ON SLIPS OF THE PEN

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Definition

The easiest way to define a slip of the pen is to describe what it is not. A slip of the pen is not a spelling error, caused by deficient knowledge of spelling rules, nor is it a lexical error, i.e. it does not stem from an incorrect interpretation of the meaning or the origin of a morpheme. Spelling and vocabulary belong to the competence, slips belong to the performance. Boomer and Laver (1968) have defined a slip of the tongue as "an involuntary deviation in performance from the speaker's current phonological, grammatical or lexical intention". This definition is applicable to a slip of the pen too. A slip arises somewhere in the program of a linguistic achievement, spoken or written.

Purpose

The purpose of the present study is to find out to what extent, if at all, the writer uses the same linguistic units as the speaker when programming his linguistic performance. In the debate on reading and reading processes there is a discussion about the existence and, if so, the necessity of speech recoding as a mediating stage between visual input and meaning analyses in reading. Recent results (e.g. Kleiman, 1975, and Levy, 1977) support the existence of a speech recoding stage which occurs after lexical access, i.e. word comprehension, and facilitates the temporary storage of words necessary for sentence comprehension. Earlier experiments on reading at the Haskins Laboratories

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by Erickson et al. (1973) also point to a phonetic-phonological code as appropriate for temporary storage. (See Nauclér, 1975, for further discussion.) Also in writing it is necessary to keep a number of linguistic units in temporary store while coding them into graphomotoric commands. It is therefore reasonable to assume some kind of phonetic-phonological mediation for writing as well.

From analyses of slips of the tongue it is evident that different kinds of linguistic units are involved on the phonological level, indicating the discreteness of phonological units of different sizes, all of which can play a role in production. (For a survey, see Fromkin, 1973.) Consequently, my first question is: Do slips of the pen support the assumption that we use the same linguistic units to program both speech and writing?

Since both competence in oral language and special writing rules are required for the acquisition and mastering of written language, mastering written language may be regarded as an augmented competence (Weigl, 1972). This augmented competence implies among other things close connections between linguistic expression and graphic performance, groups of graphemes (graphic units) being related to groups of segments by means of correspondence rules in an almost automatic way (Bierwisch, 1972). But before such rules are internalized, beginners have to rely only on their competence of oral language. They must "sound out" the words to be able to write them down. This is apparent in young people's spelling and lexical errors.

Thus, we must assume two programs for writing, one for coding the message into a phonetic-phonological code (available but not necessarily used) and one for converting it into graphomotoric units. A slip of the pen can therefore arise either in the linguistic or in the graphic program. A comparison between linguistic and graphic slips can provide interesting information as to the serial ordering of units of different programs. However, graphic slips are not discussed in this study. As far as

possible they have been separated from the linguistic slips. Instead, a comparison between two groups of writers, differing in age, was carried out for the following reasons: On one hand, young people can be expected to make more linguistic slips than adults as they have to depend more on speech recoding. On the other hand, adults plan longer sentences and need all the storing capacity of their short-term memory even if they have internalized the correspondence rules. But since the short-term memory may contain about seven items at a time regardless of size, the young people need the capacity of the short-term memory, too. They fill it with items of smaller linguistic size. Therefore, a difference between skilled and less skilled writers is not likely to show up as a difference in frequency between linguistic and graphic slips. It is more reasonable to assume that the difference in size of linguistic units used for the graphomotoric program can influence the slips of the two groups. My next question is therefore: Is the distance between a slip and its "trigger" shorter for slips made by young people than by adults, the former presumably storing units of smaller size in their short-term memory?

Corpus

The material used for this study consists of compositions written by students of different levels. 190 compositions were written by students in the 4th grade (aged 10-11 years), 190 by the same students when in the 6th grade (now 12-13 years), and 150 by upper secondary school students (12th grade) as a school-leave examination (aged 18-19 years). In this report the two lower grades are treated as one group, called "less skilled writers". The material has certain drawbacks. The writers have obviously corrected all slips they noticed. The slips still remaining are those which are difficult to discover when proof-reading. Not only the number but also the variety of slips

has decreased as a consequence. Furthermore, a slip might look just like a spelling error or a lexical error, and since it is impossible now to ask the subjects about their errors, there is no way to be sure of the right category. It seems, however, as if my classifications were made correctly on the whole, as the number of slips does not decrease much from grade 4 to grade 6 (in contrast to the number of spelling and lexical errors). Learning does not affect this type of performance.

