/) and the other by the relevant feature "long" (e.g. /p:/). S-V. presents the above consonant system as pertaining to absolute final context (*finale absolue*)<sup>19</sup>, which context, it seems, we should also take as the context of maximal differentiation where *all* the consonant phonemes are susceptible of occurring. Though S-V. mentions /l/ only and does not actually give /l/-/l:/ in the table of the consonant phonemes pertaining to absolute final context, we should also take /l/-/l:/ into account, as S-V. herself cites /bal/ "bal" vs. /pol:/ "palme" (p. 38). In addition, /g/-/g:/ should be taken into account, as S-V. cites /beg/ "Bègue" vs. /eg:/ "aigre, acide" (p. 37). There is one important fact to be mentioned at this juncture: the opposition between the short and long consonant phonemes (e.g. /p/-/p:/) is valid in absolute final context provided that an *oral* vowel precedes them. S-V.'s presentation (p. 25, p. 42) of the long and short consonants as pertaining to absolute final context pure and simple is therefore inadequate.

In establishing the consonant phonemes (or the vowel phonemes, for that matter) of the Réunion creole, S-V. straightforwardly makes use of Martinet's reduced pattern of the commutation. Here is an example.

Le phonème /p/

L'identité phonologique de ce phonème ressort des rapprochements suivants:

/p/-/b/ [...]

/p/-/f/ [...]

/p/-/m/ [...]

/p/-/p:/ [...] (p. 28)

Immediately before proceeding to the treatment of /b/ next, S-V. characterizes /p/ in terms of relevant features, i.e. "oral (consonant)" (cf. /p/-/m/), "voiceless" (cf. /p/-/b/), "bilabial" (cf. /p/-/f/) and "short" (cf. /p/-/p:/). (S-V. synonymously uses the term "simple" and "short".) My

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<sup>19</sup> As I shall mention presently, this specification of the context is actually inadequate.

sole objection is, as the reader will have guessed, that S-V. fails to refer to /p/-/t/, /p/-/s/, /p/-/ʃ/<sup>20</sup> and /p/-/k/ – though, effectively, even such two-by-two comparisons are quite binaristic – in addition to /p/-/f/ in establishing "bilabial". On the other hand, I am in agreement with S-V.'s characterization in terms of relevant features of not only /p/ but all the other phonemes (both consonant and vowels).

I now turn my attention again to absolute final context, but this time the penultimate distinctive unit is a nasal vowel (/ẽ/, /ã/ or /õ/, depending on an individual word), not an oral vowel. This particular context is, according to S-V., one of the contexts of neutralization of the oppositions between the short and long consonant phonemes<sup>21</sup>. She makes relevant statements about those neutralizations that occur in the above-mentioned context. For the purpose of the present discussion, I shall concern myself with just a few of these neutralizations.

(1) S-V. first says that /p/-/p:/ is neutralized in the said context and the associated archiphoneme (which I shall notate /p-p:/ but which S-V. rather confusingly represents as /p/) is realized by [p] (but not [p:]) and cites /lãp/ "lampe", /trõp/ "se tromper", according to her own notations (p. 28).

(2) Next S-V. says that /b/-/b:/ and /b/-/m/ are neutralized in the said context and the associated archiphonemes, i.e. /b-b:/ and /b-m/, are realized by [m:] and cites, again in her own notations, /sektãm:/ "septembre", /kõkõm:/ "concombre", etc. (p. 29).

(3) S-V. subsequently talks about the neutralization of /m/-/b/ (the associated archiphoneme being realized by [m:], citing /sãm:/ "avec" (p. 39).

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<sup>20</sup> /ʃ/ is, according to S-V., definable as "voiceless apico-alveolar fricative". This is distinct from both /s/ "voiceless short predorso-alveolar fricative" and /s:/ "voiceless long predorso-alveolar fricative" as well as /z/ "voiced apico-alveolar fricative".

