

The Plica and Liquescence

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It is the purpose of this article to establish a connection between the use of the plica in polyphonic music of the 13th century and that feature of plainchant notation and performance known as liquescence.¹ The article thus touches upon two répertoires with which the dedicatee of these lines was intimately concerned. Gordon Anderson's numerous editions of 13th-century polyphony resemble those of most other recent editors in leaving tacitly on one side questions about the significance of the plica other than its rhythmic interpretation. Those who mention the possibility that the plica involved a peculiarity of performance practice do not mention liquescence. One writer has actually rejected the idea.² Standard textbooks on notation mention the derivation of the written form of the plica from earlier liquescent neumes, but none, so far as I am aware, has suggested that the plica in polyphony might also denote liquescence. I hope to demonstrate that this was, nevertheless, the case.

It must be admitted that the nature of liquescence itself is not well understood, and it may well be that in showing that the plica could have a liquescent function I merely substitute one unknown quantity for another. This article does not attempt to clarify the nature of liquescence. Much less does it consider the rhythmic significance of the plica.

Several things invite one to consider a connection between the plica and liquescence. The notational forms usually referred to as the plica (a single note-head with descending or ascending tails on either side, sometimes a single tail ascending to the right) or ligatures with plica added (an additional ascending or descending tail is added at the end of the last note head) are exactly those used to indicate liquescence in contemporary plainchant sources in square notation. There is, it is true, a certain hiatus between those theorists who speak of chant notation, who refer to the note shapes as *cephalicus*, *epiphonus*, etc. and to the style of delivery which these shapes imply as *semivocalis*, *liquescentis* or *liquida*; and

1 The article amplifies some of the evidence which I first put forward in «Plica», *The New Grove Dictionary of Music and Musicians*, ed. S. Sadie (London, 1980), vol. XV, p. 12. I am grateful for the comments of those who heard it on its way to the present form at the Annual Conference of Medieval and Renaissance Music, Glasgow, 1981, and at a seminar at Royal Holloway College in 1982.

2 Peter Bohn: «Die Plica im gregorianischen Gesange und im Mensuralgesange», *Monatshfte für Musikgeschichte*, XXVII (1895), p. 47, discusses the matter as if there were a complete break in the tradition between plainchant and polyphony. H. Anglès: «Die Bedeutung der Plika in der mittelalterlichen Musik», *Festschrift Karl Gustav Fellerer* (Regensburg, 1962), p. 28, denies the possibility of a connection: «Wenn man auch von der Plika als solcher nicht behaupten kann, daß sie den Charakter einer Liquescentis habe, wie ihn der Epiphonus und Cephalicus des gregorianischen Gesanges aufweist, welche, wie es scheint, zur mittelalterlichen Plika geführt haben...».

13th-century theorists who use the term *plica* and refer not at all to style of delivery. The term *plica* appears for the first time, so far as I am aware, in the treatise of Johannes de Garlandia: for Johannes it appears to be an element in the systems of modal and mensural rhythm, of rhythmic but no other significance (at least none that is explained). And this is how most later theorists treat the *plica*. But Johannes de Muris does appear to use the *plica* as equivalent to the old terms *epiphonus*, *cephalicus*,³ And when, in well-known passages, two theorists refer to a special style of delivery implied by the *plica*,⁴ the duty to pursue the connection with liquescence seems inescapable. This was, in fact, suggested by Freistedt:⁵

«Ein vergleichendes Studium der Anwendung der Plica in der Mensuralmusik hätte nachzuweisen, welche phonetischen Bedingungen bei der Plica im Text jeweils gegeben sind. Dabei wäre aber wohl zu beachten, daß die Textunterlegung in den uns überlieferten Beispielen der Mensuralkunst zuweilen nicht genau ist. Solche Ungenauigkeiten erschweren die genaue Feststellung des Semivokals.»

Freistedt was, of course, over-pessimistic in the matter of text underlay. There is no difficulty in carrying out a satisfactory probe along the lines he suggested, as this article will show. It is constructed in the following way: first, the continuing use of liquescent neumes in chant sources of the 13th century is assessed; then the evidence for liquescence in 13th-century polyphony is discussed, specifically in the polyphonic conductus repertoire; finally, suggestions are made for the investigation of liquescence in other repertoires, such as the motet and vernacular monophonic song.

