WORD-MEDIAL SP, ST, SK-CLUSTERS AND SYLLABIFICATION IN ENGLISH

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1. Introduction

In this paper[1] I wish to apply the delimitation method of "extrinsic allophones" (i.e. programmed as opposed to automatic, or "intrinsic", allophones) to English words with medial /sp, st, sk/ followed by a stressed vowel, either directly, as in despise, establish, confiscation, or with in intervening /r/, /l/, /w/, or /j/, as in estrange, disclaim, disqualify, dispute. It may be noticed that in words of this type syllabification cannot be accounted for phonologically by the principle of permitted initial and final clusters (cf. Hjelmslev 1936, p. 52), since the point of syllable separation according to this principle can be either between the sibilant and the stop (e.g. /iṣ-treindʒ, dis-paiz/), before the sibilant (/i-streindʒ, di-spaiz/), or, with a few exceptions, after the stop (/ist-reindʒ, disp-aiz/). Phonetically, however, it seems quite feasible to syllabify these words. It is well-known that /p, t, k/ in both British and American English are aspirated initially in monosyllabic words, and it is by now generally held that they are unaspirated post-initially, i.e. after initial /s/, in such words (cf. Davidsen-Nielsen 1969). Since /p, t, k/ are thus characteristically manifested as aspirated (voiceless) stops initially and as unaspirated (voiceless) stops post-initially, the interpretation naturally presents itself that the occurrence

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1) This paper is an abbreviated version of Davidsen-Nielsen 1974. The phonetic experiments were carried out at the Institute of Phonetics, University of Copenhagen. I am grateful to Eli Fischer-Jørgensen and Jørgen Rischel for thorough and constructive criticism and to Svend-Erik Lystlund for technical assistance.

of an aspirated stop after s medially in a polysyllabic English word indicates syllable separation between the sibilant and the stop, and that the occurrence of an unaspirated stop in this environment indicates that the syllable border is not positioned between the sibilant and the stop but precedes s. It seems safe to exclude the possibility of syllable separation after the stop since a glottal catch never reinforces the stressed vowels in words of this type, i.e. pronunciations like [disp?aiz, rist?ɔ:] are not found.

2. The material investigated

English words with medial sp, st, sk-clusters followed by a stressed vowel may be classified in the following way:

(I) Words in which a prefix ending in -s immediately precedes the stressed syllable:

(a) dis- (e.g. dispose, indiscriminate)
(b) ex- (e.g. explain, inexpressible)
(c) mis- (e.g. misprint)
(d) sus- (e.g. suspend)
(e) trans- (e.g. transplant)

(II) Words in which one of the following combinations or single graphemes (by far the majority of which are prefixes) immediately precedes the stressed syllable:
a-, ab-, anti-, be-, circum-, con-, de-, down-, e-, en-, fore-, hyper-, in-, inter-, intro-, non-, ob-, out-, over-per-, pre-, pro-, re-, retro-, sub-, super-, under-, un-, up-
(Examples: asparagus, abstain, antistrophic, bestir,

circumscribe, conspicuous, despise, downstairs, establish, ensconce, forestall, hyper-space, inspect, intersperse, introspective, non-stop, obscure, outstanding, overstay, perspire, prescriptive, proscribe, restrain, retrospective, substantial, superstition, underscore, unspeakable, up-standing)

(III) Proper names and words derived from proper names (e.g. Aristophanes, Bostonian)

(IV) Compounds (e.g. cross-purpose)

(V) Other words (e.g. historian, trustee)

The following words were now selected for recording (see Davidsen-Nielsen 1974 as regards the inclusion of the three words in parentheses):

