

SOME REMARKS ON SYLLABIC STRUCTURE

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An accurate characterization of consonant clustering, and therefore a general insight into the nature of the syllable, has been one of the goals of modern linguistics, and the problem has been approached from a number of theoretical perspectives. Regardless of the language family to which the analysis has been applied, descriptions of consonant clustering and phonotactic restrictions on co-occurrence have usually been based in some fashion on the distribution of consonant groups in word initial and word-final position. Anderson (1965: 75) has offered the following definition: 'Intervocalic consonant clusters are considered structurally compatible to the phonological system if they are "dissolvable". They are dissolvable if they are composed of an initial sequence cc-, a final sequence -cc, or if the second member occurs in word initial position and the first member occurs in word final position. Word final position means before a pause or phrase final, i.e. something which can occur in absolute final position. On this basis the final consonants of prepositions are excluded'. Similar statements have been voiced by Fischer-Jørgensen (1952), Saporta and Olson (1958), and Anderson and Jones (1974). Pulgram (1970) formulated a complete theory of syllabification, extending his ideas regarding consonant clusters to the 'principle of maximum syllabicity' which asserts roughly that languages strive, *ceteris paribus*, for syllables which terminate in a vowel. Moreover, as a corollary of the above assertion, Pulgram proposes the 'principle of minimal coda and maximal onset', which asserts that if it is impossible to divide an internal consonant cluster so as to create an open syllable, the syllable boundary should be placed as far to the left in the group as is compatible with the overall phonotactics of the language in question.

While having much to recommend them in synchronic analyses, Pulgram's proposed hypotheses fall short of complete regularity in the diachronic dimension. For example, remaining purely within the Romance family, one encounters the ready counterexample of the prothetic *e/i* which arose before Latin word-initial groups beginning with *s*: *schōlam* > Sp. *escuela*, Port. *escola*, Fr. *école*, It. (*in*) *iscuola* etc., where the originally word initial *s* is now in syllable-final position, thus creating a series of closed syllables (cf. Klausenburger, 1972). Moreover, a systematic study of the evolution of consonant clusters through syncopation of unstressed vowels in Italian, Spanish and Portuguese (Lipski, 1974) also reveals that the desire to maintain or create

open syllables, while no doubt operating throughout the history of these languages, was nonetheless counteracted by additional forces.

As another offshoot of the theory of consonant clustering based on phonotactic compatibility, Anderson (1965) proposed, based on the distribution of consonants within the phonological system, to divide all existent and potential consonant clusters in a given language into four groups: (1) existing and dissolvable; (2) existing and non-dissolvable; (3) potential and dissolvable; (4) potential and non-dissolvable, with the speculation that, in the absence of contravening factors, a historical evolution would tend to favor the production of internal clusters in the relative order 1-3-2-4. These predictions were in large measure borne out in Lipski (1974).

Both the negative and positive aspects of the preceding theory of consonant groups and syllabicity have been discussed in the literature, and the general consensus is that despite its shortcomings, some version of such a theory is probably correct, subject only to as yet unformulated modifications. There have, however, been investigators who have called for a rejection of the theory, based on apparently incompatible counterevidence. The most recent study is that of Vincent (1976), who offers a number of examples from Italian in an attempt to demonstrate that 'the overlap theory of syllable structure will have to undergo significant revisions before it can be entertained as making valid claims about the phonological structure of natural languages' (82). The 'overlap theory' was proposed by Anderson and Jones (1974) and asserts, briefly, that 'internal clusters are defined as a syllable-final sequence preceding a syllable-initial sequence, where "precede" includes overlap where possible'. Since Vincent himself proposes no tangible modifications of the theory, but rather offers a pessimistic prognostication of its eventual validity, it was felt necessary to further explore the nature of the possible revisions that might be called for in order to salvage such a theory, i.e., if they are necessarily as 'significant' as Vincent would have it. Secondly, the specific Italian data under consideration will be examined with slightly greater scrutiny, in an attempt to determine if another analysis and explanation might be construed in order to represent the situation under study. Thus, rather than embarking immediately on the quest for theoretical pronouncements, the remainder of this note will offer a reexamination of the data adduced by Vincent, together with some additional observations and speculations.

