SPEECH MANAGEMENT
ON THE NON-WRITTEN LIFE OF SPEECH

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1.   INTRODUCTION[1]

The development of pragmatics as an area of concern within linguistics has carried with it a growing interest in what really happens when we communicate linguistically. Especially, the nature of interaction in spoken language has come under increased scrutiny. In this study, we want to examine a range of spoken language phenomena which we believe have their locus in the relation between the individual speaker and the ongoing spoken interaction. More precisely, we want to concentrate on the externally noticeable processes whereby the speaker manages his/her linguistic contributions to the interaction and to the interactively focussed informational content.

The general rubric for what we want to study we suggest might be "speech management phenomena" (SM). The concept of SM involves linguistic and other behavior which gives evidence of an individual managing his own communication while taking his/her interlocutor into account. This is done by such means as gaze aversion, pausing, use of special morphemes, use of special gestures, repetition and change of already formulated content and/or expressions. The use of these means is, above all, functionally related to the individual's needs both of managing his/her memory and of processing and articulating in the presence of an interlocutor.

More generally, on our view, the structure and function of both spoken and written language can be seen as a response to restrictions, needs and affordances which are connected with at least the following six factors (cf. also Allwood 1985):

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1. the nature. of the physical environment.

2. the nature of the cultural environment in the form of norms and conventions for thinking, behavior, artifact manufacture and artifact use (especially the norms for spoken and written language).

3. the individual participants in communication (speakers and listeners) and their biological, psychological and social characteristics.

4. the nature of the activities the participants pursue together.

5. the communicative interaction between these participants as it unfolds in the pursuit of different (common) goals and activities (aspects of the structure and function of language which are related to this factor will be referred to as interactive (IA) in the sequel).

6. the informational content (topic) of the contributions and interaction of the participating individuals (the structures and functions which are related to this factor will be referred to as main message (MM) structures/functions).

The actual structure and function of language can be said to result from the combined influence of at least these factors. For all the factors it is furthermore possible to see how each one can be connected with potential differences between uses of the spoken and written medium.

In this study, our concern is primarily with the manifestation in spoken language of the relationship between factors 3, 5 and 6 above, where we take 3 as our point of departure. Methodologically, we justify such a limitation of perspective mainly on grounds of complexity. Heuristically, even if for no other reason, it seems hard to study a complex phenomenon in any other way than by studying discernible parts of the phenomenon. This must, however, be done while bearing in mind that the part one studies is not, in fact, autonomous but has relations to phenomena that are not for the moment being considered.

We have furthermore limited our analysis to the speech output of the participants. We have not considered bodily signals (with the possible exception of the influence that lip movements might excerpt on a transcriber). We concentrate on phenomena which indicate ongoing spontaneously occurring speech management. Typical such phenomena have been treated under headings such as "(self-)repairs", "(self-) correction", "hesitation phenomena", "(self-)repetition", "(self-) reformulation", "substitution" and "editing". Our focus is, thus, normal spontaneous management of speech. We have not included some other phenomena which also could provide us with clues to the nature of the ongoing speech articulation process, such as data from psycholinguistic production experiments, children's development of speech and features of aphasic speech. Neither have we analyzed "speech errors" occurring

without any signs of external management, c. g. pure slips of the tongue, cf. Fromkin (1973, 1980). Finally, we have not included structures such as anacoluthons where two phrases or sentences share a constituent. Although typical of spoken language, such structures are not, according to our view cases of speech management. Rather, they are regular MM structures of spoken language that have been banned on normative grounds in the written language form of many languages.

2. PREVIOUS ACCOUNTS

2.1. The tradition of not studying SM phenomena in linguistics

First, perhaps should be mentioned the long tradition in linguistics of more or less explicitly excluding SM phenomena from the class of phenomena worthy of study. Using Saussurean terminology (Saussure 1916) they are typical of "parole" and therefore probably outside of the systematic account of "langue". Using Chomskyan terminology (Chomsky 1965) they would be typical "performance errors" and therefore also probably outside of the account of "competence". We say probably since the exact empirical delimitation of phenomena of "parole" from phenomena of "langue", or phenomena of "performance" from phenomena of "competence", has never been fully settled. At least, the phenomena on which we want to focus have been included on many lists of performance phenomena. For example, Chomsky (1965: 4), as performance phenomena, mentions "false starts, deviations from rules, changes of plan in mid-course and so on'.

There are several things that are unsatisfactory both with the Saussurean and the Chomskyan dichotomy, among them are the following three:

1. In both cases it has never been sufficiently clarified what the criteria for membership are in "langue" and "competence", respectively. The criteria could, for example, be one or more of the criteria in the following definition. A phenomenon X belongs to "langue" and/or "competence" if..

    A. X exhibits a consistent connection between particular structures and particular functions. One should note that this is, in general, a many-to-many relationship so that one structure can realize several functions and one function can be realized by several structures. For example, -s in English can realize third person singular present tense, but also plural number and genitive case of nouns; conversely, both plural and genitive can be realized by several other structures than -**s** (cf. Jespersen 1924: linguistic categories as Janus-like entities).

    B. X is repeatedly used by one or several speakers (depending on whether one wants to exclude idiolects).

C. there is variation between language communities with regard to the structure and function of X (if we use idiolects as our baseline, then variation between speakers).

If the criteria for membership in "langue" and/or "competence" could be accepted as one or more of A, B and C then we suggest that a large class of SM phenomena belong to both "langue" (excluding the idiolect interpretation) and "competence

2.   The two dichotomies have served as an excuse to exclude certain phenomena of spoken language interaction from serious study and, thus, indirectly to preserve what has been called "the written language bias" in linguistics; cf. Linell (1984) and Volosinov (1932).

3.   The exclusion of certain spoken language phenomena from careful study have prevented us from getting a realistic view of.

A. linguistic structure in spoken language,
B. the nature of interindividual interaction in spoken language and
C. the nature of the dynamics involved in the relation between the individual's speech production, the interaction and its content

It is to the investigation of topics 3.A and 3.C we want to contribute in this paper. Before doing so let us, however, briefly turn to some contributions which, in contrast to the main current in linguistics, have been concerned with SM phenomena.

2.2. Some examples of studies of SM phenomena within linguistics broadly construed

The first mentions of SM phenomena in western linguistics, broadly construed, probably occur in ancient rhetoric. Repetition, reformulation, etc. are discussed as rhetorical devices in terms of their supposed effect on an audience. Besides the rhetorical tradition, SM phenomena were also discussed among the possible causal factors lying behind linguistic change proposed in the 19th century (see for example Jespersen 1922: 255-301).

In the 1960s Charles Hockett discussed SM phenomena (Hockett 1967) and also criticized what he took to be Chomskyan views on speech generation. He also describes the sharp glottal "cutoff' by a speaker "who is trying to start over again as if he could erase what he just said".

In the 1970s and 80s various subsets of what we are calling SM phenomena have been discussed and one can discern a division into more psycholinguistically oriented studies (Linell 1980, Levelt 1983, Levelt & Cutler 1983, and Bock 1982) and more socially oriented studies (Schegloff 1979). Below we now give an overview of these studies.

A number of studies connect lexical search and syntactic planning with SM phenomena. Linell (1980), summarizing several studies of the syntax of utterance planning, points out that pauses and other hesitation phenomena occur where the speaker has to choose words or structures, i. e. before new constituents with a rich load of information or during/after the first function word of such a constituent. This would apply especially to the "fundament" or the "nexus field", where the choice of new information or a "rheme" has to be made (for the notions of "fundament" and "nexus field", see Diderichsen 1964). This would also be the site of self-repetition of function words and of changes in construction, where the speaker retraces to the start of the "rheme" (cf. also Saari 1975, Einarsson 1978, Clark & Clark 1977).

Levelt (1983) treats the structure and function of self-repairs in a corpus consisting of 959 repairs in 2809 descriptions of visual patterns. He uses the following taxonomy of self-repairs: difference repairs (where the message is replaced by a different message), appropriateness repairs (where the expression is changed because of possible ambiguity or adjustment of level, or for coherence reasons), error repairs (where a lexical, syntactic or phonetic error is corrected), and covert repairs (consisting of either an interruption plus an editing term or a repetition of one or more lexical units.

Levelt suggests that there are three phases of a self-repair:

Phase 1: monitoring and interruption when an error is detected.

Phase 2: hesitation, pause, editing term. Here Levelt discusses the relation of specific "editing terms" to the specific nature of the speech problem. The semantic differences between such terms have also been noted by Maclay and Osgood (1959), Hockett (1967), James (1972, 1973) and DuBois (1974). The "editing terms" which have been discussed by these authors are **uh, oh, ah, that is, rather and I mean.** Levelt discusses the terms **ub, of** (or), **dus (so), nee** (no), **sorry, nou ja** (now yes), **wat zeg ik** (what say I) and **Ik bedoel** (I mean) in the Dutch database. The term **uh** is mentioned as a possibly universal symptom of "actuality or recency of trouble", which may have become lexicalized, occurring mainly in covert repairs.

Phase 3: the actual repair. Here Levelt points out the similarities between the wellformedness of self-repairs and coordination and he gives a rule for well-formed repairs.

A repair <A C> is well-formed if and only if there is a string B such that the string <A B and* C> is well-formed, where B is a completion of the constituent directly dominating the last element of A (* and to be deleted if C's first element is itself a sentence connective). (Levelt 1983: 78)

Example: A   C   B

               to the right is a green   a blue node node and

Levelt further claims that the listener is always given a semantic cue by the relation of the first word of the repair to the original utterance.

Bock (1982) discusses how syntax is affected by speech planning phenomena. In her opinion, reference, lexical accessibility, lexical search and also other factors belonging to the communicative setting influence the syntax of the speech output. She favors Hermann Paul's view of speech planning as indeterminate in that an utterance is started without any definite plan for its complete structure (Paul 1886). The speaker chooses which part of information is to be delivered first in the utterance. According to Bock, the unmarked case in interaction would be to start with given information, which means taking the listener into account. One can, however, also choose to start with the most focussed or salient information of the utterance. Bock argues that this would imply more hierarchical planning.

        The choice of phrases or single words can pose further problems. Bock postulates a model where lexical and phonology call/phone tic influence from the context results in certain "priming" effects, i. e. there are lexical units, syntactic and phonological patterns which are, at a given point in the discourse, more easily accessible to a speaker than others. They can be automatically produced in some contexts, typically when there is a cognitive overload or cognitive problems. The priming effect might then result in the production of something which is more or less off target. This is perceived by the speaker, who makes a repair in order to retrieve an expression which is less easy to access but closer to the target. Bock sees her own approach as a compromise between autonomous and functional syntax, where processing is usually mostly autonomous, but where working memory governs the processing as soon as it is needed.

        A more social perspective on repairs than that provided by the majority of the previous authors is given by Schegloff (1979) who points out that a syntax-for conversation would have to include self- (and other-) repairs and the ways in which they affect the syntax of a turn. He is, however, unsure whether the description of repairs should be part of a "super syntax" interacting with sentential syntax or whether it should just be a part of sentential syntax.

