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Interaction and Linguistic Structures

PARAGRAMMATISM RECONSIDERED

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In recognition of the enthusiasm he has brought to all aspects of the study of spoken verbal interaction, we dedicate this series to Professor Dr. Aldo di Luzio, University of Konstanz.

0. Prologue: Speaking with the Left Hand

What is an aphasic symptom? Most contemporary aphasiologists define a symptom, i.e. an instance of deviant verbal behaviour, as the **direct** expression of a definite disturbance of function. Up to a point, this is not in dispute.

However, a small number of scientists doubt that this is the only possible definition. John Hughlings Jackson was the first to differentiate between negative symptoms - direct sequelae of an impairment of the substratum - and positive symptoms that are due to the effect of a separation between an undamaged area and a damaged one (1879:304ff). In the 1920s Kurt Goldstein added two further possible sources of symptoms: depending or secondary symptoms which are due to the effect of the pathologic process in a damaged area on other parts of the nervous system, and symptoms which represent protective mechanisms against the effect of the damage on the personality as a whole (1971:3).

In the 1980s Claus Heeschen and Herman Kolk developed their adaptation theory based on the work of these two researchers. They too distinguish between negative and positive symptoms, but in a slightly different way. Their definition of negative or impairment symptoms corresponds to that of Hughlings Jackson, whereas their positive symptoms resemble Goldstein's protective mechanisms. Heeschen/Kolk think that the organism as a whole tries to minimize the consequences of the damage to the brain by making use of **functional reorganization**.[1] This means that an intact but less optimally suited module of the brain takes over the tasks of a damaged or destroyed component. Because the substitute is less than adequate, the adaptation results in a functionally usable but somewhat inaccurate or non-standard grammatical form. Deviant forms of this kind are called positive symptoms.[2] So, the fundamental point in defining a positive symptom is its function (Heeschen/Kolk 1988:51). To make their distinction clear, Heeschen/Kolk give the example of writing with the left hand because of a defect in the right hand. The handwriting looks awkward, but the words can be recognized (1988:42f).[3] Heeschen/Kolk mention the use of elliptic structures by agrammatic patients as an example of adaptation to a syntactic deficit. They argue that the aphasics shift from complex to simple sentence structures because of slowed activation of the elements of the sentence representation. This complexity reduction is a preventive strategy (Kolk/Heeschen 1990:225).[4]

This study aims at reconsidering the aphasic symptom of paragrammatism, typically found in Wernicke's aphasics, within the framework of the adaptation theory. I have replaced the traditional notion of an aphasic symptom with Heeschen/Kolk's notion because in my opinion the former is not compatible with recent developments in general linguistics, whereas the latter certainly is. I am convinced that aphasiology as applied linguistics should not act independently of developments in general linguistics, since aphasia is not a novel kind of behaviour, but - merely - the linguistic behaviour of normal people who have

to communicate with a language that consists of - partly - non-normal impairments (Lesser/Milroy 1993:334f). In the following paragraphs the main differences between this approach and subtractive loss-methodology will be illustrated.[5]

Firstly, Goldstein's organismic approach parallels a position in general linguistics which claims that the Saussurian distinction between language as a system of words, sounds and meanings (langue) and language use (parole) is futile - at least, where spoken language is concerned (Hudson 1996:228f, Auer 1999:53ff, Streeck 1983:74, Schiffrin 1988:264). Goldstein states that

> every individual speech-performance is understandable only from the aspect of its relation to the function of the total organism in its endeavor to realize itself as much as possible in the given situation. (1971:21)

He emphasizes that aphasic performances vary with regard to different situations (1971a:163f). It is important for the understanding of aphasic symptoms to take the mere existence of **variation** into account. If a particular symptom were always the direct expression of a damage, aphasics would not be able to vary their verbal output.[6] Within adaptation theory it is possible to account for this variability. Heeschen/Kolk give an example of this context-sensitive variability of aphasic talk. By investigating the syntactical structure of utterances by Broca's aphasics Heeschen/Kolk observed that the aphasics sometimes attempted complete sentences and sometimes spoke in telegraphic style, omitting the determiners and using only infinite forms of the verb. As these last two are devices to establish references, Heeschen/Kolk maintain that the more responsibility the interlocutor takes to arrive at definite references, the more the aphasic can afford to omit them. Any face-to-face conversation between aphasics and their speech and language therapist represents a situation in which the patient has a minimum and the interlocutor a maximum of responsibility. As a result, there are many examples of the telegraphic style. In different circumstances, for example if the patient's utterances are taped and need to be decoded later by others, or if a misunderstanding occurs in the course of the conversation, the patient must assume more responsibility. He must be more explicit and as a rule does so by abandoning the telegraphic style. For this reason Heeschen/Kolk interpret the telegraphic style as an **option**[7] triggered by situational factors and not as a syntactical deficit as such (Heeschen 1993:22). In this way, the development of adaptation theory parallels the shift in research focus within general linguistics. There, linguists acknowledge that systematic aspects of parole exist and that it makes sense to investigate them. Similarly, initial investigations into the language use of aphasics show regularities which can be accounted for only with regard to contextual factors. Adaptive processes can be established only here - and not in the langue.