Classifications

The material was first divided into deletions, substitutions and additions. Only very few examples of metathesis, corresponding to the classic spoonerism in speech, were found. Deletions are by far the most common type of slip of the pen, four times as frequent as each of the two other types.

Results

The smallest linguistic unit involved in slips of the pen, i.e. the feature, is mainly found in the substitutions. When one grapheme is written for another, there are two possible explanations for this. Either the substitution is graphic, i.e. the graphomotoric commands given were wrong, resulting, for instance, in an upstroke instead of a downstroke. For this to happen the graphemes substituting each other must look alike, as p-b, g-d, d-b, and so on. Or the substitution occurs before the motor programming. In that case the slip is regarded as linguistic and the segments corresponding to the graphemes substituting each other must have linguistic features in common.

As can be seen from Table 1, similar graphemes are not the most frequent substitutes. But if the two segments, corresponding to the graphemes involved, are compared, they turn out

to contain the same features but one in about 70% of the substi-
tutions. In the rest of the cases all features but two are
shared by the two segments involved. This is in consistency
with Fromkin's results from slips of the tongue (personal com-
munication).

Table 1

Numbers of obstruents substituting each other

Grade	p-b	t-d	k-g	b-d	t-k	g-d	k-p	g-t	k-d	v-f	p-f	p-v
4	2	6	2	2	2				1			
6		4	1					1		2	1	
12	3	2	4			1	1					1
	5	12	7	2	2	1	1	1	1	2	1	1

What is the reason for writing another grapheme than the intended
one? It seems as if the substitutions are influenced mostly by
a similar segment in the immediate context (syntagmatic assimila-
tion). This sometimes leads to partial identity between the
segments

(1)   P har under senare tid tagits upp i diskussionen ⟶ takits
        (P has lately been brought up in the discussion)

but in most cases to complete identity

(2)   ej bör vänta med att ingå äktenskapet ⟶ äktenspapet
        (should not wait to get married)

(3)   nu styrde maskinen ut ur folkhopen ⟶ folkhofen
        (now the machine steered out of the crowd)

(4)   vi fick ta upp den igen ⟶ vick
        (we had to pick it up again)

The "trigger" is not necessarily found in the syntagm. There
are many examples of paradigmatic influence

(5)   Äktenskapet bygger till 75% på → bycker[1]
      (Marriage is based on ... to 75%)

(6)   Alla fyra grupperna har följande uppgifter → förjande
      (All four groups have the following tasks)

It can be argued, of course, that in (2), (3) and (4) the sub-
stitutions are graphic anticipations and duplications, but if
that is so, there is no sufficient explanation for the fact that
the substituted segments have all the phonological features but
one in common with the segment substituting them and no striking
graphic similarity. It should also be emphasized that vowels
and consonants do not substitute each other, a fact which can
only be accounted for linguistically.

       Features expressing manner of articulation are more fre-
quently exchanged than features expressing place of articulation
by both groups. But if the feature VOICED is disregarded the
skilled writers substitute fewer "places of articulation" than
"manners of articulation". The opposite is true for the less
skilled writers, a somewhat puzzling finding.

       The voicing feature is the most common one substituted
among the paradigmatic slips. This is not the case among the
syntagmatic ones. The exchange of value of the feature VOICED
might as well be a lexical error as a slip, caused by deficient
knowledge of the morpheme in question, since it has been shown,
i.a. by Simon (1975) that the distinction voiced/voiceless is
mastered only late in the acquisition of language. However, as
the feature VOICED is the most frequent one substituted paradig-
matically by both groups of writers in this study, there is
hardly any reason to doubt its classification as a slip.

       In a few cases the substitutions are not influenced by a
single segment but by a sequence of segments in the paradigm
similar to the intended one

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1) Swedish spelling rules do not permit ⟨kk⟩ . The rule ⟨k⟩ →
    ⟨c⟩/_⟨k⟩ has been applied after the shift from VOICED to
    VOICELESS.

(7)   anpassningsproblem med den → anpassningsproble_v_
       (adaptional problems to the)   "blev" is the past tense
       of a modal auxiliary

A single _segment_ turns out to be most often involved in _additions_.

The following examples are regarded as linguistic slips due to

the context in which the graphemes are added

(8)   en svag lukt → svag_t_ [svɑːk_t_ lukt]
       (a slight smell)   '_t_' is an inflection suffix

(9)   naturligtvis [natʉrli_kt_vis] har ökat → ök_t_at
       (naturally have increased)

(10)   smärtorna på Bosse → _s_på
       (the pains on Bosse)   'Bosse' is a proper name. The
                                   syntactic structure of the
                                   phrase is as bad in Swedish
                                   as in English.