        Schegloff describes some of the "orderly" features of repairs. (He characterizes "repairs" as the ways in which "troubles in speaking, hearing and understanding of 'talk' are dealt with in an organized fashion in conversation', i. e. not necessarily implying error correction.) Repairs can, for example, expand a noun phrase by inserting a descriptor or "modiflee', put a sentence in a "frame" or "unframe" it, convert a sentence into a subordinate clause, convert a question into an assertion, convert a wh-type question into a yes-no question, reorder elements of "projected talk' or have

the consequence that a sequence of turns is inserted within the boundaries of a sentence.

Schegloff finds the following pattern in the initiation of same-turn repairs:

1. A cut-off (glottal or other stop) within a word or a sound, which stops the next sound due and seems to have a "back-ward" orientation, i. e. it initiates repair of an already produced element (cf. Hockett 1967 and Levelt 1983).

2. **Uh** or pause as repair initiator outside the word or sound boundary, which replaces the next sound due and initiates a repair of the next due item, thus having a "forward" orientation (cf. Levelt 1983).

While the prepositioned repair initiators tend to be placed just before the "troublesource", the postpositional repairs have a more variable distribution, according to Schegloff. He also claims that repair can be initiated anywhere in a turn, but that some "concentrations" can be pointed out: just-post-initiation and just-pre -completion of a unit; same-turn repairs close to the repairable, often within two words; at points where "pivot elements" i. e. elements converging with the first elements of the repair, occur.

2.3. The present study in relation to previous accounts

As we have seen above, one aim of the reported research has been to find relevant evidence in order to put forward a specific speech planning model. Hockett, Bock, Levelt and Linell all have the speech planning perspective in mind, while focussing either on a specific model, on models in general, or on the specific linguistic phenomena in themselves. Another aim, most clearly exemplified by Schegloff, has been to understand the social nature of SM phenomena and to construct a syntax, or "supersyntax". specifically derived from spoken interaction.

In the present study, both these aims are kept in mind, but the primary focus lies on describing the SM phenomena in themselves from a local, mainly structural perspective and on establishing general principles or rules which should be able to account for SM phenomena in relation to the utterances in which they occur. Because of the specific nature of the aims of the previous studies, these studies do not provide a totally suitable taxonomy for the type of analysis of SM phenomena we have in mind. With regard to SM, the focus of all the studies, except partly Schegloffs, is on "correction" phenomena (a speaker produces something which is wrong with respect to his target; he discovers this, interrupts himself and then gives the correct alternative). This perspective is too limited for our aim, since a large part of the SM phenomena have other characteristics. Further, in the case of Levelt (1983), the corpus builds on data from very specific types of utterances in a psycholinguistic experiment, an activity which gives conditions for the speaker which are very different from informal spoken

interaction (in effect almost monologic conditions). Linell and Bock focus on providing explanations of "repairs" and not on their description. Only Schegloff discusses a broader class of phenomena, including cases where no "error" has been produced but where, instead, there is a "forward" orientation. Schegloffs study, however, has an interindividual focus and therefore does not provide any detailed taxonomy of intraindividual SM-phenomena.

We would now like to discuss some of the things we believe it would be useful to investigate in addition to the phenomena already investigated in the studies mentioned above. Firstly, we think that an analysis of SM phenomena should not have an exclusively intraindividual psycholinguistic perspective, nor should it have an exclusively social perspective. On our view, at least both of these perspectives should be investigated simultaneously. In the taxonomies and analyses we propose below, we have tried to keep this in mind (section 4). Secondly, we think it would be useful to try to get clearer about the relationship between SM phenomena and other types of linguistic structure; we discuss this problem in section 3 below. Thirdly, we would like to discuss further in what sense and to what extent SM phenomena are part of what we think of as a linguistic system (sections 3, 4, 5, 6). Specifically, we here want to explore a sense in which they are rule governed (section 4). Fourthly, we want to try to get a better descriptive idea of the nature of SM phenomena per se. Additionally, we think that looking at another language, Swedish, might add to the findings of previous studies on English and Dutch (sections 4 and 5).

3.   ON THE RELATIONSHIP BETWEEN SM AND OTHER TYPES OF STRUCTURE

If speech is to function efficiently, it must be able to flexibly respond to the shifting requirements of the speaker's attention, intentions, memory and emotional states. It must also allow flexible adaptation to the ongoing requirements and reactions of the listener(s). This means that it must be manageable on-line and sensitive both to the speaker's internal dynamics and to the dynamics of the interaction. The existence of on-line speech management mechanisms is thus required if speech is to be efficiently flexible.

SM-mechanisms must, in order to meet the requirement of efficient flexibility, in some way be superordinate to those mechanisms which ensure the articulation of content (and among these mechanisms we find lexicon and syntax, as they are ordinarily conceived, what we have been referring to as main message (MM) functions). This means that SM mechanisms probably form part of a comprehensive system which has syntax as a part. We remember Schegloffs use of the term "super syntax" as one of the ways he suggested for characterizing repairs.

But speech has other functions than conveying factual content. It expresses the emotions and attitudes of the speaker and contains various mechanisms for adaptation to aspects of communicative interaction such as turn taking, interindividual feedback and sequencing. As mentioned above, we have called these interactive (IA) functions. These three types of functions (SM, IA and MM) can be viewed as a kind of coarse approximation of the functions which are actually present in speech; for a more fine grained version see Allwood (1980). For the time being, we will use them as our point of departure for a discussion of the relationship between SM and other kinds of functions.

If we relate SM to processes of speech production (verbalization), we can say that SM mechanisms, when needed, are superimposed on speech production processes normally directed toward IA and MM. The metaphor of "speech management" has been chosen to pair with the metaphor of "speech production" to indicate a control relationship between SM and speech production (i. e. the production of IA and MM structures).

Normal everyday communication, thus, manifests the integrated product of SM, MM and IA. Of the three, SM is the hardest to observe since, in a sense, it only becomes visible when something needs to be overtly managed, e. g. goes wrong. When everything flows without overtly expressed management, only MM and IA can be observed. When it comes to the mechanisms whereby MM, IA and SM are expressed, we think there is a primary relationship between lexicon, grammar and MM and between gesture, prosody and IA. SM functions seem to be more equally distributed between all these four expressive means.

We also think that even though it might be possible to point to a primary relationship between certain linguistic structures and particular MM, IA or SM functions, many structures can secondarily be used in a different function. Thus, IA oriented feedback expressions like yes, no and mm can be used for SM functions like hesitation and self-reinforcement or for MM functions like affirmation or disconfirmation of the truth-value of a proposition. Likewise, SM expressions such as uh can be used for IA purposes, e. g. to hold a turn, or for MM purposes, e. g. expressing doubt toward a proposition. Other SM structures are often used for rhetorical expression of emphasis (a mainly MM oriented function). Besides these cases of transfer of function the general many-to-many relationship between the structure and function in language also surfaces in the fact that several functions sometimes simultaneously may be expressed by the same structure.

4. ON THE STRUCTURE AND FUNCTION OF SM

4.1. Functions of SM

SM phenomena can be classified both from a functional and from a more structural

behavioral point of view. From an analytic perspective we distinguish two kinds of basic SM functions: (i) choice related SM-functions, and (ii) change related SM-functions. These two functions can be combined so that we also get (iii) combinations of choice and change related SM functions.

The function of *choice related SM is* to enable the speaker to gain time for processes having to do with the continuing choice of content and types of structured expression. More in particular, such processes can be connected with prompting of memory, search of memory, hesitation and planning.

The function of *change related SM* is to enable the speaker, on the basis of various feedback processes (internal and external), to change already produced content, structure or expressions. The subset of these processes that are based on the speaker's reactions to his own speech production make up the kernel of what in Allwood (1986) was called IFB -intraindividual (communicatively related) feedback. When change related SM is normatively motivated, it can be characterized as self-repair (Schegloff 1978) or self-correction (Levelt 1983).

Combinations of choice and change related SM occur, for example, when a speaker needs to select a particular type of change related SM or when a speaker needs to make a choice within the scope of a change related SM operation.

The three types of SM functions can be connected with IA and MM functions as well as with what we can call 11 (intra-individual) functions. Choice related SM functions can be connected with such IA functions as turnkeeping and the expression of certain attitudes such as doubt, reluctance, surprise, etc. They can also be connected with MM functions such as emphasis and with II functions such as memorization and activation. Change related SM functions can be connected with IA functions such as impression management, with MM functions such as emphasis, clarification and specification and with II functions such as learning and practising. The category of "combinations of choice and change functions" corresponds to an analogous combination of the mentioned IA, MM and II functions.

A common element of all SM processes is that they, like all parts of speech production, require time. This means that they all can be used to gain time - a property which is capitalized on especially in choice related SM. Two other common elements of all SM processes, except lengthening of continuants (cf. section 4.2), are that they, on the one hand, require a

temporary break in continuous speech production and, on the other hand, require mechanisms for normal speech production to be resumed. We therefore distinguish break and resumption as two SM functions which only exceptionally occur independently. Break is, in fact, implied by all types of SM except lengthening, while resumption, in its turn, implies at least break, mostly combined with either some other type of SM or with change of speaker. Neither break nor resumption are, however, purely analytic features - break is normally associated with a specific prosodic contour and resumption often with repetition (cf. sections 4.2 and 4.3). As a collective name for break and resumption we will use *process SM* since they usually are involved in the basic processual prerequisites of SM. We will regard process SM as a fourth type Of SM function.

The functions should be regarded as properties which can simultaneously belong to a certain expression. They are not, thus, to be regarded as mutually exclusive classes of bearers of such properties. Such a treatment will only be possible when each expression has a clear main function. In the empirical examples given below in this section and in section 5 we have only selected cases where SM, rather than IA, MM or 11, seems to be the main function.

4.2. Structure of SM

We now turn to a classification of SM phenomena which is less "functional" and more "structural' than the classification above. We will now be looking at the structures and mechanisms which are regularly used to realize SM functions. Since it generally holds that there is a many-to-many relationship between linguistic function and linguistic structure, it follows that the structures we are considering at times also can take on other functions either separately or simultaneously, e. g. emphasis. But this does not invalidate our claim that the structures are SM structures just as little as the claim that {-s} is a third person singular present tense marker in English is invalidated by the observation that {-s} can also be a nominal plural marker in English. First we will examine what we will call basic SM features and then we will turn to combinations of such features.