(disburse)	miscalculate	perspire
disclaim	mistake	prescriptive
discomfit	mis-take ('take badly')	proscribe
discourteous	mistime	prospective
discover	mistook	prosperity
discrepancy	unmistakable	respectable
discussed		resplendent
(disdain)	suspense	responsible
(disgust)	sustain	restorative
disperse		retrospective
dispute	transcription	substantial
disqualify	transparent	unsteady
distain	transpire	
distemper		Australia
distinguish	ascribe	Shakespearean

distress	askance	
disturb	aspire	aristocracy
	astonish	austerity
exclaim	abstain	confiscation
excrescence	bespangle	dyspepsia
excursion	conspire	dexterity
expansion	constabulary	fastidious
expect	constituency	frustration
expediency	despise	gastronomy
expensive	despondence	gestation
experience	destruction	hysteria
extensive	especial	illustration
extenuate	establish	ministerial
exterior	estate	monstrosity
extinguish	estrange	
extrinsic	inspire	
	instalment	
	instinctive	
	interstellar	
	non-stop	
	overstep	

In order to provide a standard of comparison for the results obtained with word-medial stops, I furthermore selected the following words:

I	II	III
spear	pier	beer
spat	pat	bat
steam	team	deem
sty	tie	dye
scold	cold	gold
score	core	gore

I	II	III
spray	pray	bray
spume	pews	abuse
splint	plinth	blink
strain	train	drain
strip	trip	drip
stewed	tube	dude
scrape	crepe	grape
screw	crew	grew
skew	queue	gules
squad	quad	Gwen
	class	glass

3. Recording, instrumentation, and speakers

For various complicating reasons, which are explained in Davidsen-Nielsen 1974, the above words were recorded in two sessions. In the first recording session 22 native speakers of British and American English recorded the words with medial /sp, st, sk/ three times along with the words with initial and post-initial stops directly followed by a vowel (the former words were recorded in isolation after having been pseudo-randomized and the latter in rhythmically identical carrier sentences of the type A spear from the army). In the second session the words with initial and post-initial stops followed by a liquid or semivowel and (once again) the words with initial and post-initial stops directly followed by a vowel were recorded three times by 7 of the above 22 speakers (the former in rhythmically identical carrier sentences of the type A scrape on the elbow and the latter in isolation). At both sessions the informants were instructed to speak naturally and leisurely, and

the tape speed was 19 cm/s. For each speaker one of the three recordings from the second session (two in the case of isolated words with (post-)initial stops immediately followed by a vowel and all three in the case of words with (post-)initial stops followed by a liquid or semivowel) were then analyzed by feeding the signal from the tape recorder into a pitch meter and an intensity meter and by using a mingograph as registering apparatus. On the mingograms there were two intensity curves (logarithmically and linearly registered respectively), one duplex oscillogram, and one pitch curve. On the three curves and on the oscillogram it was possible precisely to delimit the stops and their internal phases and thus to measure duration. The measurements comprised 2024 words with medial obstruent clusters, 714 words (462 from the first session and 252 from the second) with initial and post-initial stops immediately followed by a vowel, and 672 words with initial and post-initial stops followed by a liquid or semivowel.

4. Results

4.1 Initial and post-initial stops immediately followed by a vowel

On measuring the duration of the release stage in the 462 words with initial and post-initial stops recorded in the first session it appeared that the average duration of this element was 7·2 cs in the case of /p, t, k/, 2·4 cs in the case of /(s)p, (s)t, (s)k/, and 2·3 cs in the case of /b, d, g/. As was to be expected, furthermore, the place of articulation turned out to be relevant to the release stage, the duration of this phase increasing with growing retraction. The average

figures obtained for labials, alveolars, and velars were as follows:

p-	6·4 cs	t-	7·6 cs	k-	8·1 cs
(s)p-	1·7 cs	(s)t-	2·6 cs	(s)k-	3·0 cs
b-	1·6 cs	d-	2·3 cs	g-	2·9 cs

On the basis of these findings I conclude that the stops after initial s are unaspirated along with /b-, d-, g-/, whereas /p-, t-, k-/ are aspirated. Considering the clarity of the results and the relatively large number of speakers I furthermore venture the generalization that unaspirated stops after initial s constitute the norm in both British and American English.

As for results obtained with words of this type in the second recording session, see Davidsen-Nielsen 1974, p. 24.