In some cases of additions where the linguistic influence is not

obvious it may perhaps be more appropriate to consider the slip

as graphic, i.e. a graphomotor command has been released twice

(11)   rätt nöjd faktiskt → fak_s_tiskt
       (quite satisfied, as a matter of fact)

Also among the additions are examples of external influence from

similar sequences, syntagmatic as well as paradigmatic

(12)   en gräsklippare berättar → berättar_e_
       (a lawn-mower tells)   '-are' is a derivative suffix
                                       meaning "the one that/who"

(13)   började det plötsligt osa bränt → _d_osa
       (it suddenly started to smell of smoke), "osa" is a verb,
                                   "dosa" is a noun meaning "box"

Less skilled writers have a certain tendency to simplify the

structure of the word by inserting a vowel in a consonant cluster.

The inserted vowel is an anticipation of the following one

(14)   borta bra men hemma bäst → ba_r_a
       (proverb: there is no place like home)

(15)   sen dess tycker jag illa om piggsvin → piggs_i_vin
       (ever since I dislike porcupines)

The same effect, i.e. a less complicated consonant structure, is

obtained when a consonant is deleted in a cluster, a phenomenon

which dominates the _deletions_. Whenever a consonant is left out, it is deleted from a cluster. The only exception to this "rule" is single consonants in word final positions. Deletions in clusters can be regarded as a way to make sequences of linguistically similar segments (consonants) simpler. But it can also be ascribed to the fact that consonants in clusters very often share the same place of articulation. In this case, the similarity leads to deletion and not to assimilation as was the case with the substitutions.

As can be seen from Table 2, both skilled and less skilled writers delete more than half of all consonants in medial clusters. Only the less skilled writers delete in initial clusters, whereas the skilled ones are more inclined to do so in final clusters.

Table 2

Deletion of consonants in clusters (%)

| Grade | Position of cluster | | |
	init.	med.	final
4	30	52	18
6	14	51	35
12	2	55	43

Emphasizing some differences between the two groups we must try to explain them. The fact that less skilled writers unlike skilled ones delete consonants in initial clusters has probably to do with the graphic units stored by the skilled writers. Such units are certainly more easily acquired for the first part of a word than for any other part, the structure of the first part of a word being constant in contrast to the final part, where the structure is changed by inflectional suffixes.

When a skilled writer deletes a single consonant at the end of a word (i.e. the consonant is not part of a cluster), the consonant is in most cases an inflection, but when deleted by a less skilled writer it is more often part of the stem. Consequently, it seems to be merely a matter of position when a less skilled person deletes a consonant at the end of a word, whereas in the case of a skilled writer one might assume a strategy implying a programming of lexical and grammatical morphemes separately. The latter morphemes, being more redundant, may sometimes be overlooked.

It is apparent from what has been said about deletions in consonant clusters that, in contrast to substitutions and additions, no segments (or sequences of segments) of similar phonological quality triggering the deletions are found in the context. The occurrence of two or more consonants in sequence seems to be enough to cause a deletion. This is one of the few cases where there is not a certain distance between the trigger and the slip. In the substitutions and additions there are some examples of the trigger and the slip being separated by a word boundary only. In the group of the less skilled writers there are also a few examples of trigger and slip in the same syllable, the distance between them amounting to no more than one or two segments.

On the whole, both groups favour the distance of one syllable between the trigger and the slip. Less skilled writers prefer the syllables involved to be part of the same word. No distance of more than six syllables is observed, once in each of the three grades.

Conclusions

Since it is apparent from the slips of the pen examined in this study that both features, segments and morphemes are involved when comparing errors, intentions and triggers, the assumption that we use the same linguistic units when programming speech and

writing seems to be correct. The hypothesis that the distance between the trigger and the slip ought to be greater when the slip is made by a skilled writer, was confirmed inasmuch as the trigger and the slip were never found in the same syllable in errors made by the skilled writers. This was sometimes the case with errors made by less skilled writers. Moreover, in most cases concerning less skilled writers the trigger and the slip were found in the same word. For the skilled writers they were more often found in different words.

Summary

A phonetic-phonological coding is used, not only by less skilled writers but also by skilled ones. The difference between the two groups of writers lies mainly in the size of the lingui- stic units used as input to the graphomotor program and in the number and size of the graphic units internalized.

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