1. **Basic SM features**
    1. 1. **Basic SM expressions (BSME)**
        A. pause
        B. simple SM expressions (SSME) (e. g. **eh, äh, m**)
        C. explicit SM phrases (SMP) (e. g. **vad heter det** (what is it called))
        D. other SM sounds (SMS) (e. g. smacking, sighing, hissing and other sounds which are difficult to classify)

    1.2. **Basic SM operations**
        A. lengthening of continuants
        B. self-interruption
        C. self-repetition

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These features can be realized singly or in combination. When they are combined they can involve the same segmental expression (e. g. lengthening a vowel in a simple SM expression: **äh** - **ä:h**) or neighbouring segmental expressions (e. g. a pause followed by a simple SM expression: //**äh**). One or more SM features make up an SM unit when all of the features form a functional unit operating on the same MM or IA structure (or SM structure, when we have an explicit SM phrase). Whereas all of the basic SM features can appear singly and, thus, on their own constitute SM units, some of them, especially self-interruption and self- repetition, more often occur combined with other features.

Let us now briefly comment on the features. By a pause, in general, we mean lack of speech and gesture while holding a turn. An expectation of speech or gesture goes with holding a turn. A pause, thus, becomes noticeable (and thereby also expectable and planable). By an SM pause, specifically, we mean a pause with SM function. We have counted pauses as expressions although this might be debatable. When it comes to simple SME, which indicate SM functions by a single morpheme, and explicit SM phrases, we are dealing more with a difference of degree than of kind. Thus, we probably have a continuous gradation from the more implicit SM expressions, such as **eh** and **mm** (traditionally classified as interjections) via more explicit but still indirect expressions of SM, such as **så att säga** (so to speak), to the fully explicit expression of SM by means of such phrases as **vad heter det** (what is it called).

With respect to contexts of possible occurrence, there seems to be no special restrictions on BSME. As already mentioned in section 3, SM operates very freely on both MM and IA structures, and BSME may, in contrast to some other types of SM expressive features, occur initially and finally in utterances, as well as medially (though some qualification may be necessary with respect to initial and final pauses). Here are some examples containing BSME - pauses in (1) and (3); simple SME in (2) and (3). (All examples are authentic, based on video-recorded naturalistic material, unless otherwise indicated; in all examples, the SM phenomena we are considering are emphasized; cf, appendix 1 for further transcription conventions.)

(1) å de betyder att   //   alla försöker va ett steg före hela tiden
      (and that means that   everybody tries-to be one step ahead all the time)

(2) ja kom å tänka på **äh** torpet
      (I came to think of   the-cottage)

(3) för att inte   **ääh** // **eh**   för att hålla en del gröder vid liv
      (in order not to   in order to keep some crops alive)

The second major class of basic SM features is the class of basic SM operations. The first basic operation is lengthening of continuants, exemplified in (4).

(4) ja hade ju hoppat över dom här konstiga figurena fö ja inte::
  (I had you-know skipped these strange figures because I [did] not)

The lengthening operation may in principle be applied to any continuant sound, though in practice sounds occurring at the end of words seem to be favored.

The two remaining basic operations are self-interruption, which means that the speaker interrupts his speech in the middle of a constituent (e. g. a word or a phrase) which therefore is not immediately completed, and self-repetition, which means that the speaker reproduces some expression(s) or part(s) of expression which he has already uttered (earlier in the same utterance). (In the remainder of this section, we will generally use the shorter terms "interruption" and "repetition" to mean self-interruption and self-repetition, respectively.) These two operations are exemplified in (5) (interruption) and (6) (repetition).

(5)   så man-   jaa just de a så
      (so one   yes just that yes so)

(6)   de e valt bara   **bara** för att de ska
      (it is chosen only   only because it will)

The basic SM operations, generally, seem to have very few restrictions with regard to their contexts of possible occurrence. It is true that neither self-interruption nor self-repetition can occur absolutely initially in an utterance (since there has to be something to interrupt/repeat) and that lengthening only can operate on continuants, but apart from these rather trivial restrictions, the basic operations seems to be extremely general in their applicability. This is a property they share with the (simple) SM expressions.

There is one major difference, however, between interruption and repetition, on the one hand, and lengthening, on the other. Whereas the former are often combined in different ways to form complex, hierarchically organized SM operations (which will be treated below among the combinations of SM features), the latter is not. On the whole, it seems that with regard both to its distribution in SM structures and its functional properties, lengthening is more similar to the basic expressions than to the other basic operations.

As a consequence of the combinability of self-interruption and self-repetition we fairly rarely find them operating on their own as single-featured SM units. For self-interruption this can happen (i) when an interruption occurs at the very end of an utterance, or (ii) when an interruption, by the speaker, is followed by a topic change and there is no resumptive linking with the previous structure. Example (5) above meets the second of these requirements and is therefore to be counted as a single unit of self-interruption. A self-repetition, on the other hand, is counted as a

single unit only in cases where (i) there is no intervening interruption between the repeated and the repeating expression, or (ii) the repeating expression occurs in utterance-final position and is not followed by a continuation (i. e. it is not repeated to resume structure for some other operation). Example (6) above satisfies the first condition and can therefore be regarded as a single unit of self-repetition.

4.3. Combinations of SM features

4.3. 1. Overview

We now turn to SM units which consist of combinations of SM features. In order to facilitate understanding of what we are discussing, consider first figure 1, where we give an overview of how SM features can occur in SM units.
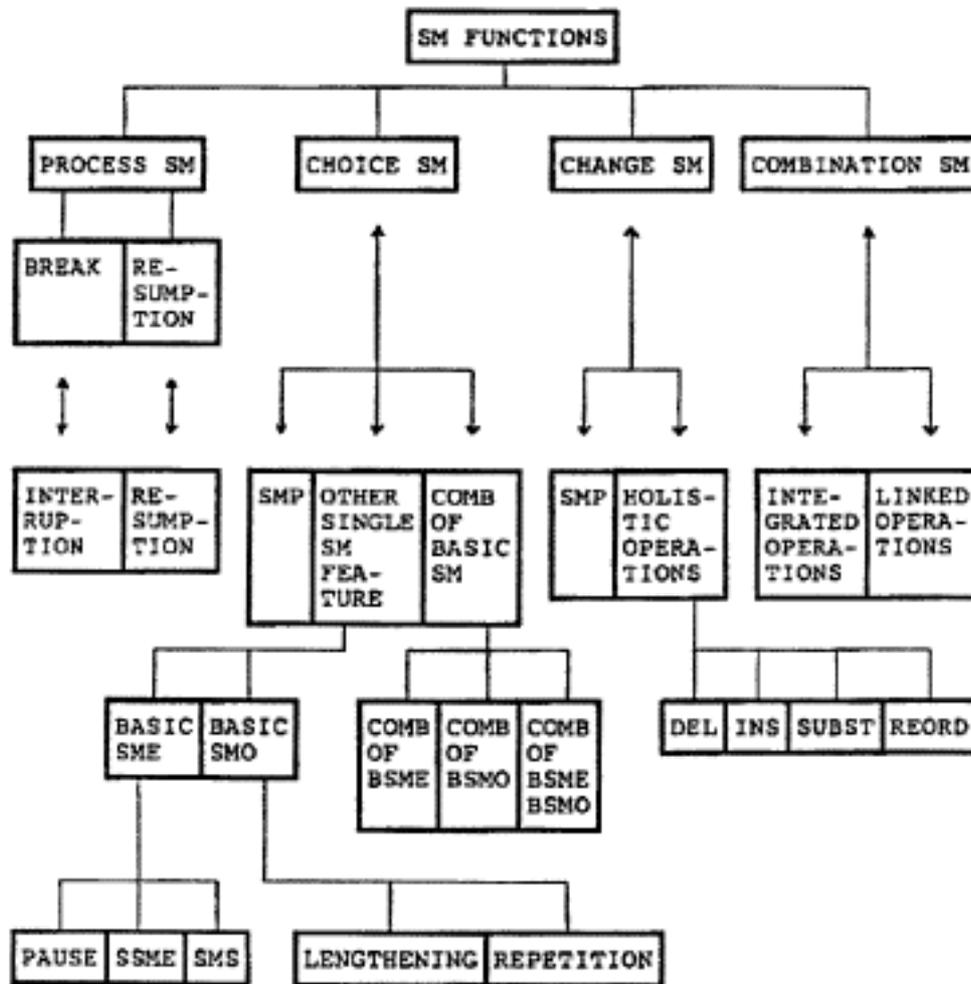

Figure 2. Crossclassification of SM functions with SM structures

Among the SM units which consist of a combination of SM features, we first **distinguish** *combinations of basic* SM from *complex SM operations.* **Among the combinations of basic SM we count all combinations of basic SM**

expressions, combinations of basic SM operations and combinations of basic SM expressions with basic SM operations which do not themselves constitute or contain complex SM operations (see below). The first case is exemplified in (7) (simple SME + pause) and the third one in (8) (SME + repetition); the second case (i. e. combinations of basic SM operations) is not very frequent, since the majority of such combinations will constitute complex SM operations (see below).

(7) A vardepapper   ö//   statsskuldväxlar å va du vill ...
    (and value papers   national debt bills and what you want)

(8) ja tycker inte   **de liksom de de**   hänger i luften
    (I think not   it sort-of it it   hangs in the-air)

The second major class of feature combinations are the *complex SM operations,* which may be further subdivided into *holistic, integrated* and *linked* operations. Holistic operations are operations which can be seen as being built up from the two basic SM operations interruption and repetition with one or several additional features. We will be discussing and defining the following holistic operations: (i) resumption, (ii) deletion, (iii) insertion, (iv) substitution, and (v) reordering. Each operation will be viewed as consisting of a number of suboperations some of which cannot be linked to concrete parts of speakers' utterances. For example, in (9) below the speaker's deletion of **de** as an element to be substituted and his search for a substitute for de are not overtly indicated.

(9) om de- om: **varje** //**chartist**   far ett eh större antal anhängare...
    if every chartist   gets a greater number-of adherents)

The two remaining types of complex operations (i.e. integrated and linked operations) represent extensions of the holistic operations in that they overtly mark a function which can be left unmarked by a holistic operation. We will return to integrated and linked operations later on, but we will begin by taking a closer look at the holistic operations.

4.3.2. Resumption

Let us first note that when a speaker is to continue after an interruption, he will often need to indicate in some way to a hearer how the new utterance is connected to the structure which was being developed before the interruption. Whenever a speaker uses repetition for this purpose, we speak of a *resumption* of the interrupted structure.

Formally, we define a *resumption* in the following way. Assume that a speaker interrupts himself in the middle of an utterance, and that up to the point of interruption he has uttered a string of words U (where the last word may have been left unfinished due to the self-interruption). In such a case, we define the set RU of potential repetitions (partial or complete) relative to U to be the set of all non-empty substrings of U.

Using + to stand for the operation of concatenation and r, u and v as variables ranging over strings of words, we now say that after an interruption of the sort described above, the speaker makes a *resumption of the interrupted utterance* U if and only if (i) he utters a string of words **r**, which is analyzable as u +v, where V ε RU (and u may be any string including the empty string 0), and (ii) he goes on to add more words after the string r (or, at least, clearly manifests the intention to do so).