3 M. Gerbert: *Scriptores ecclesiastici de musica sacra* (St. Blasien, 1784), vol. III, p. 202.

4 The best known description is that of Magister Lambertus (E. de Coussemer: *Scriptorum de musica medii ævi nova series*, Paris, 1864-1876, vol. I, p. 273; discussed, for example, by W. Apel: *The Notation of Polyphonic Music 900-1600*, 5th edn., (Cambridge, Massachusetts, 1953, pp. 226-230). It is similar to the statement in the *Ars musicæ mensurabilis secundum Franconem* (ed., G. Reaney and A. Gilles, *Corpus Scriptorum de Musica*, vol. XV, 1971): «Plica est nota divisionis eiusdem soni in gravem vel in acutum, et debet formari in gutture cum epygloto» (*opere citato*, pp. 44-45; also in E. de Coussemer: *Histoire de l'harmonie au moyen-âge*, Paris 1852, p. 276).

5 H. Freistedt: *Die liqueszierenden Noten des gregorianischen Chorals*, (Freiburg i/Ue, 1929), p. 51.

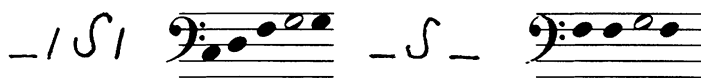
Liquescence and Plainchant to the 13th century

The two fundamental studies of liquescence in plainchant, those of Mocquereau⁶ and Freistedt, were based on the study of the manuscript St. Gallen, Stiftsbibliothek, 339. Mocquereau counted the liquescent neumes in the manuscript and discussed the different situations in which they occurred. Freistedt subjected Mocquereau's data to further analysis and provided additional theoretical and phonological supporting material. In Table 1, column A, I have reproduced the statistics used by Mocquereau and Freistedt, while using a system of classification slightly different from theirs. I have distinguished three main groups of liquescent neumes, those used for:

- (a) diphthongs,
- (b) sonant consonants (where the vocal chords are in motion during the delivery of the consonant),
- (c) surd consonants (where the vocal chords are not in motion); I have also included *b* and *d* in this group although they are actually sonant.

Of Mocquereau's 3504 occurrences of liquescence, 447 (12,8%) belong to group (a); 2672 (76,3%) belong to group (b); and 385 (11%) belong to group (c).

Although the numerous theorists cited by Mocquereau and Freistedt are not so specific as one would wish, it seems beyond doubt that liquescence involved the singing of an extra note to accommodate a change of syllable in the text. Liquescent notes are not found where there is no change of syllable. The theorists do not describe in sufficient detail how these consonants or diphthongs are to be delivered, and two main possibilities have been considered: the diphthong or consonant itself is pronounced as the extra note is sung:



Al-le-luy-a → Al-le-lu-y-a de-scen-dit → de-sce-n-dit

— or else a complete new syllable is inserted to accommodate the consonant and its extra note:



de-pre-ca-bun-tur → de-pre-ca-bu-ne-tur

6 A. Mocquereau: «Neumes-accents liquescents ou sémi-vocaux», *Le répons-graduel Justus ut palma*, Paléographie musicale, vol. II (1891), pp. 37-86.

«La prononciation réelle est celle-ci: deprecabun^etur» argued Mocquereau.⁷ Freistedt, by contrast, argued for a sonant mutation of surd consonants, *exempli gratia*, *t* becoming *z* or *dh*.

I mention these possible interpretations only to prepare the way for the occurrence of the same consonantal situations in the polyphonic répertoire.

The early St. Gall manuscripts such as ms. 339 are well known for the sophistication and care for detail of their notation. But are they representative of more general practice in the matter of liquescence? One other group of manuscripts, that of Benevento, is famous for the variety and profusion of its liquescent neumes.⁸ A spot check (I regret that I can give no comprehensive figures) seems to indicate that they are to be found in numbers roughly equal to those in the St. Gall sources. But these manuscripts from St. Gall and Benevento undoubtedly stand at one end of the range of sources in their provision for liquescence. More typical, as far as I can judge, is a manuscript cited by Freistedt, although he gave no complete statistics: the famous tonary of the early 11th century from St. Bénigne at Dijon, Montpellier, Bibl. de l'École de Médecine, H.159.⁹ Table 1, column B, gives my count of all instances of liquescence in this manuscript.

