

Locational Implications of Pauses In Written Composition

* Madeline Haggan

* Ph. D. in Psycholinguistics, University of London, 1973.
Lecturer of Linguistics, English Department, Kuwait University.

Abstract

Pause locations in written composition were studied in order to investigate sentence level planning. A model relating pauses to simple word search had to be rejected. Instead, the data suggested that pauses in writing showed a tendency to occur at the main syntactic breaks in the sentence than at the lesser syntactic breaks. In spite of the relative ease of the writing situation as compared with that of spontaneous speech in the sense of constraints to maintain the flow of production, the implications are that both situations conform to a similar model of sentence generation.

Studies on pausing in the composing process such as those by Flower and Hayes (1981) and Matsuhashi (1981) have tended to concentrate on the higher level planning associated with the longer pauses exhibited by writers of lengthy texts. The assumption which seems to underlie this emphasis is that once the goals are set and the rhetorical decisions are made in these pauses, which therefore coincide with the onset of composing units, the shorter pauses, associated with planning at the level of the sentence, can be ignored. This seems an overly-simplistic approach. Firstly, it overlooks the sheer dimension of this type of pausing. Matsuhashi (1981), for instance, reports that 91% of the time gaps between words were of less than half a second's duration although she based her analysis on only those pauses of one second's duration or longer. Secondly it does not take into account the fact that certain types of prose (theoretical or argumentative as distinct from narrative) evolve -- it is tempting to say, painfully -- through the cumulative construction of content. Thus it may be that the argument only really develops once the writer tries to express it on paper and, although he may be conscious of the general 'drift' the argument will take, it cannot be assumed that it unreels smoothly in neat pre-coded units. Even allowing that such higher-level plans are formulated in the process of their execution, adjustments and innovations may be introduced which not only alter the shape of the originally conceived unit but may also have implications for the design of future rhetorical units. Obviously such decisions arise at the level of the sentence and, without knowing something about their control, we cannot begin to say we understand the dynamics of written composition. This, therefore, constitutes the rationale for conducting the present study, which tries to extend the scope of pause analysis in Composition to include all pauses and not just the longer ones. The gathering of the experimental data has been described in detail elsewhere (Haggan, 1986) but briefly the relevant parts of the procedure are as follows. Nine female students from the Department of English Language and Literature, University of Kuwait acted as subjects in the experiment. All were native speakers of Arabic in the third year of their studies for a B.A. in English. All subjects showed near-native competence in English and had above-average academic records. The topic was carefully selected as being one which would require some thought, but which could be dealt with in simple language. Each subject in turn was asked to write a brief composition on the following topic: "Imagine that you have met a man from Mars. On this planet there is no such thing as milk. Write a short composition in which you try to explain and describe to him what milk is".

During the composing period, the experimenter observed each subject and, whenever there was a noticeable break in the flow of writing, wrote down the first word or words after each pause, a practice session on this

task prior to the experiment having shown that it could be done efficiently and unobtrusively. The data thus obtained on pause locations was then used to test certain hypotheses regarding sentence - level planning in writing.

I. Pausing and Lexis

In the investigation of pausing in speech, one of the first relationships to be studied was that between a pause and the immediately ensuing word (Goldman Eisler, 1980). Subjects in the present study volunteered the reason they felt they paused was because they were thinking about the next word. Word search, therefore, seemed a useful indication of where to start in the quest for a model of sentence - level planning in writing. Maclay and Osgood (1959), by counting the perceptible pauses in the written transcripts of the speeches of conference participants, showed that pausing was more likely before content words than before function words, and it seemed a reasonable first step to expect that this situation would prove true in the case of written composition obtained in the present investigation as well. Thus the first hypothesis to be tested was simply that subjects would pause more frequently before content words than before function words. In fact, this hypothesis was not validated since 56% of all pauses in the present data occurred before and within function words whereas only 44% occurred before and within content words. Obviously, this two-way classification is a somewhat coarse distinction since each category covers several types of words, some of which may present greater retrieval problems than others. Consequently, a finer analysis was conducted, investigating the number of pauses before each of the respective word classes. Table 1 presents the figures obtained. As can be seen, the greatest concentration of pauses occurred before nouns, which would provide some substantiation of the subjects' introspective feelings of a relationship between pausing and lexical choice. However, it is obvious that this type of encoding problem is not the only factor necessitating a break in the flow of writing. The need to think of the right word, for instance, would hardly explain the fact that 17% of pauses occurred before pronouns, 13% before prepositions, 17% before relative pronouns and conjunctions and even 8% before articles. The word search model is obviously only a very small part of the story, and the logical step is to move up from the area of lexis to the area of syntax.