Secondly, aphasia restricts the ability of the aphasic to behave adequately in social interactions. As a result many aphasics suffer from being isolated within and outside their family network (Müller 1993:373). This shows very clearly that there is a direct relationship

between the social functions of language and the form of verbal behaviour. But so far, no attempt has been made to explain the social dimension of aphasia directly with regard to the impaired speech performance of aphasics. In my opinion, this is a serious omission because exclusion from (various forms of) social action is the most (far-reaching and therefore most) dreadful consequence for the aphasic person as a social being.[8] To make the social dimension of language accountable for aphasiological theorizing, I would suggest supplementing adaptation theory with Goffman's theory of face. Goffman defines face "as the positive social value a person effectively claims for himself" during social interaction (1955:213). It is "an image of self delineated in terms of approved social attributes" (1955:213). If one's own face is concerned, these attributes include pride, honour, and dignity (1955:215). A person may be said to maintain face "when the line he effectively takes presents an image of him that is internally consistent" (1955:213). He does so by avoiding actions which would lead to losing face and correcting incidents which threaten face. For all the different activities serving this purpose Goffman coined the term face-work (1955:216). Why is it important for a person to maintain face and why is face-work important for the structure of spoken interaction? The answer to both questions lies in the structure of the self. The self is of central importance for a person's emotional well-being, which is why Goffman sometimes terms it a sacred object. He defines it as "an image pieced together from the expressive implications of the full flow of events in an undertaking; and [...] as a kind of player in a ritual game who copes [...] with the judgmental contingencies of the situation" (1955:225). So, because of the importance of the self for the person and the intimate relationship between self and face, "the person tends to conduct himself during an encounter so as to maintain both his own face and the face of the other participants" (1955:215).[9] Since interaction is very often a verbal one, it follows from what Goffman said about the self that a functional relationship between the structure of the self and the structure of spoken interaction exists (1955:227). Though Goffman was not very explicit on this aspect of his theory[10], he states that adequate verbal behaviour is one facet of face-work. An utterance, like any other personal act, projects an image of the actor (Goffman 1981:278). How does Goffman's theory of face relate to the social dimension of aphasia? Goffman regards speech as a competency, i.e. a capacity common to all humans which enables the routine accomplishment of a given end (1981:198). Therefore, deficient verbal behaviour can initiate the workings of social control (1981:199). Goffman describes this process as follows:

> Competency in regard to common-human abilities is something we tacitly allot to all adults we meet with, an achievement and qualification they are taken to start with, credit for which they receive in advance. An individual's failure to sustain these "normal" standards is thus taken as evidence not only that he doesn't (or might not) measure up in these respects, but also that as a claimant he has tacitly presented himself in a false light. With reappraisal goes discrediting and an imputation of bad faith. (1981:202)

Presenting oneself "in a false light" is simply another expression for presenting an image of oneself that is internally **not** or **no longer** consistent. Consequently, the person speaking