In other words, a repetition (partial or complete) occurring after an interruption is (part of) a resumption if it is performed in order to link previous structure to a continuation of MM or IA structure, or to another SM operation. From another point of view, we may say that a repetition is resumptive, in the sense intended here, if and only if (i) it is preceded by an interruption, and (ii) it is followed by a continuation. (Consequently, a repetition is not resumptive, and is therefore treated as a single unit of repetition, if and only if (i) or (ii) does not hold; cf. section 4.2).

Let us now consider a few examples to make the notion of resumption clearer.

(10) sà de känns som de-   **att de**   e valt bara bara för att
     (so it feels like it-   that it   is chosen only only because)

(11) men sen hade ja-   **ja hade**   ju hoppat över dom här konstiga
     figurerna
     (but then had I   I had   you-know skipped these strange
                          figures DEF)

In (10), U = sà de känns som de, RU = **{sà, de, känns, som, de, sà de, de känns, känns som, som de, sà de känns, de känns som, känns som de, sà de känns som, de känns som de, sà de känns som de}**, and the string **att de** (r), occurring immediately after the interruption, is a resumption of U, since (i) it can be analyzed into the two substrings att (u) and **de** (v), the latter of which is in RU, and (ii) it is followed by a continuation. Thus, we say that in (10) the speaker first interrupts himself and then resumes the interrupted structure in order to continue with the addition **e valt bara för att**

In (11), the utterance following the interruption contains two substrings which qualify as resumptions of the interrupted utterance, namely **ja** (r1) (analyzed as 0 (u1) + **ja** (v1)) and **ja hade** (r2) (analyzed as **ja** (u2) + **hade** (v2)). In such a case, we will generally count the longest string as the actual resumption. This means that in (11) we will count **ja hade**, rather than just **ja**, as the resumption of the interrupted structure. In this case, the resumption occurs in order to make a reordering possible.

An interruption-resumption sequence may occur in actual speech for many different reasons, but we believe that one of the most important factors is the speaker's need to first change and then continue structures

which have already been articulated. We will now define four holistic SM operations which we believe to be of particular importance in this respect, namely deletion, insertion, substitution and reordering. All four will be taken to consist of an initial interruption followed by a particular type of change involving a resumption. These operations thus have in common that they always operate on preceding, already articulated structures, and that their immediate function is to change this structure in some way by deleting, inserting, substituting or reordering elements.

4.3.3 Four holistic operations which presuppose resumption

Before we go on to define the remaining holistic operations formally, it may be useful to illustrate the cases we have in mind by means of a few schematic examples. Assume that a speaker interrupts an utterance ending in the three constituents. A, B, C (these constituents may be thought of as words, phrases, or any other relevant substrings of the interrupted utterance). We then wish to focus on four particular ways of resuming the interrupted structure by means of , inter alia, repetition. The four cases (with subtypes) are illustrated in (12.14), where X stands for any constituent not present in the original interrupted utterance and ... indicate that the utterance is continued further.

Interruption Resumption

(12) A B C-   1. A C ...   (Deletion)
                    2. A B X C ...   (Insertion)
                    3. A X C   (Substitution)
                    4.ACB   (Reordering)

Example (12.1) exemplifies the operation of *deletion;* the speaker repeats the constituents A and C, which were not adjacent in the original interrupted utterance, thereby indicating that the material which originally occurred between A and C (i. c. B in our example) is deleted.

In (12.2) we have an *insertion;* all the three constituents which ended the original interrupted utterance (i. c. A, B and Q are repeated, but a new element is inserted between B and C.

The next example, which illustrates the operation of *substitution, is* similar to the preceding one in that a new element is inserted into the old structure; the difference, however, is that the new element X in (12.3) replaces an old element (i. e. B), which is thus deleted. (In a way we could therefore say that a substitution is a combination of an insertion and a deletion.)

Finally, (12.4) is a *reordering,* all the original constituents A, B and C are repeated, but in a different order.

We will now give formal definitions of the four holistic SM operations exemplified above (i. e. deletion, insertion, substitution and reordering). In doing this we will also distinguish several subtypes, some of which are not represented in (12.14). In the following definitions we will assume that U is an interrupted utterance, RU is the set of potential repetitions relative to U, and u+v is a resumption of U in accordance with our definitions above. Furthermore, we let PRE be that relation on RU such that for all strings of words u, v RU, uPREv iff the last word of u precedes the first word of v in the original, interrupted utterance U (thus, uPREv does not imply that u immediately precedes v in U, but it does imply that u and v do not overlap). As before, we will use + to stand for concatenation and, in addition to u and v, we will use w, x and y as variables ranging over strings of words.

4.3.4. Deletion

An interruption followed by a resumption u +v is a *deletion* if and only if either u = E) and there is a non-empty string w   - RU such that vPREw, or u, v RU and there is a non-empty string w   - RU such that uPREw and wPREv. In both cases we say that w is the deleted element.

The definition says that there are two types of interruption-resumption sequence which can function as a deletion. In the first the speaker repeats a part of the interrupted structure, leaves out the rest, and then goes on to add new material; the part which is not repeated may then be interpreted as in a sense deleted. This type is illustrated in (13), where **de e** (u) is repeated and **ju** (w) deleted.

(13) men de e ju-   **de e** farligt
      (but it is you-know   it is dangerous)

In the second type of deletion, the speaker concatenates two parts of the interrupted utterance which were not originally adjacent; the material which originally occurred between the two repeated parts will then be interpreted as deleted. This type, which is illustrated schematically in (12.1) above, is exemplified in (14), where **dom (u)** + **första si** (v) is repeated and **allra** (w) deleted. (Strictly speaking, **dom** is not a repetition, since the original form was **de**; however, both **dom** and **de** are forms of the definite article and it seems therefore that, functionally, one may count as a repetition of the other.)

(14) de allra första si-   **dom första siderna** vi läste där
      (the very first pa-   the first pages we read there)

The case of deletion provides us with a good opportunity to explain our use of the terms *holistic* and *complex* in relation to SM operations. Conceptually, deletion may be regarded as a basic and non-complex operation, but its realization in speech is, by necessity, structurally complex and indirect (indirect in the sense that the deletion of an element X is

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performed partly by *not* performing a certain act, i. e. by *not* repeating X in a certain context, and complex since it combines this deletion with interruption and resumption). Therefore, we think that an operation like deletion should be regarded as structurally complex but also as functionally holistic, since its different suboperations, are performed together in order to build up a single, unified operation.

4.3.5. Insertion

An interruption followed by a resumption u+v is an *insertion* if and only if either there is no substring w of u such that w   RU, or u can be analyzed as w+x, where w   RU and wPREv, and there is no non-empty stringy y   RU such that wPREy and yPREv. In the first case, we say that u is the inserted element; in the second, we say that *x* is the inserted element.

According to the definition, there are two types of insertion. In the first type the speaker begins (after the interruption) by uttering the inserted element (the string u in the definition) and then resumes the interrupted structure at the point immediately after the place where the new element is inserted. This type is illustrated in (15), where the inserted element is **ska kunna ta beslut** (u) and the repeated element **på** (v) indicates that it is inserted into the original structure immediately before the preposition **på.**

(15) de måste han va för att han snabbt på-   **ska kunna ta beslut** på   en
    (that must he be so that he rapidly in   will be able to make decisions   **a**
      tiondels sekund
      a tenth-of-a-second

In the second type of insertion, illustrated above in (12.2), the speaker begins (after the interruption) by repeating a part of the interrupted structure before and up to the point where the new element is to be inserted, adds the inserted element, and then resumes the interrupted structure immediately after the point of insertion. It should be pointed out, however, that we have not yet found an actual example of the second type, though we are convinced that it is a possible SM operation. For the purpose of illustration, we have modified (15) and turned it into an insertion of the second type, given below as (16), by adding the repetition of **för att han snabbt** (w) before the utterance of the inserted element **ska kunna ta beslut** (x) and the repetition of **på** (v).

(16) de måste han va for att han snabbt på   **för att han snabbt ska kunna ta**
    (that must he be so that he rapidly in   so that he rapidly will be-able-to
                                  make

    beslut på en tionde(decisions in a
    tenth-of-a second)

If we compare the operations of deletion and insertion, we may note that in the case of a deletion it is necessary to resume the structure before (example

13), and possible to resume it also after the deletion (example 14), whereas in the case of an insertion it is necessary to resume the structure after (example 15), and possible to resume it also before the insertion (example 16). All this provided, of course, that our data and definitions are adequate.

4.3.6. Substitution

An interruption followed by a resumption u +v is a substitution if and only if either there is no substring w of u such that w   RU and there is some non-empty string y   RU such that yPREv, or u can be analyzed as w+x, where W   RU and wPREv, and there is some non-empty string y   RU such that wPREy and yPREv. In the first case we say that u is substituted for y; in the second we say that x is substituted for y.

It may be noted immediately that insertion and substitution have been defined in such a way that a single resumption can qualify as both an insertion (the first type) and a substitution (the first type). The following example is a case in point:

(17) så de känns som de- **att de e** valt bara bara för att de ska
      (so it feels like it   that it   is chosen only only because it will)

After the interruption, the speaker utters the complementizer **att** (that) and then resumes the pronoun **de**. However, it is practically impossible, in this case, to decide whether the complementizer **att** is substituted for the complementizer som (like) or whether it is inserted after it to form the complex complementizer **som att** (all three possibilities: **som, att** and **som att** are grammatical in Swedish). Thus, the resulting structure is ambiguous, a fact which is reflected in our definitions.

We also believe that there is a second type of substitution, however, which is distinct from the corresponding type of insertion, the difference being that in the case of an insertion a new element is inserted between two adjacent parts of an interrupted structure, whereas in the case of a substitution a new element replaces part of an interrupted structure and is therefore inserted between two non-adjacent parts of the interrupted structure (cf. (12.2-3) above). We remember that another way of analyzing the operation of substitution is to say that it is a combination of deletion (of the replaced element) and insertion (of the replacing element).

However, we have not yet found an actual example of the second type of substitution, so for illustrative purposes we again present a modified version of an earlier example.

(18) så de känns som de-   **de känns att de**   e valt bara bara för att de ska
     (so it feels like it   it feels that it   is chosen only only because it
                                       will)

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In this (invented) example the interrupted structure is resumed both before and after the substituted element **att** (x) (before, by means of **de känns** (w), and after, by means of **de** (v). This makes it clear that the operation is a substitution and not an insertion (cf example (17) above).

4.3.7. Reordering

An interruption followed by a resumption u+v is a *reordering* if and only if u,v RU and vPREu.

The definition says that the resumption of a reordering operation consists of two substrings of the original interrupted structure, the order of which has now been reversed. Here is a typical example, where the original **hade ja** is resumed by the reordered **ja** (u) + **hade** (v) after the interruption.