<sup>21</sup> I should point out here that S-V. happens to miss out /l/-/l:/ in her description and consequently fails to refer to the neutralization of /l/-/l:/ in absolute final context following a nasal vowel. Her description runs simply as follows: "Après voyelle nasale en finale absolue, /l/ n'est pas attestée." (p. 38). S-V. herself gives no example words that may involve the neutralization of /l/-/l:/ anyway. I shall therefore suspend my judgement.

(4) S-V. further says that /m/-/m:/ is neutralized in the said context and the associated archiphoneme is realized by [m:], and cites /tõm:/ "tombe" and /tẽm:/ "timbre". Note incidentally that S-V. does not talk about the neutralization of either /b:/-/m:/ or /b/-/m:/, as one might expect.

It would seem that, by collapsing what S-V. says in (1) to (4), she actually intends to say that /m/-/m:/-/b/-/b:/ is neutralized in the said context and the associated archiphoneme is realized by [m:]. This is of course by assuming that S-V. has no objection to the concept of what I call a multiple opposition, i.e. a phonological opposition whose terms are three or more<sup>22</sup>. In my view, a multiple opposition is a single opposition, not a simultaneous combination of a number of oppositions strung together<sup>23</sup>.

That /m/-/m:/-/b/-/b:/ is neutralized in absolute final context when preceded by a nasal vowel and the associated archiphoneme is realized by [m:] is, unfortunately, untenable for the following reason. Any neutralizable opposition must be an exclusive opposition: an exclusive opposition is a phonological opposition whose two or more terms are alone in sharing the sum of the relevant features exclusively possessed by them in a given phonological system (for details about the concept of "exclusive opposition", see e.g. Akamatsu 1988: 58; Akamatsu 1992: 53-54). The sum of the relevant features commonly and exclusively possessed by /m/, /m:/, /b/ and /b:/ is "bilabial", but this is also shared by /p/ and /p:/. Consequently, /m/-/m:/-/b/-/b:/ cannot be an exclusive opposition and hence cannot be a neutralizable opposition either. We have not forgotten that S-V. previously says that /p/-/p:/ is also neutralized in the above-mentioned context and the associated archiphoneme /p-p:/ is realized by [p] (see (1) above). The sum of the relevant features commonly possessed by /p/ and /p:/, i.e. "voiceless bilabial non-nasal", is

<sup>22</sup> It is not absolutely clear to me that S-V. considers as a single opposition what I call a multiple opposition.

<sup>23</sup> This reminds us of how Hubbell (1950: 90) considers as "many oppositions" the opposition among those vowel phonemes which are susceptible of occurring in accented syllables in English when he writes : "... where so many oppositions are suspended [in unaccented syllables], it seems to be more reasonable to set up a distinct category." See in this connection Akamatsu (1987: 190, and n. 301).

exclusive to these two phonemes. Therefore /p/-/p:/ is an exclusive opposition and hence can also be a neutralizable opposition. Considered in isolation, the suggestion that /p/-/p:/ is neutralizable is plausible (but see further below). It is evident, however, that not everything is all right with the above-mentioned analysis involving /m/-/m:/-/b/-/b:/.

The correct analysis, in my own view, should be as follows: On the one hand, /p/-/p:/-/b/-/b:/ is neutralized in absolute final context when preceded by a nasal vowel, and the associated archiphoneme, which is characterized as "non-nasal bilabial" and which I shall symbolize as /p-p:-b-b:/, is realized by [p]. On the other hand, /m/-/m:/ is also neutralized in the above-mentioned context and the associated archiphoneme, /m-m:/, characterized as "nasal bilabial", is realized by [m:]. Note that "non-nasal bilabial" is exclusive to /p/, /p:/, /b/ and /b:/ and also that "nasal bilabial" is exclusive to /m/ and /m:/, with the result that both /p/-/p:/-/b/-/b:/ and /m/-/m:/ are exclusive oppositions and also, as has just been indicated, neutralizable oppositions. (Exclusive oppositions may be neutralizable or non-neutralizable, as the case may be, in individual cases in different languages.) The two archiphonemes in question, i.e. /p-p:-b-b:/ and /m-m:/, are opposed to each other, as well as to the other distinctive units (phonemes or archiphonemes) which are susceptible of occurring in the above-mentioned context. The fact that [p] which is the realization of /p-p:-b-b:/ happens to be short (not [p:]) while [m:] which is the realization of /m-m:/ happens to be long (not [m]) should not alarm us, for the distinction between short and long is phonologically irrelevant in the said context in the Réunion creole.