Although roughly the same quantity of music is notated in St. Gall 339 and Montpellier H.159, the latter has only half the number of liquescent neumes. The situations in which they occur, however, are very similar. A slightly higher proportion are used in Montpellier H.159 for the letter *t* (nearly all such cases, in any manuscript, involve the word *et*) and a rather lower proportion for *m*. But the differences do not seem very important.

The same tradition can easily be seen to persist into the 13th century, the period of square notation. Column C of Table 1 gives figures for the manuscript reproduced in facsimile as *Graduale Sarisburiense*,¹⁰ London, *British Library*, Add. 12194. Here the total number has again fallen, but not far. The proportion used for *l* has increased to well beyond that in St. Gallen 339, thus almost double that in Montpellier H.159; while for *m* the proportion is further reduced.

Given the respect for authority and tradition clearly evident in so many ways in mediæval chant manuscripts, it is hardly surprising that we should find liquescent neumes in sources of the 13th century and even later—even though the *quilisma* is not found in square notation, and the *oriscus* is rarely distinguishable. Does the same hold true, however, in more modern parts of the chant répertoire? The rhymed sequences of the 12th century and later are an obvious subject for investigation. Since many of the sequences are written largely according to the principle of one note per syllable, one finds relatively few liquescent neumes overall.

7 A. Mocquereau: «Neumes-accents liquescents ou sémi-vocaux», *Le répertoire graduel Justus ut palma*, Paléographie musicale, vol. II (1891), p. 45.

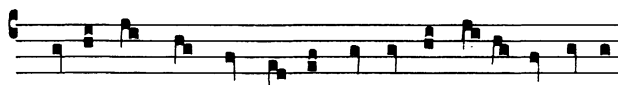
8 See R.-J. Hesbert: «Étude sur la notation bénéventaine», *Le codex VI.34 de la Bibliothèque capitulaire de Bénévent*, Paléographie musicale, vol. XV (1937-1953), especially pp. 145-151 and the table on pp. 160-161.

9 Facsimile in Paléographie musicale, vol. VIII (1901-1905).

10 Facsimile edited by W. H. Frere (London, 1894).

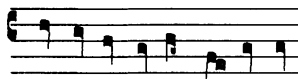
Of the 110 rhymed sequences in ms. Bari, Bibl. Capitolare, 1,¹¹ for instance, many sequences have no liquescent neumes at all. Table 2 lists their occurrence.

A fully balanced survey should present figures not only for those liquescent neumes which do appear, but also for those cases where a liquescent neume should be present, according to the hypothesis being tested, but is not in fact used. In Bari 1, this happens very frequently. Counting those situations where liquescent neumes were traditionally most frequent, that is where *l*, *m*, *n*, and *r* precede another consonant, one finds that for every occurrence of a *plica* or other liquescent form, one can find six occurrences of an ordinary two- or three-note neume. For example, in the following example, from *Virgo mater salvatoris* (p. 19), liquescent forms could have been used for *mor-tem* and *me-morantes*:



myr-ra mor-tem me-mo-ran-tes sa-cro do-cti fla-mi-ne

—while a little later in the same sequence, one finds the following phrase, where *in* has a *plica*, but *ter renis* does not:



De-le-cta-ris in ter-re-nis

Far fewer chances to use a liquescent neume are missed in the St. Gall manuscript (only about one in five) or the Montpellier source (about one in three). So the Bari sequentiary, at least, is evidence for a decline in the use of liquescent neumes.

One further test which should be applied is to make sure that the consonants involved are not a purely random selection. For instance, *n* is one of the commonest of all consonants in several languages: is it possible that the large proportion of liquescent neumes coinciding with *n* simply reflects the common occurrence of that consonant?—and likewise in the case of other common consonants. Against this possibility we could urge the statements of theorists about *semivocales* and *liquidæ*. A count can easily be made, however, and seems to suggest an answer to the question.

I counted the consonants which immediately preceded another consonant in Bari 1, except where the two consonants together came at the end of a word (*exempli gratia*, *est*) where the first came at the end of a line and the second started the next line, or where the two consonants together started a word (*exempli gratia*, *stabat*). I stopped the count after 1000 examples: the results are given in Table 3.