4.2 Medial stops immediately followed by a vowel

In the 1562 words where the medial stop is followed directly by a stressed vowel the duration of the release stage was measured. The results were then compared with those obtained for initial /p, t, k/ and /(s)p, (s)t, (s)k/ at the first recording session in order to determine whether the word-medial stop displayed initial manifestation (aspiration) or post-initial manifestation (non-aspiration).

In the following table of results (based on the first recording and only supplemented with figures from the second or third recording where borderline cases are involved) the figures which are considered to represent initial, aspirated manifestation have been underlined. See Davidsen-Nielsen 1974, (p. 26) as regards "disambiguation" of 84 borderline cases (i.e. 3 cs in the case of labials, 4 cs in the case of alveolars, and 5 cs in the case of velars); in nine remaining borderline cases a question mark has been added in the table.

TABLE 1

		American speakers											British speakers										
		JKD	JE	JOC	KOC	ACL	WW	PH	JH	KE	NW	JHP	IN	MCH	LC	MH	MC	DH	NS	GC	AC	JS	JB
1	(disburse)	2	1	2	1	2	1	2	2	2	2	2	2	1	2	3	2	2	2	2	1	1	2
2	discomfit	7	9	7	5?	6	7	6	3	6	8	6	5?	4	6	7	4	3	5?	8	6	3	2
		7	8	7		6	9	6		7	8	6			7	7				6	4		
3	discourteous	3	9	2	3	3	4	3	4	3	4	3	5?	3	7	7	4	3	6	6	4	4	4
4	discover	2	3	2	3	4	4	3	3	3	3	3	2	2	3	6	4	2	3	4	4	3	2
5	discussed	2	2	2	2	3	3	2	2	3	3	2	2	2	2	3	2	2	2	2	2	2	2
6	(disdain)	2	2	2	2	3	3	2	2	3	3	2	2	2	2	3	2	2	2	2	2	2	2
7	(disgust)	3	4	2	3	4	3	2	2	2	3	3	1	2	2	2	4	3	2	4	3	3	2
8	disperse	2	2	2	1	2	2	2	2	4	2	2	2	2	2	6	2	2	2	2	2	1	1
9	distain	2	2	2	2	2	2	2	2	2	2	2	7	3	4	5	4	7	2	2	9	2	2
10	distemper	7	8	6	6	5	5	3	5	5	6	5	5	2	6	6	4	3	3	3	3	3	3
11	distinguish	3	3	3	2	2	3	2	3	4	2	3	2	3	3	4	3	3	3	3	3	2	3
12	disturb	3	3	2	2	3	3	2	3	4	3	2	2	2	3	3	4	2	2	3	3	2	2
13	excursion	3	4	2	2	4	3	3	2	3	3	3	2	3	2	7	3	3	3	7	3	3	2
14	expansion	1	2	2	2	2	2	2	2	1	2	2	2	2	1	2	2	2	2	2	2	1	1
15	expect	2	1	2	1	2	2	2	2	1	1	2	2	2	1	2	2	2	2	2	2	1	1
16	expediency	1	2	2	1	2	2	1	2	2	2	2	2	2	1	5	2	1	2	2	2	1	2
17	expensive	1	1	2	1	2	2	2	1	2	1	2	1	2	1	2	2	1	2	2	2	2	1
18	experience	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	1	2
19	extensive	3	1	2	3	3	2	3	3	3	2	2	2	3	2	5	3	3	2	5	3	3	2
20	extenuate	2	2	3	2	3	2	2	3	3	3	3	2	2	3	6	5	3	2	4?	3	3	2
21	exterior	3	3	2	2	5	2	6	3	3	7	3	5	2	4	8	3	3	3	5	3	2	3
22	extinguish	3	3	2	3	3	2	3	3	4	3	3	2	2	3	5	3	3	3	3	3	2	2
23	miscalculate	8	6	7	6	7	9	6	7	6	7	6	5?	4	7	7	8	7	6	6	6	6	7
24	mistake	3	3	2	3	2	5	3	2	4	2	2	2	2	4	4	6	3	2	3	3	2	3
25	mis-take	10	8	6	2	5	6	6	2	6	5	5	5	4?	10	7	6	6	7	6	7	5	6
26	mistime	7	7	7	6	6	9	8	6	7	6	5	6	5	9	11	7	7	7	6	8	6	8
27	mistook	7	9	6	5	3	9	3	5	7	7	5	2	2	4	5	4	5	7	3	5	2	2
28	unmistakable	3	3	3	2	3	2	2	2	3	2	2	2	3	3	3	5	2	2	3	3	3	3
29	suspense	2	1	2	1	2	2	1	1	2	1	1	2	2	2	2	2	1	2	2	2	1	1
30	sustain	3	2	2	3	3	2	3	3	3	3	2	2	3	2	3	4	2	1	3	3	2	2
31	transparent	1	4	7	4	4	10	4	4	5	1	4	4	2	2	5	2	6	5	2	2	2	2
			1	1	1	2	2	2	2	5		2	2			2		2	2				
32	transpire	2	1	1	1	2	2	2	2	3	1	2	2	2	1	2	3	2	2	2	2	1	2
33	askance	2	4	3	2	3	3	2	2	3	3	2	2	3	3	2	3	3	3	4	4	3	2
34	aspire	2	2	2	1	2	1	1	2	2	1	2	2	2	2	2	2	1	2	2	2	1	1
35	astonish	2	3	2	2	3	2	2	2	3	2	2	2	3	2	3	4	2	2	3	3	2	2
36	abstain	3	3	2	3	2	2	3	2	2	3	3	3	3	3	2	4	2	2	2	3	2	2