How do we begin to suspect that there is something wrong with S-V.'s analysis according to which /b/-/m/, /b:/-/m/, /b/-/b:/ and /m/-/m:/ are allegedly neutralized in the afore-mentioned context in the first place, and moreover, all four associated archiphonemes are identically realized, i.e. by [m:]? If we are to follow S-V.'s analysis, we should have to accept that the four archiphonemes in question, /b-m/, /b:-m/, /b-b:/ and /m-m:/, are characterizable as, respectively, "bilabial", "bilabial", "voiced bilabial non-nasal" and "bilabial nasal". But /b/-/m/ cannot be an exclusive opposition (the common base "bilabial" recurs in /b:/, /m:/, /p/ and /p:/);

nor can /b:/-/m/ be an exclusive opposition (the common base is again "bilabial"). Consequently neither /b/-/m/ nor /b:/-/m/ can be neutralizable oppositions. On the other hand, both /b/-/b:/ and /m/-/m:/ can be exclusive oppositions, as their common bases ("voiced bilabial non-nasal" and "bilabial nasal", respectively) do not recur in any other phoneme in the Réunion creole. We must consider another point. /b-m/, /b:-m/, /b-b:/ and /m-m:/ should be four different distinctive units (archiphonemes in this case) which are, however, characterized by S.-V. in terms of three, not four, different sums of relevant features, as we have seen above, i.e. "bilabial", "bilabial", "voiced bilabial non-nasal" and "bilabial nasal". This is unacceptable. Moreover, according to S-V., all four (three?) archiphonemes are realized identically, by [m:], but this would not do, either, as we would be made to understand that the three (or four?) different distinctive units could not be distinguished from each other because of their identical realization in one and the same context that S-V. refers to. Besides, only /m-m:/ "bilabial nasal" (but neither /b-m/ nor /b:-m/ nor /b-b:/) satisfies the condition that its realization should be [m:] (both nasal and bilabial); the realization of an archiphoneme must at least be in agreement with its characterization in terms of the relevant feature(s) of the archiphoneme, so that only "bilabial nasal" is compatible with [m:].

What are the reasons for which S-V. goes wrong, as seen above? The answer is that recourse to Martinet's reduced pattern of the commutation test, which is adequate for the purpose of establishing the phonemes together with their relevant features (but note a few theoretical deficiencies I mentioned earlier in this paper), is simply not adequate for the purpose of detecting and identifying instances of neutralization (apart from instances of systematic non-occurrence of individual phonemes in given contexts, i.e. the so-called defective distribution). Martinet's reduced pattern of the commutation test is largely binaristic and based on minimal pairs, as I pointed out already, and any cases of the neutralization of *multiple* oppositions remain undetectable and unidentifiable. This is why S-V. talks separately about the neutralization of /b/-/m/, that of /b:/-/m/, that of /b/-/b:/, and that of /m/-/m:/, these

oppositions being simple oppositions. It is as if S-V. presented, to consider another but pertinent example, the neutralization of /m/-/n/-/ŋ/ (a multiple opposition) in English before /p b t d ʧ j g k-g/ (cf. *camp, iamb, lent, sand, hinge, finger, sink*) separately in terms of the neutralization of /m/-/n/, that of /n/-/ŋ/ and that of /m/-/ŋ/ (but see Martinet 1956: 42). Be that as it may, had S-V. made the point of identifying each archiphoneme in terms of relevant features (a task she never performs in her work in question) and of confirming whether the associated neutralizable opposition was really an exclusive opposition, she could have avoided arriving at the erroneous analyses concerning the instances of neutralization and the associated archiphonemes I have discussed above.