II. Pausing and Syntax

In an experiment similar to the present one, but based on spontaneous speech, Haggan (1973) found that speakers' pauses at the major constituent breaks in the sentence (i.e. between subject and verb, and

between verb and object) exceeded those at any of the lesser constituent breaks. This implies the operation of a system of grammatical categorisation uniting and separating the lexical items as they are released from the word store, an on-line process carried out at the high speed characterising any skill. In speech, this speed of syntactical programming is largely facilitated by the speed at which the physical process of articulation takes place. In addition, the flow of utterance is subject to the socio-psychological pressures exerted by the speech situation (e.g. if the speaker pauses, he may be interrupted, be thought unsure, etc.) so that there is also considerable external constraint imposed on the speaker to maintain a steady flow of speech. Thus, in the spontaneous speech situation, the habit hierarchies fundamental to the higher stages of integration of any skill do, as it were, take over. In writing, however, there is a somewhat more "relaxed" situation. On the one hand, the actual formation of graphemes is effected at a slower rate than the articulation of speech sounds, while on the other hand, the writer is not prey to the same constraints to keep writing as the speaker is to keep speaking. The question then arises: does this relaxation over-ride the internal pre-coding of syntactic clusters, so that the writer's pauses are less tied to syntactic boundaries but are more directly related to the encoding contingencies as they crop up, or are these habits so strong that they even regulate the stops and starts of written linguistic activity? Although Immediate Constituent Analysis is no longer held to be adequate as a general descriptive grammar (Crystal, 1971, Chap. 4) an analysis into immediate constituents is still an important level in most current syntactic theories. In the context of the present investigation it was felt that it was uniquely useful for our purpose because it offers a useful technique for providing map reference points in syntactic terms for possible pausing stations. Using Nida's system (1973) the following constructions were included for analysis with pauses classified according to their position within constituents (marked by X in the following examples).

adjective	x noun	e.g. large x family
article	x noun	a x family
noun	x phrase	country x in the Middle East
intensifier	x adjective	very x large
adjective	x phrase	bad x for the country
verb	x adverb	live x unhappily
preposition	x noun (phrase)	in x the Middle East
auxiliary	x participle	will x result
co-ordination		brothers x and x sisters

In addition to these, a further construction designated "verbal phrase" was set up to include what traditional 1.C. Analysis would probably have treated as an infinitival construction e.g. wanted x to x come, and two part verbs e.g. look x for infinitival construction e.g. wanted x for come and two part verbs e.g. look x for. This was done simply to group together pauses associated with verbal phrases, each individual category on its own not giving rise to a significant number of pauses. Pausing between major constituents was investigated by recording pauses at the presentence location (Pre-S), between subject and verb (S/V) and between verb and object (V/O). As the analysis proceeded, it became obvious that an additional "location" would have to be set up, namely word-medial. The number of pauses occurring at each of these locations is shown in Table 2, while Table 3 provides a further breakdown of wordmedial pauses classified according to the word class that is interrupted.