Italian, perhaps more so than any other Romance language, is not to be interpreted as the end result of a monolithic historical evolution; rather, one must take into consideration the heterogenizing effect of the various dialects which, even up until the present, have rendered exact descriptions of the 'Italian language' nearly impossible, and which have in turn created a literary/cultural linguistic standard which is rather arbitrarily composed largely of educated Tuscan, together with such variants from other areas as have attracted the public fancy. Thus, to offer a theoretical proposal for Italian

based on a variety of data from several different dialects is to commit the folly of assuming that 'Italian' is anything more than a cover term for a series of historically and geographically related but nevertheless quite distinct entities.

Vincent notes with disapproval the existence in Italian of clusters which may not be 'dissolved' by the above criteria; examples include *avrei* 'I shall have', *atleta* 'athlete', etc. The cluster *tl*, as a matter of fact, is totally incompatible with the phonotactics of Italian, that is, it may not appear in word-initial position due to general constraints which may be stated in terms of natural classes, roughly that in an initial 2-member cluster, the 2 consonants must not be homorganic. The group *vr* (which Vincent himself admits is rare in Italian, although having a high text frequency due to its presence in the forms of the verbs *avere* 'have' and *dovere* 'owe' where the group arose through syncope) appears to be somewhat less than totally incompatible in initial position, since the cluster *fr* appears word-initially, as do *fl* and *vl* (the latter only in borrowed words of Russian origin); the exclusion of *vr* seems then to be due more to the Latin phonotactic heritage than to inherent restrictions in modern Italian. Thus the cluster *vr* in a way fills a structural 'hole' in the Italian cluster system, while *-tl-* presents a total violation. Not surprisingly, the evolution and current status of the words clearly indicate this division: the group *vr* arose naturally through the loss of unstressed *e*: *avere* *e* > *averei* > *avrei*. *Atleta*, on the other hand, is a learned borrowing in which the incompatible cluster is tolerated (subject to the law of minimal coda/maximal onset and the placing of all non-analyzable consonants to the left of the syllable boundary) as a 'foreign' word, and is occasionally subject to modification. An identical process occurs in Spanish, whose phonotactic system is in this regard similar to that of Italian: in a word such as *atlético* one frequently hears in rapid colloquial speech, a totally deleted *t*, or a conversion to a compatible group such as *gl* or [dl]. It should come as no surprise that a language as world-wise as Italian should have words exhibiting non-compatible clusters, for no one has ever been so rash as to claim that the above rules of cluster distribution act as incontrovertible laws which forbid the introduction of undissolvable groups. The syllabic laws rather represent statistical tendencies, as well as patterns of diachronic formation, and must not be construed as demanding absolute fidelity in a synchronic analysis.

Vincent next attacks the proposed description of Italian in one of its weakest spots, namely the geminate consonants. Italian, as is well known, presents (at least in the southern dialects) a phonological distinction between single and geminate consonants, and a phonological characterization of consonant gemination has remained one of the most difficult problems of Italian linguistics (cf. Josselyn, 1900; Metz, 1914; Parmenter and Carmen, 1962; Rosenzweig, 1965; Gregorio, 1932). It is commonly assumed, as Vincent notes, that an internal geminate group must be in some sense divided between the two 'halves' of the group. Some have speculated (e.g., Kim, 1965; Pulgram, 1970: 102-111)

that geminates are not truly 'doubled' consonants, but rather a form of lengthened single consonant, although by regarding geminates as phonologically single entities, one runs into a total impasse with the problem of syllabification. As noted by Vincent, geminates may not occur in word-final position; they may, however, occur word-initially in certain circumstances (the so-called *rafforzamento iniziale*), and historically this possibility led Weinrich (1969) to propose one solution to the vowel length/consonant length controversy. Geminate consonants may occur phrase-initially to give special emphasis (e.g., *bbenissimo!* 'very good') and also, under an extremely complex set of conditions, following certain words ending in a tonic vowel, most of which originally contained a final consonant: *sta + ci* → *stacci* 'stay here', etc. (cf. Lipski, 1973; Pulgram, 1970; Leone, 1962; Bianchi, 1948; Camilli, 1913, 1941; Fiorelli, 1958; Norman, 1937). However, nearly all descriptions of spoken Italian, whether presented from a phonological or a phonetic viewpoint, have insisted that a geminate consonant does in fact span the syllable boundary in a fashion which is totally unique to the system under consideration. Thus, to base either an analysis or a counteranalysis using the Italian geminates as a key witness is to tread on extremely thin ice, for there exists no common consensus, either among grammarians or phoneticians, as to the status of these peculiar consonants. A much safer position, and one adopted, at least implicitly, by many phoneticians, is to regard theories of consonant clusters as dealing solely with *heterogeneous* groups, while leaving problems of doubled consonants for separate explanations.