TABLE 1

(continued)

		American speakers											British speakers										
		JKD	JE	JOC	KOC	ACL	WW	PH	JH	KE	NW	JHP	IN	MCH	LC	MH	MC	DH	NS	GC	AC	JS	JB
37	bespangle	1	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1
38	bestow	3	3	3	2	3	2	2	2	4	3	2	2	2	2	2	2	2	2	2	2	2	2
39	conspire	1	2	1	2	2	1	2	1	2	1	1	2	1	2	2	2	2	2	2	2	1	2
40	constabulary	2	2	3	2	3	2	3	2	3	2	2	3	2	2	3	4	2	2	3	3	2	2
41	constituency	2	3	2	2	2	2	2	3	4	3	3	3	3	2	3	4	3	2	5	3	2	3
42	despise	2	2	1	2	2	1	1	2	2	2	2	2	2	2	2	2	1	1	2	1	1	2
43	despondence	1	2	2	1	2	2	1	2	2	2	2	2	1	1	2	2	1	1	2	2	2	1
44	especial	2	2	1	1	2	2	2	2	2	1	1	1	2	1	1	2	1	2	2	2	1	1
45	establish	3	3	2	2	3	2	2	2	4	2	2	2	2	3	2	4	2	2	3	2	2	2
46	estate	2	3	2	2	3	2	2	2	3	2	3	2	2	3	3	3	2	3	3	2	2	2
47	inspire	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	1	1
48	instalment	3	3	2	2	2	2	2	2	3	3	3	2	3	2	3	4	2	2	3	2	3	2
49	instinctive	2	3	3	2	3	2	2	3	3	3	3	2	3	3	4	2	3	3	2	2	2	2
50	interstellar	2	3	2	2	2	3	2	3	3	3	3	2	2	3	3	4	2	2	3	3	3	3
51	non-stop	2	2	2	2	2	2	2	2	2	2	2	2	3	3	2	4	3	1	3	2	2	2
52	overstep	2	2	2	2	2	2	3	2	3	3	3	2	2	3	3	4	2	1	3	2	3	3
53	perspire	1	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	1	1
54	prospective	1	1	1	1	2	1	2	1	1	1	1	2	2	1	2	2	1	2	2	2	2	2
55	prosperity	2	2	2	1	2	2	1	2	5	2	1	1	2	2	2	2	2	2	2	2	1	2
56	respectable	1	2	2	1	2	1	2	2	1	1	1	2	1	2	2	2	2	1	2	2	1	1
57	responsible	2	2	2	1	1	1	2	2	1	2	1	2	1	2	2	2	2	2	2	2	1	1
58	restorative	3	3	2	2	3	2	2	3	3	2	2	2	3	2	2	4	2	-	5	3	2	3
59	retrospective	2	1	2	1	2	2	2	2	2	1	1	2	2	2	2	2	1	1	2	1	1	1
60	substantial	2	3	3	2	3	2	2	2	2	3	3	2	2	3	3	4	2	2	3	3	2	2
61	unsteady	3	3	2	2	3	3	2	2	4	2	2	2	2	2	3	4	2	2	3	3	2	3
62	Shakespearean	1	2	2	1	2	2	1	2	2	2	2	2	2	2	5	4	1	2	2	2	1	2
63	aristocracy	2	3	3	2	3	2	2	2	4	3	2	2	2	3	3	4	2	3	4?	3	2	2
64	austerity	2	2	3	3	2	3	3	2	4	3	2	3	2	3	2	3	3	2	5	3	2	3
65	confiscation	3	4	3	3	4	3	3	4	3	6	3	3	3	3	4	4	3	3	4	3	3	2
66	dexterity	3	3	2	2	6	3	2	3	3	3	2	4?	2	4	9	4	2	2	3	3	3	1
67	dyspepsia	4	4	6	4	4	2	2	1	4	5	2	2	2	4	4	2	2	2	2	2	1	1
68	fastidious	3	3	2	2	2	3	3	3	4	3	3	2	3	1	6	4	3	3	5	5	2	3
69	gestation	3	5	2	3	5	3	3	3	3	2	3	2	2	4	3	4	3	2	3	3	2	3
70	hysteria	3	3	3	2	3	3	3	3	3	3	3	3	3	4	4	4	3	3	5	3	3	3
71	ministerial	2	6	3	2	2	2	3	3	3	3	3	3	3	2	4	6	3	2	5	3	2	3