How then should one proceed in order to arrive directly at the correct identification of the neutralization of /p/-/p:/-/b/-/b:/ and that of /m/-/m:/ in absolute final context when preceded by a nasal vowel in the Réunion creole? The answer is that we should perform what I have conveniently described further above as a “full-scale” pattern of the commutation so that we may bring together for comparison the context of maximal differentiation (which S-V. seems to suggest to be absolute final context in which the penultimate distinctive unit is an *oral* vowel (not a nasal vowel)) where the oppositions between the long and short consonant phonemes are valid (context of relevance) and contexts of neutralization – we have seen one such context of neutralization above – where these oppositions are neutralized<sup>24</sup>. In other words, we need, for our analysis, these different commutative series which constitute the contexts of relevance and the contexts of neutralization. As these different commutative series are based on the principle of multiple opposition and consequently consist of sets of multiplets, the existence and sufficiency of minimal pairs will be regarded as incidental.

We can then see which distinctive units in question (phonemes and archiphonemes) are identifiable in the different commutative series, i.e. in

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<sup>24</sup> There are, as S-V. (1992) herself indicates here and there, other contexts of neutralization of the oppositions between the short and long consonant phonemes, but I leave them out of account in the present paper.



the contexts of relevance and in the contexts of neutralization. During the course of the commutation test, we shall detect instances of neutralization as manifested *via* the realizations (i.e. phonetic entities) of the associated archiphonemes. Thus, in absolute final context, i.e. the context of relevance (of maximal differentiation), where the penultimate distinctive unit is an *oral* vowel, we find [p], [p:], [b], [b:], [m], [m:], [f], [f:], [v], [v:], [t], [t:], [d], [d:], [n], [n:], [s], [s:], [z], [s̺], [z̺], [j], [j̺]<sup>25</sup>, [k], [k:], [g], [g:], [l] and [l̺]<sup>26</sup>. On the other hand, in the context of neutralization of the oppositions between the short and long consonant phonemes, i.e. in absolute final context where the penultimate distinctive unit is a *nasal* vowel, we find [p], [m:], [f]<sup>27</sup>, [t]<sup>28</sup>, [n:], [s], [z]<sup>29</sup>, [z̺],

<sup>25</sup> I am not convinced about the phonological status of what S-V. presents as [j].

<sup>26</sup> In this series of consonants, I deliberately leave out [g̺:] which S-V. includes, as I am not certain about the validity of her treatment of [g̺:]. Incidentally, what is meant by [V] (S-V.'s symbol) is, according to her, a dorso-velar spirant articulated fairly fronted (S-V. 1992: 38).

<sup>27</sup> Although I am aware that I should, after [f], put either [v] or [v:], I intentionally omit them both since, to judge from S-V.'s words, I cannot be sure which occurs in the context in question. Her own words are: "Après voyelle nasale, de même qu'en finale devant consonne (cf. /p/) /v/ n'est pas attestée." (p. 30). Does this mean that /v:/ occurs in that context? Or does this mean that there occurs the neutralization of /v/-/v:/ in that context, with the result that the associated archiphoneme is realized by [v:]? S-V. gives no relevant examples anyhow.

<sup>28</sup> Again, although I am aware that I should, after [t], put either [d] or [d:], I deliberately omit them both. S-V. writes as follows: "Après voyelle nasale, en finale absolue, l'opposition /d/-/d:/ n'est pas attestée. /d/ et /d:/ n'apparaissent pas après voyelle nasale dans cette position." (p. 32). Does this mean that /d/-/d:/ is neutralized in the said context? If so, which of [d] and [d:] occurs as the realization of the associated archiphoneme? Unfortunately, she gives no relevant examples.