Since the aim of the analysis was to ascertain whether or not broad tendencies could be detected indicating the writer's awareness of syntactic structure in positioning his pauses, attention was focussed on obtaining cumulative totals of pauses at each of the locations specified. Detailed listing and analysis of individual instances where pauses occurred yield interesting insights into particular contingencies necessitating a pause and from the basis of a separate study. However, the goal of the present investigation was to see whether such encoding contingencies are dealt with (by pausing) only at the contingency point or whether the writer's awareness of the syntactic groupings allows -- and indeed prefers -- pausing at a syntactic break which may be anticipatory to the particular contingency arising. In other words is there any evidence that the writer's text is unrehearsed in precoded syntactic chunks, or is the relationship between pauses and contingencies so direct that there is no discernible underlying syntactic patterning as to pause location?

A preliminary analysis of the data was to obtain the mean number of pauses occurring at major and lesser constituent breaks. As can be seen from Table 2 this gave figures of 28 and 8.09 respectively, an overwhelming concentration of pauses at the major constituent breaks as compared with the number occurring at the lesser constituent breaks, and a strong argument for the notion that the writer makes active use of syntactic groupings in his placement of pauses. However, closer inspection of the data reveals that the high average for major constituent pauses rests to a very great extent on the fact that so many pauses occur at the Pre-S location; in fact, it is the most favoured position of all for pausing. This fact alone could be taken as an indication of the influence of syntactic coding on the writer's performance since it reveals a tendency for the initial programme at least to be at the unit of the sentence.

However, as the data show, programmes initiated at this point are not always complete, and may need further modification or amendment once set in motion. It is, therefore, interesting that even excluding pauses at the Pre-S location, the average number of pauses occurring at the two remaining major constituent breaks exceeds that occurring at the lesser constituent breaks (12.5 and 8.09, respectively). The evidence seems, therefore, to point strongly to the influence of the internalised grammar in determining where the writer will pause. This tentative syntactic model can, however, be taken a step further since it appears from the data that pauses between verb and the object were very frequent. This may be due to syntactic topography since it represents a major constituent break at some distance from the beginning of the sentence. Thus, the planning done at the Pre-S location may not extend this far into the sentence, or may require 'topping-up', before the sentence can be completed.

However, having extracted this syntactic - boundaries interpretation of the data, the large number of pauses occurring at the lesser constituent breaks cannot be ignored. Obviously, 'emergencies' arise in the course of encoding which were not catered for in the syntactic boundaries. It is in this setting that we can now introduce the demands imposed by lexical choice. As can be seen from Table 3, there is a strong tendency for pauses occurring at the lesser constituency breaks to precede the generation of nouns. This tendency is further supported by the breakdown of word-medial pauses, which also represent some form of lexical uncertainty. Although this sometimes merely takes the form of spelling difficulties, it more frequently indicates that the writer may not be confident that the word he has selected **is** the right one. He may therefore stop to think about it, either proceeding with the same word or coming up with a new one. As can be seen, there was a strong tendency among the writers in the experiment to interrupt content words, and especially nouns, in this way. To sum up, therefore, the data indicate a tendency for the writer, like the speaker, to position his pauses (implying that he formulates his writing plans) at the major rather than the lesser syntactic breaks with the bulk of pauses occurring at the Pre-S location. This utilisation of syntax in the placement of pauses, with its implication for the planning of linguistic chunks is counteracted by the contingencies of lexical choice, in which case the planning extends over only the immediately - ensuing word.

If difficult lexical choice is necessarily preceded by a pause then what, it must be asked, is actually being planned in the other pauses? A straightforward extension of the data from research on pausing in speech would lead to the rejection of the possibility that future syntax is being planned. Studies such as those done by Goldman Eisler (1980 Chap. 5)