Following the above points, Vincent offers the final major objection to the proposed theory of syllabic division and, given the formulation of the theory as it now stands, it must be confessed that the evidence is damning. Apart from borrowed words or unassimilated Latinisms, final consonants in Italian¹ occur only in the prepositions *in*, *con*, *per* and in the definite article *il*, none of which may appear in phrase-final position. Since many internal groups, if they are to be divided along the final group + initial group format, must contain a representative of the archiphonemes /N/, /L/, or /R/ (allowing for homorganic assimilation) it is impossible to describe such groups, which are far too numerous to be considered 'structurally nonintegrated' as compatible with the Italian system. The problem is further complicated by Vincent's assertion that in medial clusters whose first member is *s*, the *s* is in reality syllable final, even though an entire range of word-initial groups beginning with *s* exists in Italian. If such is indeed the case, one must add the archiphoneme /S/ to the above list, and thus a further problem to the attempts at syllable division, for *s* appears word-finally in *no* native Italian word.

Let us begin by examining the second assertion first. Vincent bases his assertion on the observation of Hall (1948: 13) that in certain central and southern Italian dialects, 'sibilants, nasals, laterals and trills are slightly lengthened in syllable final position before another consonant'. In the case of

nasals, laterals and trills, such a formulation poses no problems for the case at hand, for such consonants are relegated to syllable final position by other criteria, which are not at issue here. The case of cluster-initial *s* is then the crux of the issue, and there is reason to believe that the lengthening in this position is due to a different set of factors, rather than to a common set of specifications which separate out /L/, /R/, /N/ and /S/ as a 'natural class' (Vincent himself admits that such a class is indeed difficult to satisfactorily specify). We refer to the presumed lengthening of cluster-initial *s* in word initial position which was, according to many investigators, sufficient to give the *s* a quasi-syllabic value in the Vulgar Latin period (cf. Andersen, 1972: 34; Bourciez, 1967: 48, 156). This syllabification of cluster-initial *s* would in turn explain the prothesis of the vowels *e* or *i* which occurred with greater or lesser regularity throughout the Roman empire, since the support vowel gave a full vocalic nucleus to the otherwise rather unstable consonant, which ranks at the bottom of the syllabicity hierarchy of vowels, resonants and fricatives. If such was indeed the case in early Italian, then it is not altogether impossible that the same situation may hold true in some modern dialects, i.e., that lengthening of *s* in internal clusters is due to its *initial* position in the cluster, rather than being a function of syllable-final position. Such an interpretation in effect removes the stumbling block of syllable final /S/ from our paths; it should be noted in this regard that Italian grammarians and phoneticians are nearly unanimous² in their assignment of cluster-initial *s* to syllable-initial position, a practice carried out even by Hall (1959) himself in his Italian textbook.³ It also removes another problem of questionable relevance mentioned by Vincent, namely the shape of the second person singular and plural preterite and subjunctive morphemes, *sti* and *ste* respectively. If one regards the *s* as in all cases syllable-initial, the problem of specifying single or geminate /s/ in the underlying representation vanishes.

It is of course quite true that in Italian, word-final consonants occur only in the four words mentioned earlier, none of which may occur in phrase-final position; thus, from the standpoint of the definition of 'final sequence', such consonants may not be considered as 'final'. There is in addition the 'optional' process of Truncation, which states in essence that word-final unstressed vowels may be deleted before a following word-initial consonant if the preceding consonant is *l*, *r*, *m* or *n*, providing that both words are part of the same phonetic group, and that no 'difficult' groups are formed (cf. Muljačić, 1969: 466). This process of apocope has existed from the earliest periods of Italian and has in some dialects, been generalized to a nearly total loss of final unstressed vowels. In the (central) areas under consideration, such truncation is the general rule in phrase-internal position, yielding examples like *far niente* 'do nothing', *vuol dire* 'it means', etc. Although such a rule, in the strictest sense, is optional, that is, its omission does not produce an absolute violation of Italian phonotactics, it is nonetheless the general rule and, in many common

expressions, it may be even asserted that truncation is a totally obligatory rule. In other words, in phrase-internal position, we have the following nearly canonical representation, which designates a *non-existent* sequence:

$$\left\{ \begin{array}{l} /L/ \\ /R/ \\ /N/ \end{array} \right\} \nabla \dots$$

subject to the restrictions mentioned earlier. This distribution suggests a slightly different interpretation of the role of initial and final position when describing the structure of consonant clusters. The philosophy behind the use of word boundaries to describe compatible clusters is that the juxtaposition of words in normal speech results in the formation of *dynamic clusters*, which arise when a word ending in one or more consonants is followed by a word beginning with consonants. In many languages (e.g., Spanish) the notion of word boundaries with respect to syllable division disappears during rapid speech, and the entire phonetic string is divided into syllables based on the principle of maximal open syllabicity, regardless of the syllable structure of the individual words in isolation; thus *el hombre inteligente* 'the intelligent man' is divided [e-lóm-brejn-te-li-xén-te]. By incorporating the idea of initial and final position in order to determine cluster formation, we are in effect stating that if a cluster may naturally occur through a dynamic process, it may then be a candidate for a permanent static cluster in word-internal position. The implications of this methodology for the problem at hand should be obvious, for, based on the dynamic combinatory possibilities engendered by the application of Truncation in Italian, combined with phrases involving *per*, *non*, *in*, and *il*, it is possible to dynamically generate *all* the heterosyllabic word internal consonant clusters, since it is precisely in such dynamic processes that the word-final consonants appear in syllable-final position. Phonotactics, it must be recalled, operates on the phonetic level, not the phonological level; thus, the deeper phonological specifications of the words involved are irrelevant to the superficial constraints which may exist. For example, in Spanish, the prothetic *e* may presumably be added by rule to word-initial underlying *sC* groups; Spanish phonotactics, nonetheless, dictates that the *s* be considered in syllable-final position: /stare/ → *estar* [es-tár] 'to be, stand'.

As an additional factor to be considered, it is clear that, in the face of the entirety of Italian phonology, there is no overwhelming a priori reason why the rule of truncation could not be replaced by its functional opposite, that is, a rule which would *add* a final unstressed vowel (normally *e*) under certain circumstances, namely in phrase-final position or before a vowel. Such a rule would account for the fact that the infinitives appear with final *e* in phrase-final position, but not phrase-internally when followed by a consonant.⁴ Historically, of course, one must concede the priority of the final vowels, but

slavish adherence to historical data is not conducive to an accurate synchronic description. Of greater relevance to the proposed counter-hypothesis is the fact that at times vowels other than *e* are deleted/added in final unstressed position, although such a practice is becoming increasingly rare in contemporary Italian. Even in the face of such difficulties, it is conceivable that a clever analysis could be proposed which would totally reverse the flow of causality in the case of word-final unstressed vowels, a fact which points further to the instability of this position when used as a keystone in a phonological analysis.

Returning to the primary topic, that of the rules of phonotactic compatibility of consonant clusters, it appears that the mention of *phrase-final* position in the case of the definition of 'final sequence' is in fact an overly severe restriction, since for all practical purposes, such a position is irrelevant from the standpoint of the formation of dynamic clusters. If one simply replaces the restriction 'phrase finally before a pause' by 'word- (or perhaps even morpheme-) finally', it is possible to salvage intact the remainder of the rules, at least in the light of the currently available evidence. By extension, the same must hold true for the restriction to phrase-initial position; for example, it is necessary to include phrase-internal allophones in order to adequately specify the consonant cluster possibilities of Spanish: phrase-initial *dr* is [dr], with initial stop, while phrase-internally, except after [l] or [n], the *d* becomes the fricative [ð]. Thus in order to analyze the cluster in *esdrújula* 'proparoxytone' [ez-ðrú-xu-la] it is necessary to allow for both word-initial and word-final position to be defined as phrase-internally, all the more so since the allophone [z] of /s/ occurs only in phrase-internal position before voiced consonants.

In summary, a slight modification to the proposed theory of consonant clusters as determined by syllabic structure suffices to restore order to chaos in the case of the Italian data under consideration, and promises to be of value in the determination of future issues. No claims are being advanced here as to the completeness or even essential correctness of the theory under discussion; rather, it has been pointed out that one set of arguments recently proposed as counterevidence may in fact be accommodated within the framework of a revised paradigm, but without the necessity of a total rejection of the fundamental tenets. One may therefore infer that, while the total validity of the theory of consonant clusters may never be determined, the theory still contains enough life to account for the data currently at our disposition.

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NOTES

1. That is to say, in the 'normalized' dialects under study here. In many regional Italian dialects, reduction and total loss of final unstressed vowels has created an entire series of absolute-final consonants.