<sup>29</sup> S-V. cites (to use her own notation) /s̺z/ "changer" (p. 34), and /k̺z/ "quinze" and /l̺z/ "linge" (p. 35). Notice that S-V. does not notate /s̺z̺/ , /k̺z̺/ and /l̺z̺/, that is, with /z/ (i.e. with a horizontal stroke beneath the symbol z). /z/ would be her way of indicating the archiphoneme in question which would be realized by [z]. We are therefore probably to understand that no neutralization takes place after the nasal vowel in the above examples. Anyhow, [z] should be included because [z] does occur in this context in free variation with [z̺], as suggested by S-V. when she cites (p. 36) both /s̺z/ and /s̺z̺/ as alternative pronunciations for the same word meaning "changer".

[j], [k], [g̃:]<sup>30</sup>. The consonant phonemes will have been defined in terms of relevant features in the context of relevance. By comparing the two commutative series representing the context of relevance and the context of neutralization, we shall see that, to the group of [p], [p:], [b], [b:] (realizations of /p/, /p:/, /b/, /b:/) which occur in the context of relevance, there corresponds [p] which occurs in absolute final context where the penultimate distinctive unit is a nasal vowel, and that, to the group of [m] and [m:] (realizations of /m/ and /m:/) which occur in the context of relevance, there corresponds [m] which occurs in absolute final context where the penultimate distinctive unit is a nasal vowel. We shall then see that /p/ ("voiceless bilabial non-nasal short") vs. /p:/ ("voiceless bilabial non-nasal long") vs. /b/ ("voiced bilabial non-nasal short") vs. /b:/ ("voiced bilabial non-nasal long") is an exclusive opposition (the common base of the four phonemes being "bilabial non-nasal") and is neutralized in the above-mentioned absolute final context where the associated archiphoneme characterizable as "bilabial non-nasal" is realized by [p]. Likewise, we shall also see that /m/ ("bilabial nasal short") vs. /m:/ ("bilabial nasal long") is an exclusive opposition (the common base of the two phonemes being "bilabial nasal") and is neutralized in the same absolute final context as the above where the associated archiphoneme characterizable as "bilabial nasal" is realized by [m:]. It goes without saying that the two archiphonemes just mentioned are opposed to each other as well as to the other distinctive units susceptible of occurring in the same context. We thus do not go through any separate and successive stages of analysis in order to talk about the neutralization of "different simple oppositions" as S-V. does.

It is above all important to examine how, differently or identically, the realizations of the distinctive units are differentiated from each other in the different commutative series when one wishes to eventually not only establish the phonemes of a given language in terms of relevant features but also to detect instances of neutralization and identify the neutralizable

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<sup>30</sup> I vicariously put [g̃:] here on the basis of what S.V. (p. 37) writes – which I have quoted in fn. 18 above – though she herself gives no such phonetic notation as [g̃:].

oppositions and furthermore the associated archiphonemes in terms of relevant features. Such various tasks of phonological analysis (and a few others) cannot be correctly achieved by resorting to the reduced pattern of the commutation test as shown by Martinet which is a machinery that is essentially designed to *confirm* the phonemes in terms of relevant features.

What I have discussed above in connection with S-V.'s erroneous analysis of certain instances of neutralization in the Réunion creole applies, *mutatis mutandis*, to some other instances of neutralization of similar nature she presents in connection with this creole. For instance, what S-V. presents as the neutralization, also in absolute final context where the penultimate distinctive unit is a nasal vowel, of /d/-/n/, of /d:/-/n:/, and of /d:/-/d:/, on the one hand, and of /t/-/t:/ on the other, should be re-analyzed in terms of the neutralization of /t/-/t:/-/d/-/d:/ (the associated archiphoneme being "apical non-nasal") and the neutralization of /n/-/n:/ (the associated archiphoneme being "apical nasal"). This re-analysis too can only be achieved by going beyond the reduced pattern of the commutation test and actually operating with the commutative series, one of which is associated with the context of relevance and the other with the appropriate context of neutralization of the phonological oppositions between the short and long consonant phonemes.