and Taylor (1969) unequivocally point to the fact that syntactic operations are conducted at the level of skills and do not, therefore, require planning time. However, just how valid it is to extrapolate from the findings for speech production and apply the same model to writing on this point is a very basic question especially since it is not an unreasonable assumption that the syntax of expository prose may be more complex than that of spontaneous speech. If the assumption is, indeed, true (and this in itself is something inviting empirical investigation) then it may be the case that this syntax requires planning time. However, a more likely explanation of these syntactically-governed pauses is that they are concerned with planning in the area of semantic expression. In other words, meaning shows a tendency to be unreeled in units corresponding to syntactic groupings. The next question arising, therefore, is what areas of meaning are mapped out in the Pre-S location and what is being planned in the sentence-medial pauses? The tendency for more pauses to occur at V/O than at S/V argue for the need for some kind of within - sentence consolidation or clarification of the original plan as the sentence proceeds, although it is not yet clear why some sentences may be more completely planned at the outset than others. What is obvious, though, is that any model of written composition must take into account the ongoing nature of cognition throughout the composing process. Plans initiated before paragraphs, or T-units, or even sentences are not complete enough to allow subsequent suspension of planning behaviour until the next paragraph or T-unit or sentence. Instead, what seems more likely is an initiation at these points of some kind of pre-linguistic planning or, put in another way, diffused excitation over appropriate semantic areas. With the liberation of such planning, the writer must still pass through the peripheral, executive stages and, even during these, feedback may modify the original semantic plans. In connection with the production of spontaneous speech, Goldman Eisler (1980 p 125) has suggested the notion of a "functional symbiosis" existing among all levels of generative operations so that at this level it may not really be possible to separate out the semantic from the lexical from the syntactic. What the findings presented here do seem to suggest is that the greater ease afforded by the writing situation over the speech situation does not mask the presence of such operations. This would tend to argue for a considerable degree of load imposed by these operations.

Our findings show that the gaps and groupings of syntax exert strong constraints on the writer on where he will or will not suspend his writing activities just as they do on the speaker when he pauses in the course of spontaneous speech. Thus, it would appear that, regardless of the inherent differences between the writing and the speaking situations, a similar model underlies the basic sentence generation of both.

In the present experiment, efforts were made to select subjects who were of near-native competence and who wrote, furthermore, on a topic of basic everyday content lending itself to the use of simple vocabulary and structure. In view of the fact that the study was conducted in a non-native milieu, a very fundamental question suggests itself: would the findings have differed if the language proficiency of the subjects had been lower? On the one hand, it could be speculated that low proficiency subjects would be less constrained by the relative strength of the syntactic valencies in placing their pauses. In other words, they may not have reached a stage where the groupings discussed here are automatically programmed. On the other hand awareness of such groupings may be fundamental to sentence production, and it may equally be speculated that this awareness transcends considerations of proficiency. Thus as soon as a student knows enough to produce a simple sentence, he may-albeit unconsciously - have some awareness of the underlying syntactic bonds that unite and separate the sentence components. This kind of knowledge may be interisic to, and inseparable from, the sentence generation process or could be the product of classroom language teaching (and as such could affect performance even in native speakers who have had formal instruction in grammar). These are empirical questions which only further experimentation can answer.

Table 1 Percentage of all pauses occurring before different word classes

Content Words	
Nouns	18
Verbs	13
Adjectives	11
Adverbs	2
Total	44

Function Words	
Articles	8
Pronouns	17
Prepositions	13
Auxiliary Verb	1
Conjunctions +	
Relative pronouns	17
Total	56
	—
	100

Table 2 Distribution of Pauses: Total Number at Respective Locations.
At Major Constituent Breaks

Pre S	51	
S/V	10	
V/O	15	
Total	= 76	(Total within sentence pauses = 25, $x = 12.5$)
X	= 28	
At Lesser Constituent Breaks		
Adj/Noun	9	
Art/Noun	8	
Noun/Phrase	9	
Intens./Adj.	1	
Adj./Phrase	3	
Verb/Adv.	4	
Prep/Noun	12	
Aux/Partic.	0	
Co-ordination	12	
Verbal Phrase	10	
Word Medial	21	
Total	= 89	
X	= 8.09	

Table 3 Word Medial Pauses - Word Class interrupted

	No. of Pauses	
Nouns	7	
Adjectives	2	
Verbs	4	
Adverbs	1	
Total	= 14	occurring within Content Words

Pronouns	1	Occurring within Function Words
Prepositions	1	
Conjunctions	3	
Articles	1	
Total	= 6	
Grand Total	= 20	

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