2. Noteworthy exceptions being Hall (1948: 13, 1961: 79) and Agard and Di Pietro (1965: 50-53). For a criticism of the latter study, see Pulgram (1970; 44-45, fn. 13).
3. Asking native speakers for judgements of syllabic structure is an inadequate method, as admitted by Pulgram (1970: 42-43). One is liable to receive every conceivable response, all indicating a fundamental ignorance; the present writer in fact questioned a number of native speakers without training in linguistics and received the expected confused replies. Moreover, in the dialects where cluster-initial *s* appears, in normal speech, to occupy a syllable-final position, phrase-initial *s* in clusters also generally receives a fleeting prothetic support vowel.
4. One may also remark on the speech of native Italians attempting to speak English, since a final unstressed *e* or *i* is often added to word-final consonants.

REFERENCES

- Agard, F., and Di Pietro, R. (1965). *The sound structures of English and Italian*. Chicago: Chicago University Press.
- Andersen, H. (1972). Diphthongization. *Language*, 48: 11-50.
- Anderson, J. (1965). A study of syncope in Vulgar Latin. *Word*, 21: 70-85.
- Anderson, J. M., and Jones, C. (1974). Three theses concerning phonological representations. *Journal of Linguistics*, 10: 1-26.
- Bianchi, E. (1948). Alcune osservazioni sul rafforzamento consonantico nel parlar fiorentino. *Lingua Nostra*, 9: 76-77.
- Bourciez, E. (1967). *Eléments de linguistique romane*, 7th ed. Paris: Klincksieck.
- Camilli, A. (1913). I rafforzamenti iniziali in italiano. *Archiv für das Studium der neueren Sprachen und Literaturen*, 13: 170-174.
- (1941). I rafforzamenti iniziali. *Lingua Nostra*, 3: 44-45.
- Fiorelli, P. (1958). Del raddoppiamento da parola a parola. *Lingua Nostra*, 19: 122-127.
- Fischer-Jørgensen, E. (1952). On the definition of phoneme categories on a distributional basis. *Acta Linguistica Hafniensia*, 7: 8-39.
- Gregorio, G. (1932). Scoperta della genesi fisiologica delle cosiddette consonanti doppie. *Studi Glottologici Italiani*, 9: 3-15.
- Hall, R. A. (1948). *Descriptive Italian grammar*. Ithaca: Cornell University Press.
- (1959). *Italian for modern living*. Ithaca: Cornell University Press.
- (1961). *Applied linguistics: Italian*. Boston: Heath.
- Josselyn, F. (1900). *Etude sur la phonétique italienne*. Paris.
- Kim, T. W. (1965). *Description and history of consonant groups from Latin to Italian*. Ph.D. thesis, University of Michigan.
- Klausenburger, J. (1972). *French prosodies and phonotactics*. Tübingen: Niemeyer.
- Leone, A. (1962). A proposito del raddoppiamento sintattico. *Bollettino del Centro di Studi Filologici e Linguistici Siciliani*, 7: 163-170.
- Lipski, J. (1973). Some observations on consonant gemination in Italian. *Rassegna Italiana di Linguistica Applicata*, 5: 351-362.
- (1974). *Diachronic hierarchies in Romance*. Ph.D. dissertation, University of Alberta.
- Metz, C. (1914). Ein experimentell-phonetischer Beitrag zur Untersuchung der italienischen Konsonanten-Gemination. *Vox*, 24: 201-270.
- Muljačić, Z. (1969). *Fonologia generale e fonologia della lingua italiana*. Bologna: Il Mulino.
- Norman, H. (1937). Reduplication of consonants in Italian pronunciation. *Italica*, 14: 57-63.
- Parmenter, C., and Carmen, J. (1962). Some remarks on Italian quantity. *Italica*, 29: 103-108.
- Pulgram, E. (1970). *Syllable, word, nexus, cursus*. The Hague: Mouton.
- Rosenzweig, A. (1965). *A spectrographic analysis of consonant length in standard Italian*. Ph.D. dissertation, University of Michigan.
- Saporta, S., and Olson, D. (1958). Classification of intervocalic clusters. *Language*, 34: 261-266.
- Vincent, N. (1976). Three queries concerning one thesis concerning phonological representations. *Journal of Linguistics*, 12: 75-82.
- Weinrich, H. (1969). *Phonologische Studien zur romanischen Sprachgeschichte*. Münster-Westfalen: Aschendorff.