(19) men sen hade ja-   ja hade   ju hoppat över dom här konstiga figuren
    (but then had I   I had   you-know skipped these strange figures DEF)

4.3.8. Integrated and linked operations

Having examined the holistic SM operations in some detail, we now return to the two remaining types of complex operations, i. e. integrated and linked operations. We said earlier that these operations represent an extension of the holistic operations in that they overtly mark a function which can be left unmarked by a holistic operation. Example (3), repeated here as (20), is an example of a substitution which has been combined with a combination of SM expressions (**ä:h // eh**), which overtly can be taken to mark the search process involved in the selection of a substitute for the negation **inte**.

(20) för att inte   **ääh //eh**   för att hålla en del gröder vid liv
    (in order not to   in order to keep some crops alive)

The combination of the BSME combination with the substitution we refer to as an *integrated* combination (or an integrated operation). The name is chosen because the BSME combination marks an integrated suboperation within a holistic operation.

However, complex operations can also be *linked. A* linked operation occurs in example (7), here repeated as (21), where a simple SME is combined with a holistic operation. får ett eh större antal anhängare ...

(21) om de **om varje** // **chartist**   får eh större antal anhängare..
    (if it   if every   chartist   gets a greater number-of adherents)

The example shows how a pause, so to speak, can be recursively embedded in a previously occurring holistic operation which in this case is a substitution. More generally, complex linking of SM features can be of three kinds. The first is *recursive,* where one SM features is embedded within the

scope of a holistic operation without being an indicator of a suboperation within the embedding operation, as exemplified above in

(21) The second is *conjunctive,* where one SM feature is more loosely, sequentially linked to a holistic operation. Conjunctive linking is exemplified in (22), where a pause is combined sequentially with an insertion (provided that we see the insertion as initiated after the pause, rather than before it).

(22) en liten risk   **väldi liten risk**
       (a small risk   very small risk)

The categories of recursive and integrated linking have so far been reserved for combinations containing at least one holistic operation, other combinations being treated as combinations of basic SM. We could perhaps have included as linked operations also some cases where several basic SM expressions are combined more loosely, but in the present study we have chosen not to do so.

The third kind of linking is what we may call *overlapping* holistic operations, i. e. two or more holistic operations occurring together without operating on exactly the same structure, as in the following example.

(23) nä men de drabbar ju   **de kan drabba** sådana områden där ...
       (no but it strikes you-know   it can strike such areas where)

In (23) the deletion of P overlaps with the substitution of **kan drabba** for **drabbar.** (Alternatively, we may say that the deletion of ju overlaps with the insertion of **kan** and the substitution of **drabba** for **drabbar.)**

4.3.9. SM rules - present and previous accounts

So far in this section we have attempted to describe some structural regularities of SM phenomena. It may be interesting, at this point, to make a brief comparison with two previous accounts, viz. Levelt (1983) and Schegloff (1979).

Let us first note that Levelt's (1983) study of self-repairs only deals with a subset of the SM phenomena treated in the present study, since neither single-featured SM units nor combinations of basic SM are studied by Levelt. It follows that the self-repairs treated by Levelt are all complex SM operations in the sense of the present study.

A self-repair, according to Levelt, consists of three phases: (i) interruption, (ii) editing term/pause (optional), (iii) actual repair (cf. section 2.2). The first and third of Levelt'
s three phases correspond to our operations interruption and resumption, which means that most of the cases treated by Levelt will be what we call holistic operations (and all of them will be

interruption-resumption sequences of some sort). When BSME (i. e. "editing terms or pause" in Levelt's terminology) occurs between the interruption and the resumption, we have an integrated (or possibly linked) operation.

Levelt's rule for well-formed repairs (cf. section 2.2) can be interpreted within our framework as a rule for well-formed resumptions, but the class of resumptions defined by Levelt's rule on that interpretation is different from the class of resumptions defined above in section 4.3.2. More precisely, Levelt's rule allows repairs without any repetition, whereas our notion of resumption necessarily implies some repeated element (although the correct condition is probably close synonymy rather than identity of form; cf. example (14) above). Conversely our definition is less restricted than Levelt's rule when it comes to the syntactic structure of the repair/resumption. We have stated, admittedly rather loosely, that the resumption should be a continuation of the interrupted structure, while Levelt requires that the repair should be of the same syntactic category as the interrupted constituent (operationalized by means of a coordination schema). We suspect that Levelt's condition is too strong and that a resumption may, in the limiting case, be more loosely related to the syntactic structure of the interrupted constituent. However, this is something that remains to be seen and it is possible, after all, that the most adequate characterization of the notion of a well-formed resumption can be obtained by combining our definition with Levelt's rule. But this is a question that can only be answered by further research.

As regards Schegloff (1979), he does not formulate any rules in the true sense of the word, but he gives a wide range of specific examples of "the effects of [self-initiated] repair on the syntactic form of sentences" (cf section 2.2). It is worth noting that all of these cases can easily be analyzed within our framework. They turn out to be special subcases of our categories, which are situated on a more general and more abstract level than the categories given by Schegloff, and the great majority are holistic operations (sometimes integrated or linked). Let us illustrate this with a single example (appearing as example (9) in Schegloff s original article).

(24) (l'unno) hh Hey do you see V- (0.3) fat ol' Vivian anymouh?

Schegloff describes this example by saying that the repair expands a noun phrase by inserting a descriptor or "modifier'. In our terminology (24) exemplifies the holistic operation of insertion (consisting of an interruption and a Particular type Of resumption which inserts **fat ol'** before Vivian) and a pause, combined into an integrated operation.

4.4. **More on SM functions**

Let us now return to the four types of SM functions discussed in 4.1 (choice SM, change SM, combination SM and process SM) and

crossclassify them with the SM structures discussed above in 4.2 and 4.3. Figure 2 below gives an overview of this relationship.
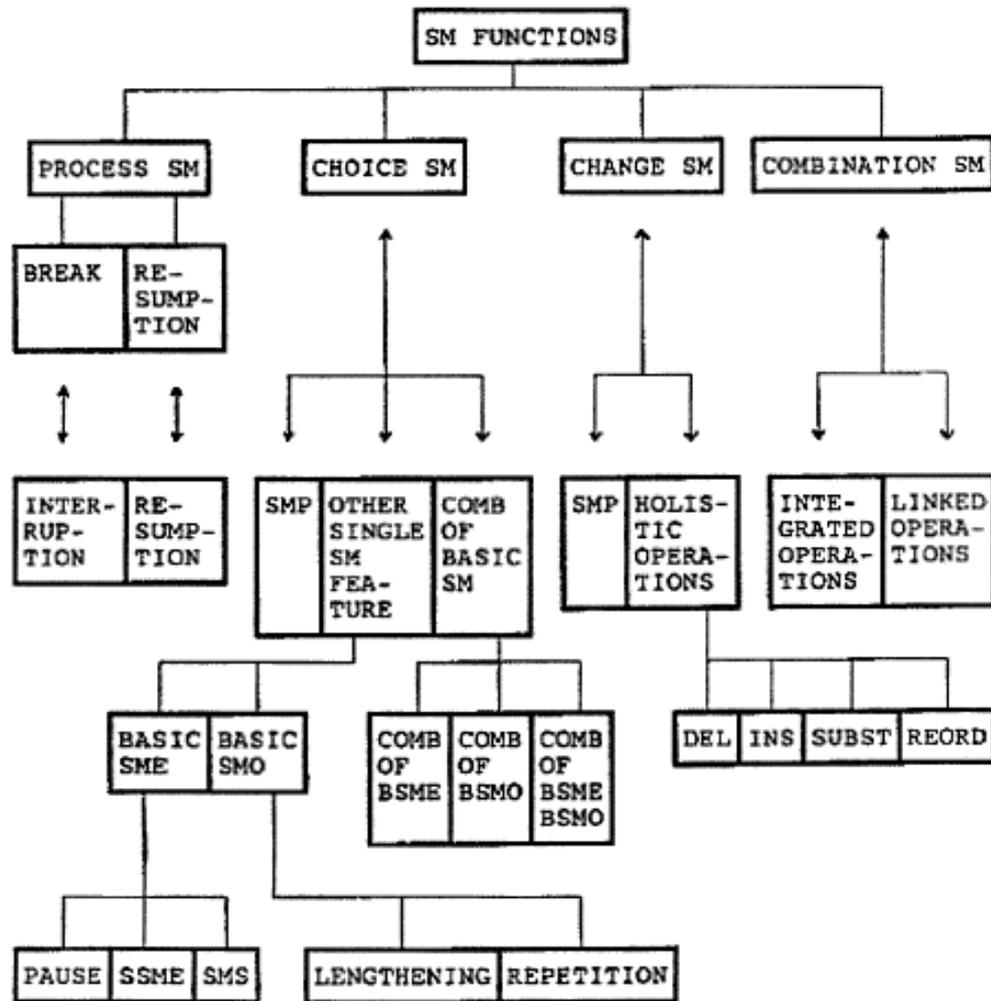

Figure 2. Crossclassification of SM functions with SM structures

For all four SM functions in figure 2 we claim that the SM structures with which they have been crossclassified could carry the relevant function as a single SM unit. The cases where interruption and resumption occur as single units have been discussed above; normally, of course, they occur in combination. For the cases when SM units occur in combination, we can find combinations with process SM, i. e. break and resumption, included in all other three types of function. Combinations of choice and change functions are, however, to be found under "combination SW, where they match the structural combinations in integrated and linked SM. One type of SM structure, SNIP, has been classified under both choice and change SM. The reason for this is that SM phrases can have both roles, as in the invented examples (25) and (26) below.

(25) de e en **va heter de**   valkyria   (choice function)
      (it is a what is it called   valkyrie)

(26) de e en blå **ja menar**   röd bil   (change function)
      (it is a blue I mean   red car)

SMP is, in general, an exceptional type of SM since it employs MM syntactic structure and semantic functions to performatively accomplish an SM function. Even though the difference between this phrasal use of MM and the use of MM in single morphemes is a matter of degree, we feel that the degree is sufficiently large to merit a reclassification of SNIP as a special type of both choice and change single SM units but which, of course, can also occur as an ingredient in "combination SM".

By extension, figure 2 can also be employed to point out how SM structures can be used to either combine SM functions with IA, MM or 11 functions or to express any one of these functions in a more exclusive focussed way. Thus, what we have called basic SM can, largely speaking, be used for IA functions such as turnkeeping and the expression of certain attitudes. The subtype of basic SM consisting of basic SM operations (repetition and lengthening) can be used for MM functions such as emphasis and II functions such as memorization and activation. Holistic SM operations and certain SM phrases can be used for IA functions such as impression management, MM functions such as emphasis, clarification and specification and II functions such as learning and practising. The integrated and linked structures can be used for combinations of the above IA, MM and 11 functions.

4.5. Speaker, listener, analyst and SM

Before continuing we would also like to mention a problem which has been implicit so far in our discussion of types of SM. The way in which we operationalize and also define the various types is affected by whether our perspective is that of a speaker, a listener or an analyst interpreting recordings and transcriptions.