¹¹ Facsimile edited by R.-J. Hesbert: *Le Prosaire de la Sainte-Chapelle*, Monumenta musicæ sacræ, vol. I (Mâcon, 1952).

In some ways, the figures resemble those of Tables 1 and 2. But *s* is preponderant here where it was not before; and *l* is less common than either *c* or *t*. If these figures are anything to go by, it might be therefore be argued that liquescent neumes have not simply fallen fortuitously upon the consonants available in proportion to their occurrence in the text. There has been discrimination in favour of the sonant consonants, especially *l*, *m*, *n*, and *r*, and against *s* (and, to a lesser extent, against *c*).

It is hardly necessary to state that more probes of this sort are essential before more than provisional conclusions can be drawn. Each source has its own characteristics and presents its own problems. For example, in the Bari manuscript some sequences show no interest in liquescent neumes, whereas other sequences will unexpectedly present half-a-dozen examples (see, for instance, *Ecce dies preoptata*, p. 95, which has 10, or *Regis et pontificis*, p. 169, which has 8). This is likely partly to reflect the variety of exemplars being copied. Another problem concerns unusual neume forms which may indicate liquescence but which may be quite distinct. For instance, on p. 175 we find the following notation for two successive lines:

...tam de- si- de- ra- bi- li di- ves es ef- fe- cta.
 ...ca- rens com- pa- ra- bi- li de- o pre- di- le- cta.

The form used twice over *li* is very rare in this manuscript, although in others it can undoubtedly indicate liquescence. Here (and on p. 295, where it appears over *gratie salutis*) it seems to be something other than liquescent, if we can rely on the verbal context.

Polyphonic conductus of the 13th century

In chant sources, liquescent neumes are not found within melisma-
 ta or smaller note-groups. By contrast, as is well known, the plica was an integral part of the notation of melismatic polyphony of the 13th century. In such a context liquescence is generally out of the question. But this need not mean that the older function of the plica, as a neume indicating liquescence, was entirely abandoned in all genres of 13th-century polyphony. Investigation of genres which have continuous or near-continuous text suggests that the older function did indeed persist.

The test I implemented was as follows. I decided to concentrate on those instances in the text where *l*, *m*, *n*, and *r* preceded another consonant. I counted the number of times the following note-forms coincided

with those consonants: (plicated forms) and

(the corresponding non-plicated forms). The count was carried out through the répertoire of two- and three-voice conductus in Florence, Bibl. Mediceo-Laurenziana, Plut. 29,1 (F),¹² in the first instance in the tenor part only. The total of 427 instances may be subdivided as in Table 4.

The discrimination in favour of the plicated forms, in a rough proportion of three to one, suggests that the plica is employed *because* of the presence of a sonant consonant in the text. The plica's function is not merely to indicate a pitch or rhythm, but is also connected with the enunciation of the text. I have made a distinction between the conductus which are unique to manuscript F and those found elsewhere as a very rough and ready way of distinguishing newer from older pieces. My assumption is that older pieces are more likely to lie among those with wide transmission. However, this reasoning begs so many questions about the notational practices of individual scribes, the origin of each source, and the course of transmission of individual pieces, that it would be foolish to insist on the reliability of the distinction. For what they are worth, the figures suggest a decrease in the use of the plica as an indicator of liquescence in the more recent pieces.

Table 5 takes up the question of the other voices in the polyphony. It gives figures for the duplum and triplum parts of the three-voice conductus in F, and suggests that here also the plica indicates liquescence.

The last set of figures referring to the polyphonic conductus counts *all* the consonants or diphthongs which are set with a plicated note form in all three voices of the three-voice conductus in F. There is an element of uncertainty here, however, which is caused by the frequent occurrence of plicated forms (particularly the double note with plica) at the ends of phrases, often followed by a stroke in the original notation. For example, the duplum and triplum parts of *O vera o pia* (f. 242^v) contain 14 such notational forms, always occurring on the last syllable of each three-syllable line and always over the vowel *a* with which each line ends. Where the plicated form ends a line no stroke is written; if there is no plica, then each line is terminated by a stroke (with only one exception). The plica here seems to be a passing note of purely melodic, not liquescent, significance. The figures given in Table 6 probably contain many such instances where liquescence was not intended, since in cases of doubt it seemed preferable to include, rather than exclude. Perhaps because of this, the figure for *s* is rather high—it may reflect the prevalence of *s* at the ends of words or phrases where no liquescence was intended.