in a deficient way loses face. If this person fails to maintain his own face during a number of successive encounters, which is the case in aphasia because in most cases it is a chronic condition, he will be regarded not only a (verbally) faulty interactant, but a **faulty person** (Goffman 1957, cited Hudson 1996:116). This will eventually lead to isolation as described above. Goffman's theory can be linked to Goldstein's organismic approach in order to explain both why people adapt their behaviour to their brain damage and what directions these adaptations take. The link between the two theories is the fact that our general need to maintain face is innate (Hudson 1996:115). This seems plausible considering the dramatic importance of the individual's image for man as a primarily social being. Goldstein states that adaptations take place to maintain functions which are central for the organism as a whole (1971a:167). In my opinion, the endeavour to maintain one's own face seems to be a very strong incentive for adaptation. Therefore, I assume some adaptations to be face-saving devices. This in turn is important for our understanding of aphasic symptoms, because it is an additional factor that triggers variation in aphasic verbal behaviour (see above). Further, it is possible that an adaptive strategy that helps the aphasic to maintain face simultaneously obstructs the communication between the aphasics and their interlocutors.[11] Lesser/Milroy mention the compulsive talking of a patient studied by Edwards/Garman (1989) as a strategy used to avoid yielding the floor to a conversational partner and thereby running the risk of revealing his comprehension problems (1993:24).[12] Lesser/Milroy conclude that "sometimes compensatory strategies have consequences which are not at first sight obvious" (1993:23f). With regard to the differentiation between negative and positive symptoms it seems plausible to assume that certain phenomena that are deficient from a langueistic point of view are produced by the aphasic on purpose in order to maintain face and therefore must be classified as positive symptoms. I will argue (see Chapter 2.1 below) that the Wernicke's aphasic I have studied uses syntactic break-offs quite frequently to cover her word-finding difficulties. Consequently, these break-offs are not the result of a syntactic processing deficit, i.e. an impairment symptom, but an adaptation symptom. In employing this strategy the aphasic tries to minimize her share of "making herself and others uneasy in conversation and perpetually killing encounters" (Goffman 1957, cited Hudson 1996:116).[13] This in turn minimizes the extent to which her face might be damaged.[14]

Thirdly, most aphasiologists have not yet adopted recent research into the differences between spoken and written language.[15] They still assume, albeit tacitly, that people speak as they write. Consequently, the definitions of many aphasic symptoms were, and still are, based on the norms of written language. This holds especially true for syntactic symptoms. By now, though, a number of linguists have established **spoken language** as an independent object of their research. They have shown that written and spoken language are different mediolects (Werner 1995:24), i.e., they are formed by the conditions under which they are produced. Therefore, oral and written utterances/sentences are structured differently. Thus, linguists explicitly reject the assumption that spoken language

is just a defective derivative of the correct, normative written language. Spoken language is characterized by the moment-by-moment, evolving process of transforming thoughts into words (Uhmann 1997:159) and the embedding of spoken language in a conversational setting. The consequence of this is that at each point of the utterance repair can occur. Because of the linearity of spoken language we constantly have to correct, expand, or specify our formulations; also our interlocutor might wish to have certain aspects clarified. Therefore, some linguists state that the form of orally produced syntactic structures results primarily from organizational mechanisms of communication, for example turn-taking or repair, and is not part of the language as such (Streeck 1983:74, Uhmann 1997:159, Schegloff/Ochs/Thompson 1996:38, Werner 1995:202). What are the implications of this point of view for aphasiological research? Most research designs and diagnostic tools still base their work on notions like paragrammatism which were described for the first time at the beginning of this century when syntax simply meant grammar. For that reason syntactic symptoms were defined as deviations from grammatical norms - of written language, that is (Hüttemann 1986:59). The advantage of the adaptation theory is its independence of norms. Instead, it looks for statistical differences between aphasic and non-aphasic speech and tries to account for these differences with regard to deficit **and** function (Heeschen 1993:30).[16]

Since the definition of **symptom** is - as it were - the linchpin of aphasiological research, the question is: what are the consequences of a different notion of symptom for aphasiological theory or - more precisely - for our concept of the functional architecture of the language-processing system? This question consists of two parts: firstly, how do we picture the relationship between the observable aphasic behaviour and the underlying lesion, and secondly, how do we proceed methodologically in order to explain aphasic behaviour in relation to various models of language production?

To answer the first part of the question, I suggest the notion of **trading off** as the mechanism fundamental to driving adaptations.[17] It works as follows: real-time speech production is limited by the amount of time and the amount of energy the system has at its disposal. Within these limits the language-processing system produces (well-formed) utterances which serve certain functions, for example, of an interactional or social nature. In cases of system damage, the time and energy available remain the same, but consumption in certain sections of the brain may rise, causing a deficit in other parts (Goldstein 1971a:179). The language-processing system as a whole though, tries to serve the above mentioned communicative functions. As resources are finite in each moment of speech, **trading off** takes place between the limited resources on the one hand and the functional demands on the other hand. The trading off results in either a functionally adequate but deviant utterance through making use of an adaptive strategy, or an impaired utterance which is both formally and functionally inadequate. Adaptations can be grouped together according to their main purpose within this process. First, adaptations can help the system

in **reducing the processing costs** of the utterance-in-progress.[18] Kolk/Heeschen argue that the frequent use of elliptical structures by agrammatic aphasics (1990:225), the reduced variety of grammatical forms (1990:228), and certain (syntactic) aspects of sentence comprehension (1990:229f) are all caused by adaptive strategies which minimize the complexity of the verbal material.[19] Second, adaptations can have **interactional** advantages for aphasics because they enable them to hold the turn or gain additional (processing-)time (Lesser/Milroy 1993:292). Third, adaptations may be relevant with regard to the **social** dimension of language in that they enable the aphasic to maintain face.