The critical remarks I have made above in connection with Martinet's reduced pattern of the commutation test are certainly not meant to suggest that Martinet generally does not operate with a broader pattern of the commutation test which involves a number of commutative series associated with different phonetic contexts, i.e. precisely as I have recommended above and particularly explicitly elsewhere (esp. in Akamatsu 1992: 60-80). Far from it. Martinet (1947: 41, 43-44) refers to the commutation test in the sense I approve of, and the relevant passages were reproduced with minor modification in Martinet (1965: 63-64, 66). From among a number of such other writings by Martinet as contain satisfactory references to the question of the commutation test, I shall do no more than randomly mention just a few more, say, Martinet (1955: 4), Martinet (1960: 3.5-3.23) and Martinet (1968: 5-6).

The commutation test is, in my own view, first and foremost linked to the concept of “multiple opposition”, not to that of “simple opposition” with which the concept of minimal pair is associated. This principle of the commutation test which is linked to the concept of “multiple opposition” is embodied at an early date, at least in spirit, in the phonological analysis proposed by Twaddell (1935) *via* his theory of “micro-phoneme” and “macro-phoneme”, to which Martinet (1947: 40) refers, though not Martinet (1965: 63)<sup>31</sup>. (Twaddell himself does not, however, mention by name the commutation test, neutralization or the archiphoneme<sup>32</sup>.) I have in the past emphasized the link between the commutation test and Twaddell’s above-mentioned phonological analysis (cf. Akamatsu 1984).

It seems to me that there prevails the view that the commutation test is essentially associated and performed with the concept of “minimal pair”, *at least operationally*, as seen in Martinet’s reduced pattern of the commutation test and as demonstrated in S-V.’s (1992) phonological analysis by means of minimal pairs. I wonder if such a view tends to be sustained by pronouncements like “La commutation ou, si l’on veut, le rapprochement de paires minimales ...” (Martinet 1975: 36), “... la “commutation” [...] qui consiste à remplacer ce fait par *un* autre de même type ...” [my italics]” (Martinet 1957: 80) and “Comme la commutation met toujours en jeu en même temps deux unités seulement ...” (Martinet

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<sup>31</sup> Martinet (1992: x) writes: “From his [Akamatsu’s] standpoint, he is right when he objects to leaving out of a reprint, in my *Linguistique synchronique* [i.e. Martinet (1965)], a reference to Twaddell’s 1935 monograph, “On Defining the Phoneme”. I had thought it would unnecessarily burden what I considered a handbook. Twaddell’s indirect approval of the functional approach would not have meant much for my French readers in the sixties, whereas it comes as a welcome support of Akamatsu’s teaching for an English-speaking audience”.

<sup>32</sup> Nor did Twaddell have in mind the commutation test, neutralization and the archiphoneme when writing Twaddell (1935). However, in private correspondence with me (1981), Twaddell expressed his favourable view on neutralization and the archiphoneme. In his letter of 22 April 1981, he writes: “The concept of neutralization (and hence of archiphoneme) seemed to me useful, beyond what I wrote, back on the early 1930s.”, and in his letter of 5 July 1981, “... the concepts of archiphoneme and neutralization need repeated emphasis”. He would certainly have been favourable to the commutation test as well.

1957: 80). These and other pronouncements of a like tenor are obviously compatible with Martinet's reduced pattern of the commutation test I have been discussing. The principal reason why I personally see the commutation test as not, in a principled fashion, dependent on minimal pairs but, and essentially and largely, on sets of multiplets, is that, in theory, a given relevant feature in a given language is only justifiably identified by virtue of its opposability to another or other relevant features in a given language. For instance, we cannot identify the relevant feature "bilabial" of /m/ in Spanish on the basis of /m/-/n/ or /m/-/ɲ/ but can only do so on the basis of /m/-/n/-/ɲ/ in that language, simply because "bilabial" is identifiable as being simultaneously opposable to both "apical" and "palatal" in Spanish, no more no less. This can only be done by operating with the concept of "multiple opposition" during the course of the commutation test. My point of view does not, of course, deny or ignore that, for example, the relevant feature "voiced" of /b/ in French is opposable to "voiceless" (of /p/) only, which naturally involves a minimal pair. Recourse to minimal pairs, however, I repeat, is *incidental*, not a matter of principle.