12 Facsimile edited by L. Dittmer: *Firenze, Biblioteca Mediceo-Laurenziana, Pluteo 29.1*, Publications of Mediæval Musical Manuscripts/Veröffentlichungen mittelalterlicher Musikhandschriften, vols. X-XI (Henryville-Ottawa-Binningen, 1966-1967).

Other répertoires

I have tapped here only a cupful from a vast reservoir of information. Clearly more data are required, from sources of both plainchant and polyphony. Numerous questions remain to be answered. For example, how long did the liquescent function of the plica in polyphony persist? It seems to have survived into the Parisian motet repertoire, as Table 7 shows, giving figures for two-voice Latin motets in F. A rapid glance through English 13th and 14th-century sources shows something similar. The matter of why some pieces within a single series in one manuscript contain numerous plicas while others have none is obviously important; and if followed up might provide useful information about patterns of transmission.

Nor can one neglect sources of vernacular monophonic music. My final table, Table 8, gives a sample of the plicas found in a well-known source of French songs:¹³ here again a connection with liquescence is strongly suggested. I have no doubt that a probe of sources of Minnesang would suggest similar things.¹⁴

Eventually it will be necessary to involve phonologists also in the debate. The manner of performance of liquescent notes is still somewhat obscure, and the pronunciation of Latin and other languages sung in the Middle Ages is clearly a crucial factor (as Freistedt suggested). Meanwhile, the indications are that liquescence is something which should be taken into account by future editors and students of 13th-century sources and their notation.

13 Paris, Bibliothèque Nationale, fonds français, 844. Facsimile edited by J.-B. Beck: *Le manuscrit du roi*, Corpus cantilenarum medii ævi, first series, vol. II (Philadelphia, 1938).

14 Liquescence is not mentioned in the recent study of Ewald Jammers, *Aufzeichnungsweisen der einstimmigen außerliturgischen Musik des Mittelalters*, Paläographie der Musik, 1/4 (Köln, 1975). It will be clear that I disagree with the statement by Hendrik van der Werf in *The Chansons of the Troubadours and Trouvères*, (Utrecht, 1972), p. 84: «.... there is no indication that it [the *nota plicata*] occurs only in relation to a specific sequence of consonants as is the case in certain [sic!] plain chant manuscripts».

TABLE 1

Liquescence in Chant Sources

	A St. Gallen 339		B Montpellier H. 159		C London 12194	
DIPHTHONGS						
au	159	4,5%	99	5,6%	86	5,6%
vowel-j-vowel	288	8,2%	123	6,9%	121	7,9%
other			<i>e o</i>		eley son x 3	
			Moy ses			
sub-total	447	12,8%	224	12,6%	210	13,7%
SONANT CONSONANTS (except b, d)						
vowel-g-vowel (e or i)	34	1%	3	0,2%	2	0,1%
vowel-l-consonant	390	11,1%	171	9,6%	261	17%
vowel-l-vowel			1			
vowel-m-consonant	564	16,1%	241	13,6%	161	10,5%
vowel-m-vowel	51	1,5%	13	0,7%	6	0,4%
vowel-n-consonant	980	28%	507	28,5%	461	30,1%
vowel-n-vowel	3	0,1%	4	0,2%		
vowel-gn-vowel	73	2,1%	27	1,5%	33	2,2%
vowel-r-consonant	518	14,8%	277	15,6%	209	13,6%
vowel-r-vowel	3	0,1%	2	0,1%	1	
vowel-s-consonant	55	1,6%	47	2,7%	10	0,7%
	esses	junior	pos ui			
sub-total	2672	76,3%	1294	72,8%	1144	74,6%
SURD CONSONANTS (also b, d)						
vowel-b-vowel	1		1			
vowel-c-(vowel or consonant)			3	0,2%	1	
vowel-d-(vowel or consonant)	61	1,7%	31	1,7%	24	1,6%
vowel-t-(vowel or consonant)	323	9,2%	221	12,4%	154	10%
vowel-x-(vowel or consonant)			2	0,1%		
sub-total	385	11%	258	14,5%	179	11,7%
TOTAL	3504		1776		1533	

TABLE 2

Liquescence in the Bari Sequentiary
(Rhymed Sequences Only)