4.3 Initial and post-initial stops followed by liquid or semivowel

On measuring the duration of the voiceless stretch of speech after the explosion in the words with initial and post-initial stops followed by a liquid or semivowel it turned out that the average duration of this phase was 9·0 cs in the case of /p, t, k/, 3·7 cs in the case of /(s)p, (s)t, (s)k/, and 3·2 cs in the case of /b, d, g/. The onset of vocal cord vibration was thus considerably delayed (20-35%) as compared with words in which the (post-)initial stop is directly followed by a vowel.

The difference between the initial and post-initial stops in pairs were as follows:

p(r)-	8.1 cs	(s)p(r)-	2·5 cs
t(r)-	9·4 cs	(s)t(r)-	4·4 cs
k(r)-	9·5 cs	(s)k(r)-	3·8 cs
p(j)-	8·8 cs	(s)p(j)-	3·0 cs
t(j)-	9·7 cs	(s)t(j)-	4·3 cs
k(j)-	10·0 cs	(s)k(j)-	4·2 cs
p(l)-	7·3 cs	(s)p(l)-	2·6 cs
k(l)-	8·2 cs		
k(w)-	8·8 cs	(s)k(w)-	4·0 cs

These results support the generally held assumption that /r, l, w, j/ in English are partially or completely devoiced after initial, stressed /p, t, k/ (aspiration manifested as devoicing of following liquid or semivowel). They furthermore show that /r, l, w, j/ are partially devoiced after initial, stressed /sp, st, sk/. However, partial devoicing also takes place after initial, stressed /b, d, g/, cf. the following average durations: br: 2·8, dr: 3·9, gr: 3·3, bj: 2·3, dj: 4·1, gj: 3·6, bl: 2·1, gl: 2·7, gw: 4·0.

4.4 Medial stops followed by liquid or semivowel

In the 462 recorded words in which a liquid or semivowel intervenes between the medial stop and the stressed vowel the duration of the release stage was measured. In order to determine whether the stops in these words displayed initial or post-initial manifestation, the results were then compared with those obtained at the second recording session for initial and post-initial stops followed by /r, l, w, j/.