In case some readers wonder why I do not operate binaristically with /m/-/n/, /m/-/ɲ/ and /n/-/ɲ/ (say in Spanish<sup>33</sup>) and insist instead on operating with /m/-/n/-/ɲ/, my answer is that this is because of the inherent nature of the concept of the relevant feature which is never binary. It is one thing to operate in terms of [+voice] and [-voice], employing the distinctive feature [voice] which is binary, as is done in generative phonology, but quite another to operate in terms of "voiced" and "voiceless" by employing two relevant features neither of which is binary. The non-binary nature of a relevant feature can even more easily be seen in the case of, say, "bilabial" in e.g. French, which is, in terms of its phonological value, equal to its opposability to "labiodental", "apical", "hissing", "hushing" and "dorsal". All this points to the fact that

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<sup>33</sup> This binaristic way of considering /m/-/n/-/ɲ/ is strongly maintained by e.g. Avram (1991: 280) and Avram (1993: 386). Avram objects to my concept of "multiple opposition".

both a simple opposition and a multiple opposition are incompatible with binarism<sup>34</sup>.

It should not be thought that S-V. (1992) has been chosen as a scapegoat, or as a special target, for my criticism in this paper. I could instead have chosen any other analysis of the phonological system of a language in which a reduced pattern of the commutation test is resorted to in order to deal, among other things, with the identification of instances of neutralizations and associated archiphonemes<sup>35</sup>. It so happens that the phonological analysis found in S-V. (1992) is the latest I have gone through in detail. I find her work very interesting and believe it deserves the attention of all those who are interested in phonology practised in the spirit of dynamic synchrony and who are eager to find out what the phonological systems of the Réunion creole are really like instead of reading vague and indirect descriptions of them which abound in the extant literature on creoles, including the Réunion creole. The generally excellent quality of her book is only marred by a small number of theoretical infelicities, and this is why I have chosen to bring up the present topic for critical discussion which is meant to be a constructive contribution. It should be easy for any functionalist, including S-V. herself, to re-analyze S-V.'s current analyses of neutralizations and the archiphonemes in the Réunion creole along the lines I have suggested. It will have been seen that my principal aim in this paper is to put in a plea for the use by the phonologist of a "full-scale" commutation test which is fundamentally based on the concept of "multiple opposition" and is not

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<sup>34</sup> Indeed the distinction between "simple opposition" and "multiple opposition" is only possible by rejecting binarism. "Simple opposition" should therefore not be equated with "binaristic opposition" (i.e. a phonological opposition consisting of two and only two terms) which is based on and embraces binarism.

<sup>35</sup> It should be noted in this connection that neither Martinet (1945) nor Martinet (1956), in the phonological analysis of the Hauteville *patois*, mentions instances of neutralization and the associated archiphonemes, though both neutralization and the archiphoneme are explained elsewhere in those works. (Note further that the excellent exposition on neutralization and the archiphoneme in Martinet (1936) predates these works by a decade and two decades, respectively.) Martinet (1947) gives an account of neutralization but is muted on the concept of the archiphoneme. Martinet (1949) refers to both neutralization and the archiphoneme.

limited to recourse to minimal pairs. However, objections may be raised in some quarters for the following reasons to my above-mentioned plea. I will take up two possible objections in particular.

(1) First, it is all very well for me to propose a full-scale commutation test for, say, English, French and German, which are well known to the phonologist, but not so in the case of many other languages which the phonologist does not know very well and on which he is obliged to work with a *limited* corpus of data. (I do not consider the Réunion creole, as analyzed by S-V., is a case in point.) This may be so, but I believe that the question of difficulty suggested is of practical order and that the phonologist should in theory and in principle perform the commutation test with an open mind by operating with sets of multiplets which make up different commutative series associated with different phonetic contexts. The possibility that some, or even most, of these commutative series may consist of less than "full" complements of multiplets in the case of a limited corpus presents no fundamental failure for the commutation test as a whole<sup>36</sup>. Besides, the ampler the different commutative series, the more chance the phonologist stands of detecting instances of neutralization (and identifying the associated archiphonemes) in some contexts and those of systematic non-occurrence of individual phonemes in other contexts. I repeat that S-V. would have reached the correct conclusion about the neutralization of the opposition between the short and long consonants if she had operated with the multiplets in different commutative series instead of operating exclusively with minimal pairs. Furthermore, the principle of operating with multiplets, which does not either necessarily or automatically exclude the possibility of operating with minimal pairs as well in cases where this is necessitated, is compatible with the concept of the relevant feature which is a unit of opposition and is therefore by definition based on the concept of opposition.