DIPHTHONGS

au	7	4,5%
uy	2	1,3%
other	3	1,9%
sub-total	12	7,6%

SONANT CONSONANTS (except b, d)

vowel-g-(consonant or vowel)	4	2,5%
vowel-l-consonant	26	16,6%
vowel-l-vowel	1	
vowel-m-consonant	13	8,3%
vowel-m-vowel	1	
vowel-n-consonant	35	22,3%
vowel-n-vowel	2	1,3%
vowel-nt	2	1,3%
vowel-r-consonant	29	50,9%
vowel-r-vowel	3	1,9%
vowel-s-(vowel or consonant)	4	2,5%
sub-total	120	76,4%

SURD CONSONANTS (and b, d)

(after vowel, before vowel or consonant)

b	1	
c	2	1,3%
f	1	
p	2	1,3%
t	11	7%
x	4	2,5%
sub-total	21	13,4%

TOTAL 157

TABLE 3

Frequency of Consonants in the Bari Sequentiary

b 15	g 25	p 11	x 15
c 54	l 50	r 173	
d 31	m 157	s 208	
f 3	n 162	t 96	Total: 1000

TABLE 4

Plicas in Tenor Parts of Conductus in F
*(l, m, n, and r preceded by vowel
succeeded by consonant)*










									
non-unica	143	41,7%	138	40,2%	53	15,5%	9	2,6%	
total: 343									
unica	22	26,2%	26	31%	32	38,1%	4	4,8%	
total: 84									
TOTALS	165	38,6%	164	38,4%	85	19,9%	13	3%	
total: 427			329	77%			98	23%	

TABLE 5

Plicas in Duplum and Triplum Parts

	duplum		triplum	
	plicated	non-plicated	plicated	non-plicated
vowel-l-consonant	7	1	11	4
vowel-m-consonant	5	7	6	9
vowel-n-consonant	37	15	34	17
vowel-r-consonant	25	9	26	11
TOTALS	74 (69,8%)	32 (30,2%)	77 (65,3%)	41 (34,7%)
COMBINED TOTALS		151 (67,4%)	73 (32,6%)	
total: 224				

TABLE 6

Consonants with Plicas in Three-Voice Conductus in F
(followed by vowel or consonant)

	Tenor	Duplum	Triplum	Total
l	16	13	17	46
m	26	16	26	68
n, gn	47	61	54	162
r	30	39	41	110
sub-total	119	129	138	386 (59,1%)
b	4	2	1	7
c	6	9	8	23
d	6	6	5	17
g	4	3	3	10
p	4	5	4	13
s	20	34	26	80 (12,3%)
t, th	18	25	16	59 (9%)
v	4	6	3	13
x	2	5	4	11
z			1	1
sub-total	68	95	71	234 (35,8%)
ahe, au	2	4	1	7
ea, eu	2	1	2	5
ia, ie, io, iu	3	2	4	9
oa		1	1	2
ua, ue, ui	3	4	3	10
sub-total	10	12	11	33 (5,1%)
TOTALS	197	236	220	653

TABLE 7

Plicas in Motets
(F ff. 399-414, duplum part)


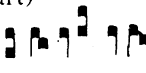
		
vowel-l-consonant	0	1
vowel-m-consonant	7	4
vowel-n-consonant	13	8
vowel-r-consonant	15	6
TOTAL	35	19

TABLE 8

Plicas in French Songs
(first 300 examples in Paris 844)

vowel-l-consonant	5
vowel-l-vowel	5
vowel-m-consonant	5
vowel-m-vowel	25
vowel-n-consonant	50
vowel-n-vowel	10
-nt	10
-nz	1
vowel-r-consonant	35
vowel-r-vowel	19
sub-total	165 (55%)
-es, -et, -ez, -est, -ist, -ois	32 (10,7%)
-c-, -d-, -f-, -g-, -h-, -ch-, -p-, -q-, -s-, -t-, -v-,	31 (10,3%)
sub-total	63 (21%)
-aill	12
-aie, -aigne, -ain	7
-au	2
-ee	5
-eill	5
-eigne, -eoi, -eu	6
-ie, -io, -i...a (start of a new word)	7
-oi, -oir	9
-oie	5
-ou	5
-ue, -ui, que iai	9
sub-total	72 (24%)
TOTAL	300