From the point of view of a speaker, holistic operations like deletion, insertion, substitution or reordering are perhaps most relevantly applied to the content which the speaker is verbalizing. Even if our attention is limited to what has been verbalized the speaker perspective would make it natural to think of a deletion or an insertion as an intentional operation that the speaker employs in his/her own verbalization process.

From the point of view of a listener, the main interest of SM pertains to the manner in which it could influence the listener's perception and understanding. Thus, an insertion or a deletion must if it is to be perceived and understood be indicated in such a way, that the listener can adapt his processing to the speaker's changes (cf the ambiguous example (17) above).

The point of view of an analyst should attempt to take both the speaker and the listener perspectives into account. In practice, however, the situation of the analyst is more closely related to the situation of the listener. The analyst has access to a limited part of the information available to the listener. This part is smaller if the analyst only has access to an audio transcription but greater if he/she also has access to audio and video recordings.

In one sense, the analyst has easier access to the interaction than the listener. He/she is not limited to a unidirectional on-line incremental intake of information but can examine a temporal sequence more or less simultaneously. This sometimes makes it possible to discover patterns which are not so easily discernible, when one is engaged online as a participant

Our point of view is, by necessity, that of the analyst. This means that although we attempt to take both the speaker and the listener into account, we, like the listener, are essentially limited to externally noticeable indications of patterns in SM. This means also that we probably have undervalued the sub subjectively intentional part of SM in favor of the intersubjectively observable criteria (cf. the definitions of deletion, insertion, etc. above). On the other hand, since the speaker does take the listener into account and our definitions are applicable to empirical material (cf. section 5 below), this does not invalidate our approach. It only points to the fact that there is more left to say.

5.   SM IN A SAMPLE OF SPEAKERS

We now turn to a look at examples and frequencies of SM in a database of spoken interactions. The aim of this section is to provide further examples of SM and to make some observations of SM occurrences, which can serve as an inspiration for hypotheses about the distribution and function of SM. No strict statistical analysis and testing of hypotheses is performed in this study. (The numbers presented in Appendix 2 are, thus, based only on the actual occurrences of SM in the database and not relativized to any other numbers.)

5.1. The database

The corpus that serves as a basis for our observations consists of 607 SM feature tokens in a total of 6.571 words produced by 22 speakers in 7 videorecorded interactions, each involving 2-4 persons. The sample contains 300 words from each speaker (except for one speaker who only produced 271 words). There were 9 male and 13 female speakers, 4 of whom were 10-15 years old and the rest of the speakers varying from 15 to 70 years of age. The first 300 words of each speaker in each videorecording were used for the database. An inventory was made of all SM phenomena in the

corpus. The analysis was made from the videotapes, with transcriptions as support.

5.2. Basic SM and holistic SM features

In classifying the corpus with regard to SM features, we have taken into account not only the basic features described in section 4.2, but also the holistic SM operations *deletion, insertion, substitution* and *reordering,* which have thus been regarded as single, complex features. The corpus contained all the main types of SM features. However, as already mentioned, some of the subtypes were not instantiated (cf. section 4.1). (For the frequency distribution of features on individuals and totally, see table 1, Appendix 2).

Regarding the overall amount of SM, we find considerable individual variation, the most frequent feature, followed by self-repetition and simple SM- expression. In the next group we find lengthening and substitution (the first holistic operation). Insertion, SM-phrase and SM-sound are less frequent and deletion is the most infrequent feature. If we look at the major types of SM features, SM-expressions (339) are more frequent than basic SM-operations (189), and the holistic SM-operations (75) are the least frequent ones.

5.3. SM units

In the following, we will consider SM not just in terms of SM features, i. e. types of single features and types of complex features. as above. but as SM units, where several SM features are combined into an operation with a common object.

The SM unit types are basic SM expressions, basic SM operations, combinations of basic SM, holistic operations, integrated operations and linked operations (cf. section 4.2. and figure 1 above). The reason for using these types of units in the analysis is the assumption that SM units on this "level" in some sense are composed of SM features operating as a unit on the same MM or IA structure.

If we compare the different SM unit types (see table 2, Appendix 2), we find that combinations of basic SM are the most frequent, followed by single basic SM-expressions and single basic SM-operations. Linked operations come next, preceding holistic operations and integrated operations. We thus find high numbers of SME and basic operations, especially in combinations, and also occurring in integrated and linked operations

5.4. SM and MM structures

We will now take a look at SM in relation to main message (MM) structures. Swedish syntax has a basic SVO order, which is kept in over 95% of the structures in our database of spoken interaction. A typical order of

subject NP - VP - object NP, with adverbs, prepositional phrases, relative clauses and predicative adjectives, as well as subordinate clauses, occurring mainly in the latter part of the sentence, is generally used by the speakers. If we study which syntactic categories SM operates on, we, thus, obtain a rough idea also of the position of SM in the sentence. Given the standard assumption that new information is mostly presented in the latter part of the sentence, we can further relate SM to the given-new distinction. The following observations are based on the SM occurrences in our database. (Related numbers are presented in table 3, Appendix 2.)

SM can be studied from several perspectives. One such perspective has to do with the object that SM operates on and its context of occurrence, both of which usually form part of MM or IA structure. In our corpus, SM most often occurs in the latter part of the sentence, usually where new information is given (i.e. object NP, VP-V, PP/adverb, relative clause, predicative adjective and subordinate clause). This is consistent with earlier hypotheses reported by Linell (1980). SM also occurs sentence initially, although less frequently. When sentence initial SM occurs, it is usually in utterance initial position, but sometimes also in utterance medial position, i. e. before a new sentence is added to an earlier one, produced by the same speaker. The earlier findings that an initial conjunction (coordinating or subordinating), article, auxiliary verb, preposition, etc. is often produced before a speech management phenomenon occurs are also consistent with the findings in our database. Numerous examples are found, very often including a self-repetition of for example the subordinating conjunction, as in example (27).

(27) de de e lustigt att   **a att**   man lyckas förtränga allting ...
       (it it is funny that   that   you can suppress everything)

We also find that the choice of SM-operations seems to be affected by which type of MM structure is primarily involved.

In our database, object NPs which are subjected to SM are primarily preceded by basic SM-expressions, as in example (28).

(28) ja kom à tänka på   **äh**   torpet
       (I came to think of   the-cottage)

Basic SM-operations in the form of self-repetition seem to operate mainly on succeeding VPs and main verbs (cf example (29), where a self-repetition precedes the VP).

(29) när man   **man** bjuder in halva byn dà
     (when you   you invite half the village then)

Combinations of basic SM most often precede sentences (example 30).

(30) **jaa** // **(smack)** teknik A natur kan dom förenas
     (yees   (smack) technology and nature can they be-combined)

Holistic operations and linked and integrated operations occur mainly with the two MM structures - object NP (example 31) and W-V (example 32) - **that** most generally occur with SM.

(31) nä men de drabbar ju   **de kan drabba** sådana områden där
     no but it strikes you-know it can strike   such areas where)

(32) mycke som har   **man får säja som har** förstört hittills
     much that has   you can say that has destroyed so-far)

5.5. The role of SM in relation to IA

We have seen above that there is a relation between certain MM structures and certain SM units. The same applies to IA structures. If we look at typical IA functions in our database, we can make the following observations.

SM units often combine with IA for turntaking, turnaccepting, turnkeeping, feedback giving and feedback elicitation. Somewhat less frequently, we also find combinations with turn giving. (For more information about IA related concepts, see Allwood 1981, 1985.)

If we start by considering *turntakinglturnaccepting,* there are SM features having also these IA functions initially in utterances (i. e. before the MM- structures S, subject NP and sentence adverb). The SM features are SME (+ lengthening) and combination of basic SM. The speaker simultaneously accepts a turn, gives feedback and engages in SM, for example, in order to plan (cf. examples (33) and (34) below).

(33) **Turntaking/Turn accepting/Feed back giving:**
    mm //   **m** å de finns j ovisst ...
    (mm   m and there are sure)

(34) hmm // **ja (andas in)**   ja kan böja mä mina associationer
    (hmm   yes (breathing in)   I can start with my associations)

When a speaker has been interrupted and tries to regain the turn and when a speaker interrupts someone else, self-repetition is very frequent and substitution also occurs. In these cases, which are not always sentence initial, conjunctions are often repeated initially. These examples are most often also examples of *feedback giving.* Example (35) illustrates this.

(35) **Other interruption:**

A: javisst //   de e | de e bättre de an
    (yes-of-course it is | it is better so than)

B: | **men** //   **men** dom tar ju inte fram
                                         | (but   but they don't develop)

Turnkeeping is, by far, the IA function most often combined with SM. It occurs somewhere medially in an utterance and operates on object NP, VP-V, subordinate clause, relative clause, predicative adjective, PP/adverb or new sentence. This is also where we find most cases of combined SM. Self-repetitions, combinations of basic SM (cf. example 36), as well as holistic, integrated and linked operations are commonly occurring. Conjunctions and relative pronouns are used as SME/IA.

(36) **Combination of basic SM initially in subordinate clause and before object NP in the function of turnkeeping:**

à ja har hört att //   om man // om man // om man inte
(and I have heard that   if you   if you   if you don't)

har kärnkraft   // så blir   **ööh** // **va hete de**   //   lampema svagare
(have nuclear-power then become   what's it called   the-lamps weaker)

Turngiving does not occur very often with SM features, but there are some cases of self-interruption, pause and SSME, which probably represent a combination of SM and IA, as exemplified below in example (37).

(37) ja fö att inte ääh //
    (yes to not)

The specific SM category SM-phrase almost always seems to be functioning as SM as well as IA *for feedback elicitation* (cf. **va hete de** in example (36) above). There is a continuum from SM-phrases into longer inserted sequences which can also have this IA function.

5.6. Hypotheses about the functions of SM

As we have seen above (section 5.3), the most frequent SM unit types in our sample are those connected with choice functions (i. e. basic SM, occurring singly or in combinations). These categories together represent approximately 80% of all SM units in our sample (cf table 2). Of the remaining cases, 14% are covered by operations combining the functions of choice and change SM (i. e. integrated and linked operations), whereas only 5% are constituted by operations connected exclusively with change SM (i. e. "pure" holistic operations). Since these patterns hold reasonably well also at the level of each individual speaker in the sample, we hypothesize that, in general, choice related SM will be a quantitatively more important ingredient in speech production than change related SM, although the relative proportions may be expected to vary considerably under different conditions.

We have also seen (section 5.4 and 5.5) that there are "clusterings" when it comes to combining specific SM units with MM and IA structures. However, the relations are not one-to-one; different types of SM can be used with one particular MM or IA structure and each type of SM can be used with several different MM or IA structures. It rather seems to be the case that certain SM unit types are *preferred* with certain structures. It is also the case that some types are consistently not used with certain structures. These findings should be compared with the earlier noted connections between SM functions, MM functions and IA functions.