In the following table of results (based on the first recording and only supplemented with figures from the two other recordings as far as borderline cases are concerned) the figures representing initial, aspirated manifestation are underlined. See Davidsen-Nielsen 1974, p. 31 for "disambiguation" of borderline cases (5 cs in the case of /spr, spl, spj, skl/, 6 cs in the case of /skr, skw/, 7 cs in the case of /str, stj, skj/); in two remaining borderline cases a question mark has been added in the table.

TABLE 2

		American speakers											British speakers										
		JKD	JE	JOC	KOC	ACL	WW	PH	JH	KE	NW	JHP	IN	MCH	LC	MH	MC	DH	NS	GC	AC	JS	JB
1	disclaim	6/4	12/4	8/4	7/3	7/4	11/2	7/3	3	6/3	9/7	7/3	6/5	2	7/5	9/5	9/3	6/2	8/4	7/5	10/7	3	4
2	discrepancy	1	4	3	3	3	7/4	4	2	4	7/3	7/5	2	2	3	3	2	6/3	4	6/8	7/8	3	2
3	dispute	10/3	8/5	8/5	5	7/4	11/5	7/3	7/4	7/4	9/6	5	8/3	3	5	7/8	5	3	7/5	8/8	8/4	4	5
4	disqualify	3	7/10	6/-	3	4	9/10	4	3	7/3	7/5	3	6/7	3	7/5	10/7	3	3	5?	9/5	6/9	4	2
5	distress	4	10/6	3	4	5	10/5	4	3	3	5	4	7/2	3	5	7/9	5	4	4	8/5	9/4	5	7
6	exclaim	2	6	3	2	5	5	4	2	4	4	4	2	2	5	9	4	4	4	8/5	8/4	3	4
7	excrescence	5	6	3	5	6	5	4	4	5	5	5	9/3	4	6	9/3	5	5	5	8/5	8/4	3	3
8	excusing	2	3	4	3	4	4	4	3	4	5	3	3	3	5	3	3	4	4	7/8	4	4	3
9	extrinsic	3	4	3	3	3	4	4	4	3	5	3	3	2	3	3	4	3	5	8/5	4	3	3
10	transcription	4	5	3	3	3	4	2	3	4	5	5	3	3	4	3	4	5	3	8/5	4	4	5
11	ascribe	3	4	3	3	3	4	4	4	3	5	3	3	3	4	5	4	4	4	6	6	5	4
12	destruction	4	5	3	3	3	4	2	3	4	5	5	3	3	4	3	4	4	5	8/5	4	3	3
13	estrange	3	4	3	2	4	4	5	4	3	5	4	5	4	4	5	5	4	4	6	6	5	4
14	prescriptive	3	4	3	4	4	2	3	4	3	5	2	3	3	4	3	3	5	4	5	4	4	3
15	proscribe	3	7/3	3	3	4	3	3	5	4	6?	3	3	3	5	3	4	4	5	7/2	5	3	3
16	resplendent	2	3	3	2	2	2	2	3	2	2	2	2	3	2	3	3	2	2	2	2	2	2
17	Australia	3	4	3	3	4	4	4	4	5	6	5	3	4	5	5	6	6	4	6	6	5	5
18	frustration	4	4	4	3	3	5	2	4	3	4	4	4	4	5	3	6	4	4	6	6	4	5
19	gastronomy	3	5	4	2	4	4	4	4	3	6	4	3	4	5	4	5	3	4	6	5	4	4
20	illustration	3	5	5	3	5	4	4	3	4	5	3	3	4	5	6	5	5	4	5	5	4	4
21	monstrosity	2	5.	4	3	4	4	4	3	5	4	4	4	5	4	5	4	4	3	5	5	4	4

5. Principles of syllabification in the words under investigation

The overall picture which emerges as regards syllabification in words with medial sp, st, sk followed by a stressed vowel, either directly or with an intervening liquid or semivowel, is that separation between the /s/ and the stop constitutes the exception rather than the rule. In only 10 out of the 89 words investigated did a majority of speakers aspirate the stop: mistime (22 speakers), miscalculate (20), mis-take (= "take badly", 19), disclaim (18), disqualify (14), discomfit (13), discourteous (13), distemper (13), transparent (13), mistook (13). Syllable division between the sibilant and the stop was furthermore characteristic of more than a few isolated speakers in the following words: exclaim (10 speakers), dyspepsia (9), exterior (6), excrescence (6), dispute (6).