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<sup>36</sup> It is of course the job of the phonologist to try and maximize all those commutative series that he establishes for the purpose of performing the commutation test. This even applies to those cases where the languages under analysis are little known to him and there are chances that the corpus he is working on may well be limited at a given moment of his analysis.

(2) Secondly, it may be objected that the commutation always brings in two and only two units each time for them to be compared with each other, and such a binary treatment is essentially fundamental in the phonologist's mental operations. According to this objection, only one commutation is necessary for two units but three commutations are necessary for three units<sup>37</sup>. For example, the distinction between /m/-/n/-/ɲ/ in Spanish involves three commutations, i.e. that between /m/ and /n/, that between /n/ and /ɲ/ and that between /m/ and /ɲ/<sup>38</sup>. I do not deny that the above-mentioned mental process is most probably what takes place on the part of the phonologist at each and every stage during the course of the commutation test. Nevertheless, it is the cumulative upshot of such commutation tests, which I refer to globally by the term "commutation test" (in this paper as well as elsewhere), that ultimately interests me. The commutation test (in the global sense I have just emphasized) involves multiplets (which subsume under them minimal pairs as well), whereby neither multiplets nor minimal pairs are prioritized at the expense of the others. In the case of /m/-/n/-/ɲ/ in Spanish mentioned above, it is through recognition of, and recourse to, the multiplets (e.g. *cama-cana-caña*; *amo-camo-año*) that the relevant feature "labial" (of /m/) is identified as being opposed to both "apical" (of /n/) and "palatal" (of /ɲ/). Likewise, *mutatis mutandis*, the identification of the relevant feature "apical" (of /n/) and the identification of the relevant feature "palatal" (of /ɲ/) in Spanish. It is also through recognition of and recourse to the multiplets (e.g. *living-rime-copine-vigne*)<sup>39</sup> that the relevant feature "dorsal" (of /ŋ/) is identified as being opposed to all of "labial" (of /m/), "apical" (of /n/) and "palatal" (of /ɲ/) in the French of some, if not all,

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<sup>37</sup> Cf. Martinet (1957: 80) and Martinet (1965: 134): "Comme la commutation met toujours en jeu en même temps deux unités seulement, les rapports binaires en viennent à jouer un rôle primordial dans les opérations mentales du chercheur : un rapport binaire est un rapport qu'on saisit directement, tandis qu'un rapport ternaire est difficilement imaginable en bloc et tend à être décomposé par l'analyste en une succession de deux ou de trois rapports binaires. [...] suffit d'une seule commutation pour distinguer deux phonèmes, mais qu'il en faut trois pour en distinguer trois."

<sup>38</sup> See note 33 above.

<sup>39</sup> I have taken these examples from among those adduced by Walter (1977: 34).



native speakers of this language. Similarly, *mutatis mutandis*, the identification of the relevant feature "apical" (of /n/), the identification of "palatal" (of /ɲ/) and the identification of "dorsal" (of /ŋ/) in French. The relevant feature "apical" in Spanish and the relevant feature "apical" in French are separate relevant features, of course, as they are opposable to different relevant features in the respective languages. Only the insistence on recourse to multiplets, as I wish to promote, can justify my own concept of the relevant feature that is negatively identifiable as such in terms of its opposability to the other relevant feature or features of the same language. This ultimately overrides the binary mental process that may well be involved even in the case of what I call a multi-oppositional relevant feature, illustrated above through the nasal consonant phonemes of Spanish or French.

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