If we look at MM and IA relations in our database in summary, we can make the following observations: *Single SM-expressions* are preferred for turnkeeping while the speaker "evokes" the object NP. *Single basic operations* are preferred for the same function in relation to the main verb or VI`. *Combinations of basic SM* are preferred when more planning time is needed, i.e before a sentence is produced, initially indicating also turntaking/turnaccepting and sometimes feedback giving, medially indicating turnkeeping. More generally, we can say that there seems to be a consistent connection between choice related SM and IA functions having to do with turntaking, notably turnkeeping.

Our observations are consistent with the previous observations, noted in section 2, that the phenomena we call SM are most often concerned with the planning/execution of the new-information part of an utterance, as opposed to the given-information part, even though they also occur before sentences, possibly with the same function or with the function of supporting the structuring of given versus new information in the sentence. Further, we observe the important cohesive role played by many so called function words taking part in SM operations (cf. Linell 1980 and others above). From the speech planning perspective, our observations make us agree with Paul (1886) and more recently Bock (1982) that planning seems to take place on-line within units such as the utterance, the sentence, the phrase and even the word (cf. the examples **bistånds-äh-arbetare** (aid-äh-worker), **val- öh // öh harpunkanon** (whale- öh // öh harpoon gun)). We also agree with Schegloff (1979) that "repair" can change syntactic structure. For example, our data contains utterances where the role of one constituent, through SM, seems to be changing from object to subject. In example (38) this happens through self-repetition and in example (39) through combination of basic SM.

(38)   de e **deras deras vatten** blir förstört
       (it is their(-s?) their water gets ruined)

(39)   ja tycker inte   **de liksom de de**   hänger i luften
       (I think not   it sort-of it it   hangs in the-air)

In our opinion, these observations point to the role of SM phenomena for on-line MM planning during the execution of an utterance. However, the close functional relationship between SM and IA phenomena, noted in

sections 3 and 5.5., also points to the need for maintaining IA functions with the help of SM, during on-line planning. It is therefore important to keep both MM and IA relations in mind when analyzing the role of SM functions.

5.7. SM in different speakers

Another aim of our studies of the database has been to find similarities and differences between individual speakers, in order to make hypotheses about interindividual consistency and interindividual differences concerning the use of SM. We find that combinations of basic SM are used by all 22 speakers, while single SM-expressions and single basic operations are used by 20 speakers, i.e. all of these units are used by more than 90% of the speakers. All of the five most common types of the SM-units are used by at least 85% of the speakers and all of the SM-unit types are used by more than 45% of the speakers. (This can be seen in table 3, Appendix 2.) There is, thus, considerable consistency in the use of SM-units. There are, however, also some individual differences.

When we look for examples of possible differences between the speakers, we find individual speakers who differ in speech rate and also differ in their choice of preferred SM-unit types. For instance, Aina, who has an extremely slow speech rate, has the highest amount of pauses and single SM-expressions, while Kajsa, who speaks very fast, has the highest number of single basic operations (practically all self-repetitions). One could hypothesize a relationship between speech rate and SM types. The slowness of slow speech consists mainly of more and longer pauses than we find in faster speech. This means that for a slow speaker pauses, including so called "filled pauses" where SM-sounds and SM-expressions occur, are always close at hand. We therefore believe that pauses and single SM-expressions are easy to use for the slow speaker and gives him/her ample time for planning ahead. The fast speaker, on the other hand, has more temporally compressed speech, with few and very short pauses. For this speaker, it is necessary to plan ahead during the actual speech production, since there are not enough pauses for planning. Since the speech is fast, the planning has to be equally fast (or faster), i. e. faster than for the slow speaker. The need for rapid planning and the simultaneity of speech and planning place high demands on efficiency in speech and speech planning. Whenever the efficient coordination of speech and speech planning fails, speech has to be interrupted. Self-repetition takes care of the resumption of speech and allows for adjustments in timing. We can, thus, consider single SM-expressions as a type of SM which mainly provides opportunity for forward planning and self-interruption and self-repetition as types of SM which allow for repair when there is a perceived lack of timing between speech planning and speech, thereby also giving some (although very short) time for forward planning.

Connected with differences in speech rate we also find differences in quantity of speech. We find speakers who talk more than the other speakers

and also produce more connected speech in their 300 word sample. These speakers have more SM units than the other speakers. This is also an expectable observation, since it is natural that longer stretches of connected speech permit more insertions of SM units than do shorter utterances. While a complete short utterance can be planned ahead, a longer stretch of speech requires on-line planning during the utterance. A second hypothesis about individual differences is, thus, that more connected speech production requires more SM.

6. CONCLUSIONS AND DISCUSSION

On the basis of the preceding five sections we would now like to specify some of the conclusions our discussion and the data presented seem to justify.

6.1. SM, "langue" and/or "competence"

It seems reasonable to conclude, going by the criteria mentioned in section 2.1, that SM phenomena should be regarded as part of the system ("langue" or "competence") of a particular language. We point to three types of argument for this conclusion:

1. SM phenomena show a consistent relation between expressive feature and function. This relation holds both between structural features and functional properties of SM, e. g. between simple SM morphemes and choice related SM functions or between holistic SM operations and change related functions, and between use of SM and certain IA, MM and 11 functions (cf. section 4.1 and 4.4). The fact that this relationship has a many-to-many character does not invalidate our claim, since this is true, in general, for the relation between structure and function in language.

2. The consistent relation between structure and function holds across speakers and points in time (cf section 5.7 and table 3).

3. Although this has not been discussed to any great extent in this paper and has not yet been supported by any systematic empirical research, it seems reasonable to expect that SM features will show systematic similarities and differences between languages. For example, the schwa-like SM-expressions (**eh, uh, öh** etc.) seem to be present in all languages where SM phenomena have been described so far, but there seem to be phonological differences in their realization between different languages. The speech rate and speech rhythm of different languages are also likely to affect the distribution of, for example, pauses, single SM-expressions and basic SM-operations. It is not unlikely that SM phrases will turn out to show systematic language specific differences. This would mean that we for SM could characterize a notion of "wellformedness". Some types of SM are wellformed given

certain functional requirements (e. g. listener being able to hear and understand speaker) as well as certain other more arbitrary conventional requirements. This mixture of requirements behind SM-wellformedness would thus be similar to what holds for the wellformedness of other linguistic categories.

6.2. SM and UG

Since SM phenomena occur because of a probably universal need for efficiently flexible speech management and since it seems reasonable to assume that SM involves fairly basic (biological, psychological and linguistic) speech mechanisms, we suggest that certain features of speech management might form a "universal pool" represented in all languages to a greater or lesser extent

Possible universals of SM we think can be found both on an abstract and on a more concrete level. On an abstract level we think that all categories of SM we have suggested, i.e. basic SM expressions, basic SM operations, combinations of basic SM, holistic operations, integrated SM operations and linked SM operations could be universal categories. On a more concrete level we think that among the basic expressions, pauses and SM sounds might occur universally although their distribution will be subject to cultural convention. As for morphemic and phrasal SM expressions these will to a great extent be subject to linguistic variation, but some sounds such as nasal continuants and mid schwa-like vowels might occur relatively universally. Among the phrases, deictic phrases could occur fairly universally.

With regard to the basic operations lengthening, self-interruption and self-repetition and the combinations of basic SM features we suggest that they all occur universally but that their distribution and frequency vary with cultural and linguistic convention. Similarly, we suggest that all holistic operations (i.e. resumption, deletion, insertion, substitution and reordering) as well as at least some types of integrated and linked operations will occur universally with possible conventional restrictions on distribution and frequency.

6.3. SM, IA and MM

Our understanding of the relationship between speech production, SM, IA and MM can perhaps be depicted in the following way:
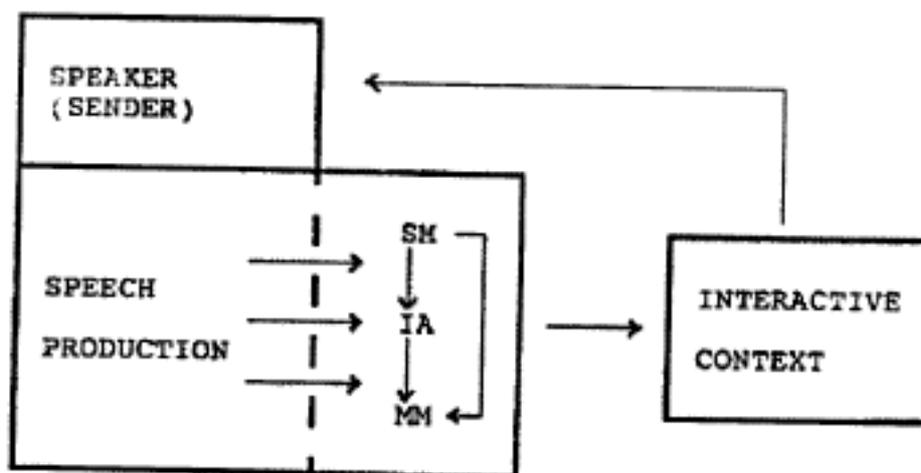
Figure 3. Relations between Speech Production, 8.51, IA and MM
(Arrows indicate direction of influence.)

Figure 3 presents us with a view of the relationship between SM, IA and MM which can be expressed in the following conclusions. The general picture we have suggested is that of speech as a system for the articulation of content (MM) which makes use of a syntax (in accordance with something like what linguistic tradition provides us with), but which also makes use of mechanisms for the management of speech in relation to the needs of both the individual (SM) and the interaction (IA). We would now like to continue by outlining the relationship between SM, IA and MM a little more in detail.

1.   SM functions are, within speech production in general, superordinate to both MM and IA functions, since the expression of anything presupposes that the speaker can manage whatever is being expressed. SM functions are, thus, involved in the monitoring and regulation of all MM and IA functions. SM mechanisms should therefore potentially be able to occur rather unrestrictedly in MM and IA structures. In fact, we want to claim that potentially they should be able to occur anywhere. Empirically, however, in the small corpus of data we have examined there seems to be a greater need for SM mechanisms in relation to some MM and IA structures than to others (cf section 5). SM is in a sense tailored to the speaker's need in verbalizing a sensible, acceptable content and to the listener's needs of being able to perceive and understand this content. These requirements, in fact, form a set of restrictions on the potentially unrestricted nature of SM.

2.   When SM and MM functions are simultaneously expressed by the same structural feature, we think there will at least sometimes be a semantic relationship between the SM and MM functions, e.g. hesitation over how to say something can simultaneously be doubt about what is asserted. More generally, when IA and MM, IA and SM,

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or LA, MM and SM functions are simultaneous we expect a functional (often causal) relationship between them. For an example of a semantic combination of all three functions consider the fact that expressions of proximal **deixis (MM) (this, that,** etc.) in some languages (Finnish-Swedish **de där**, Finnish **tuota,** and Spanish **este**) can be simultaneously used for turnkeeping (IA) and memory prompting (word search) (SM).