Two striking features are shared by these words: they begin with a prefix ending in -s (or, in the case of dyspepsia, with a learned Greek borrowing ending in -s), and they contain an internal morpheme boundary which is so clear that it is presumably intuitively transparent to the speakers. Now in Basbøll 1972, p. 194 it is tentatively proposed that the syllable boundary in polysyllabic Danish words coincides with an intuitively transparent morpheme boundary in so far as the principle of permissible initial and final consonant clusters is not thereby violated, and my results seem to confirm this rule for English. The unfused character of the above words is most evident in miscalculate, mistime, mis-take, disclaim, disqualify and discourteous (the items with most consistently aspirated stops), where removal of the prefixes leaves behind words in their own right, and where the pejorative and reversative meanings of the prefixes seem obvious. In dispute, excrescence, transparent the existence of lexical items like putative,

compute repute(d)/ crescent, crescendo, increase/ apparent as well as the relatively clear negative and locative ("out of", "through") semantic content of the prefixes may explain an awareness of internal boundary, although these cases are less easily accounted for. The composite nature of exclaim is supported by words like claim, disclaim, proclaim, reclaim, that of exterior by the antonym interior, and that of distemper by the relatively clear reversative sense of the prefix and the existence of the word temper. As regards mistook, it is claimed by Kenyon & Knott 1953, p. 282 that the syllable separation after the /s/ found in this form only, and not in mistake, mistaken, unmistakable, is due to the fact that the past form is less familiar. That a high degree of frequency should be conducive to the fusion of word elements seems quite probable, compare, for example, the reduction of the final vowel of milkman with the full vowel of chess-man in British English. Furthermore mistook is perhaps most commonly used in the sense "erroneously take A for B", e.g. I mistook him for the mayor, where the composite nature of the word is most obvious. Relatively low frequency of occurrence might explain the aspiration of the stops in dyspepsia and discomfit, together with a fairly clear negative/reversative semantic content of the prefix in the latter word and (possibly) with the existence of words like dyslalia and dyslexia.

Generalizing from my results and the principle that intuitively transparent morpheme boundaries coincide with syllable boundaries it can be predicted that syllable separation between the /s/ and the stop in English words of the type under investigation will be found in a small minority of cases, characteristic examples being disconsolate, displease, distaste (class Ia), expatriate (Ib), misprint, misquote (Ic), Fitzpatrick (III), cross-question (IV), and jurisprudence (V). Most words

syllabified in this way begin with dis-, but there will also be a goodly number of words with ex- and mis- (actually all words of the last type except mistake(n), (un)mistakable can be expected to be syllabified in this way).

In a large majority of cases, then, syllable separation before the /s/ can be predicted, thus in the majority of words belonging to class I and III, in by far the greater number of words belonging to class V, and in practically all words belonging to class II.

If we examine the results obtained for each individual speaker, the homogeneity of the American material is conspicuous. One speaker, it is true, has aspiration of the stop in only six words, but he spoke fairly rapidly (JH). That speed of delivery could be conducive to the fusion of word elements does not seem implausible, cf. that NW, the American informant who spoke most slowly and deliberately, had 15 instances of aspiration. For British English the results are more heterogeneous. Three speakers have strikingly few cases of aspiration: MCH (only in mistime), JC (miscalculate, mis-take, mistime), and JB (miscalculate, mis-take, mistime, excrescence). On the other hand, two speakers, MH and GC, aspirated the stops in an exceptionally large number of words. Although the overall picture is the same in British as in American English, we are possibly on somewhat less sure ground in this type of English and therefore have to be more cautious in our generalizations.

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