3. One reason why SM functions can be connected with IA and MM functions and why structural SM features in some cases can be used in a way almost purely connected with IA or MM functions is that SM features simply are part of a biologically and psychologically basic set of mechanisms for speech production and speech management. These mechanisms, so to speak, are there "for free" and can, when not needed for SM, be partially or completely employed for IA and MM functions. We have also noted that they can be employed for II (intraindividual) functions such as learning, memorization, practising and activation. This observation has importance, for example, for our understanding of spontaneous mechanisms of language acquisition (cf. Strömqvist 1988).

4. IA functions are also superordinate to MM functions, at least in most contexts. But IA mechanisms operate in relation to MM structures with more restrictions than do SM mechanisms. IA mechanisms are, regularly, most relevant at the beginning and end of a speaker turn. They can also occur, with sensitivity to MM structure, whenever they are needed because of interactive development or audience reaction (expected or actual) (see further above section 5.5). We, thus, get a system with the following basic precedence ranking: SM > IA > MM.

5. The presence and role of SM phenomena is probably affected by at least the following factors:

    A. Context; some contexts are normatively less favorable to overt SM phenomena than other contexts, e. g. official speeches, lectures. This, of course, does not mean that overt SM phenomena do not occur in these contexts. In a similar way the speakers internal state (fatigue, emotion) clearly affects distribution, frequency and type of SM.

    B. Degree of explicitness; a low degree of verbal explicitness in the expression of MM and IA functions (e. g. by the use of implicature, prosody and gesture) by implication carries with it a lower use of SM mechanisms.

    C. Semantic structure of MM and IA; since the point of communication is to convey meaning to a listener, we can expect the speaker to try to adapt SM mechanisms (and for that matter also IA mechanisms) to the expressed or planned structure of the utterance that is being

articulated in such a way that the listener's perception and understanding is facilitated (cf. empirical examples above).

6.4. SM, formizability and empirical regularities

In contradiction to many traditional accounts where SM phenomena have been assumed to be the prototypical examples of indescribable idiosyncratic variation and chaos, we have attempted to show that they, in fact, form a highly regular set of operations for efficient and flexible speech management. In section 4, we have given a formal account of some of these operations and in section 5, we have given data on the empirical relevance and distribution of the operations described in section 4. We can, for example, see how different types of SM units are preferred in different syntactic positions of a sentence. Single basic SM- expressions are preferred before NPs, single basic SM-operations before VPs and combinations of basic SM before sentences. We can also see a positive relation between the occurrence of SM and "new information", most clearly manifested in the predominance of VP and object NP as the MM-structures most often involved in SM. There is a close structural and functional interaction between SM and IA, e. g. with regard to turntaking functions and feedback functions. The most frequent example of this interaction is choice related SM (e. g. single or combined basic SM) in connection with turnkeeping. Phonological characteristics of a language seem to extend over MM, IA and SM functions, not only in the sense that they are properties of the MM structures which are involved in IA and SM operations, but also in the sense that SM and IA expressions themselves conform to the phonological restrictions of the language.

6.5. SM - relations to other work

In relation to earlier accounts, we believe we have provided a somewhat wider and more neutral perspective on (what we have called) speech management. We believe this perspective helps us to give a more adequate account in the following respects:

1 . It has been possible both to provide a more complete overview of SM operations and to give a more detailed account of their structure and function. This has been done to supplement earlier accounts, e.g. Levelt's and Schegloff's, which on the whole were more functionally oriented.

2. Our overview of SM has shown that although it is sometimes correct to say that SM can be functionally tied to repair or correction (and other change related SM functions), this would not amount to a generic functional characterization, since choice related functions such as hesitation and planning are also relevant; in addition, we have distinguished process SM as well as combinations of change and choice functions. The fact that this latter category is fairly common shows that although change and choice functions can be separated, they also

commonly work together, thus further motivating our view that they should be seen as functional subspecies of "speech management".

3. We have related SM both to IA and MM both in the sense that we have tried to show that SM operates on IA and MM structures, and in the sense that we have tried to show that SM structures can carry not only SM functions but also IA and MM functions, e. g. a self-repetition can be used for hesitation, for emphasis and for keeping the turn. In this way, we hope to have demonstrated that SM phenomena must be related both to intraindividual factors such as planning and memory and to social factors such as interactional structure, and that an exclusive focus on either of these areas will necessarily result in an incomplete picture.

4. Our account shows that when one carefully tries to describe what people do when they talk, including also what earlier has been called "performance errors", one ends up, not with a list of disordered random phenomena, but with an account of a set of highly structured, probably biologically motivated operations. One might even dare to suggest that the route to universal grammar from SM structures is likely to be more direct than that which has to be travelled to reach the same goal from MM structures.

5. Our account may turn out to have some practical interest for such fields as language teaching (there is some cultural, linguistic variation even if many patterns are universal), language learning (cf. Strömqvist 1988), rehabilitation of communicative disorders and speech recognition. For the latter enterprise, a failure to recognize the contribution of SM has already been reported to lead to major problems (cf van Katwijk et al 1979).

Finally, we want to return to our initial point of departure - pragmatics. One could say that a precondition for the approach taken in this paper has been a pragmatic perspective where one not only takes into consideration the traditional abstractions over structure and content embodied in the notions of "langue" and "competence". In addition, we have claimed, such an abstract account must, in order to be adequate, also take the needs of the speaker and the listener into consideration as they are manifested in SM and IA, respectively. It is our contention that such a widened perspective might also be fruitful for other areas of linguistics than the one presented here.

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APPENDIX 1. TRANSCRIPTION CONVENTIONS

Generally, spoken utterances have been transcribed using standard Swedish ortography, modified when necessary to capture special features of the spoken language; capitalization marks heavy stress. In addition, the following conventions have been used:

//   pause

-       self-interruption with clear prosodic cut-off, e. g. **så ma**- **ja just de**

:   lengthening of continuant sound (ie unusually long sounds), e.g. **e**:

...   part of utterance which has not been transcribed (usually occurs at the beginning or at the end of an example), e.g. **så de känns som de**- **att de e valt**...

Appendix 2. Tables

Table 1. Number of SM features, totally and for each speaker.

SPEAKER & INTERACTION		BASIC SM-EXPRESSION				BASIC SM-OPERATION			HOLISTIC SM OPERATION			
		PAUSE	SSME	SMP	SMS	LENGTH	SELFINT	5ELFREP	DELET	INSERT	SUBST	TOTAL
Allan	A	23	8	0	0	5	0	11	4	4	6	64
Lage	A	9	3	3	3	3	0	8	2	4	3	35
Kajsa	B	2	3	1	1	5	0	20	0	0	4	35
Gudrun,	B	10	4	0	0	6	1	4	1	0	3	33
Anna	C	10	21	1	1	4	0	4	1	1	1	44
Brila	C	2	3	1	1	2	0	3	0	0	2	14
Karl	D	9	12	1	3	4	2	1	0	0	0	32
Johan	D	2	1	2	0	0	0	2	0	0	0	7
sven	D	3	2	1	2	1	0	5	0	0	0	14
Olle	E	14	12	0	3	4	3	5	0	2	5	48
Björn	E	3	0	1	0	0	2	6	0	1	0	13
Aina	E	11	2	1	3	0	1	3	0	0	1	22
Gunnar	F	7	5	0	0	1	4	9	0	1	1	28
Agda	F	7	11	0	0	4	2	7	1	0	3	35
Kristin	F	10	4	2	1	0	1	5	0	3	1	27
Tommy	G	4	8	1	0	1	1	4	0	0	2	21
Gertie	G	4	2	0	0	0	1	6	0	3	4	20
Kati	G	4	4	0	1	0	1	3	0	0	1	14
Anette	H	19	9	2	2	2	2	4	2	1	0	43
Camilla	H	13	2	1	0	0	0	6	0	2	3	28
Barbro	H	9	3	1	0	0	0	5	0	0	3	21
Denise*	H	4	0	2	0	1	0	1	0	0	0	8
Total		179	119	21	20	43	21	125	11	22	42	607
Percentage		29%	20%	3%	3%	7%,	3%	21%	2%	4%	7%	

Tot N of words: 21 speakers 300 words
 1 speaker 271 words
6.571 words

In classifying the corpus with regard to SM features, we have chosen to regard the holistic SM operations *deletion, insertion, substitution* and *reordering* (but not integrated and linked operations) as single, complex features. Basic operations occurring as necessary suboperations of these holistic operations have therefore not been counted separately.

Table 2. **Types of SM-units used by each speaker and number of each type of SM-unit used by each speaker.**

SPEAKER	SINGLE Basic SME	Basic SMO	COMBINATIONS Comb of basic SM	Complex SM operations Holistic	Interated	Linked	TOTAL N OF SM UNITS
Allan	9	3	6	3	1	6	28
Lage	5	5	5	4	1	2	22
Kajsa	2	16	2	2	1	1	24
Gudrun	2	4	5	-	2	1	14
Anna	9	2	8	-	-	3	22
Brita	2	3	1	-	1	1	8
Karl	8	1	6	-	-	-	15
Johan	1	2	2	-	-	-	5
Sven	1	1	6	-	-	-	8
Olle	8	3	7	1	1	5	25
BjÖrn	1	3	2	-	-	-	6
Aina	10	2	4	1	-	-	17
Gunnar	6	9	5	-	-	2	22
Agda	4	4	7	-	2	1	18
Kristin	6	-	3	2	1	1	13
Tommy	4	4	2	-	1	1	12
Gertie	-	-	4	3	-	2	9
Kati	1	1	4	-	-	2	8
Anette	1	3	7	1	-	2	14
Camilla	4	1	4	1	-	3	13
Barbro	-	3	3	1	1	-	8
Denise	1	1	2	-	-	-	4
N of speakers	20	20	22	10	11	15	
Percent	91%	91%	100%	45%	50%	68%	
N OF SMU	85	71	95	17	12	32	312
Percent	27%	23%	30%	5%	4%	10%	

When considering the SM unit categories, it is important to remember that the category labeled *holistic operation* only includes operations occurring singly, i. e. without being combined with other types of SM, and that cases where a holistic operation occurs in combination with other SM belong either to the category *integrated operation* or to the category *linked operation.*

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Table 3. MM structures where SM is involved

STRUCIURE	SINGLE		COMBINATIONS				TOTAL N OF SMU	PER OF SMU
	Basic	Basic	Comb of basic SM	Complex SM Holistic	Inte Grated	Linked		
NP(obj)	34	11	22	4	3	15	89	29%
W-V	11	26	16	6	3	7	69	23%
S	15	9	26	4	1	5	60	19%
Subcl	9	12	11	2	3	3	49	13%
NP(subj)	7	4	8	2	2	0	23	7%
PP/Ady	6	5	5	1	0	1	18	6%
Relcl	2	1	2	0	0	0	5	2%
Adj(pred)	0	2	2	0	0	1	5	2%
Other	1	1	3	0	0	0	5	2%
Tot MM	85	71	95	17	12	32	312	