I maintain that an aphasic is more likely to use an adaptive strategy, the more of the above mentioned advantages it offers. The notion of trading off is in several ways superior to other, more static concepts because it takes dynamic aspects of aphasia into account, for example intrapersonal and context-dependent variability of aphasic performances. Furthermore, it makes allowances for the real-time character of spoken language (O'Connell/Kowal 1980:8). As a result, aphasic verbal behaviour can be tied in with normal language production. The same holds true for the communicative functions the aphasic still tries to perform in spite of the damage to his language-processing system. The aphasic person is simply a human being who has to perform ordinary tasks under extraordinary constraints (Lesser/Milroy 1993:334f). This means that the communicative functions as such are not deviant, only the means with which to carry out these functions.

I will now return to the second part of the question regarding the implications of an altered notion of **symptom**: how can we proceed methodologically to differentiate between impairment symptoms and adaptation symptoms? The key here is **function**. Since Heeschen/Kolk argue that impairment symptoms and adaptation symptoms are both instances of statistically abnormal verbal behaviour and are to be differentiated with regard to their functional adequacy, the first methodological step would be to link aphasic output to normal verbal output statistically. This would mean to rate aphasic utterances solely by comparing them to utterances of non-aphasic persons and not according to a pre-established aphasiological rating scale. The second step would be - according to Heeschen - to explain the statistical deviations within the framework of **psycholinguistics-for-conversation,** which has not yet been developed (1993:30).[20] In my opinion, this framework would have to represent the real-time nature of language comprehension and production, the complexity of the utterance-in-progress, the context-dependancy and orientation towards dialogue as well as the social value of utterances.

1. Research Design

In this chapter, the objective of this study, the methods applied and the data base are presented.

1.1 Objective

How is the symptom of **paragrammatism** within the framework of **adaptation theory** to be accounted for? Since this study aims at emphasizing the differences between adaptation theory and subtractive loss-methodology, I will first explain what the latter paradigm regards as the deficit which causes paragrammatic output.

Since Kleist introduced the term in 1916, paragrammatism denotes a disordered mode of expressing oneself that is characterized by confused and erroneous word order, syntactic structure and/or grammatical morphology (Butterworth/Howard 1987:2, Schlenck 1991:199f). Most researchers suppose that the faulty syntactic structure (sentence blends, contaminations, break-offs) results from a disturbance of the syntactic plan of the utterance (de Bleser/Bayer 1993:160f). Huber assumes a disturbance of the sequential organization of sentences as the cause of the syntactic errors (1981:3). Most students and practitioners regard paragrammatism as the morphosyntactic "leitsymptom" of Wernicke's aphasia. However, ever since the introduction of the term paragrammatism some students have pointed out that paragrammatic and agrammatic phenomena, which in classical theory form part of Broca's aphasia, may co-occur in the same patient (Butterworth/Howard 1987:34). This may have been one reason why Heeschen/Kolk developed the adaptation theory, mainly by comparing agrammatic to paragrammatic speech. They assume that agrammatic aphasics adapt to their syntactic deficit, whereas paragrammatic aphasics do not (1988:49). This is based upon Goldstein's idea that Wernicke's aphasics do not adapt, because they lack insight into their disturbance. Heeschen/Kolk found agrammatic as well as paragrammatic phenomena in Broca's aphasics but not in Wernicke's aphasics.[21] For this reason, they inferred that agrammatic speech is an optional adaptive strategy, whereas paragrammatic output results from not adapting (1988:49ff). I will argue throughout this study that this view is too simplistic to account for paragrammatism because adaptations are never restricted to one single function. So far, except for a small number of phenomena, it is an open question which aphasic deviations have to be regarded as either negative or positive symptoms. The reasons lie in the complexity of human speech production, which cannot adequately be accounted for by existing models[22], substantial deficits in research of aphasic talk-in-interaction and the lack of studies comparing aphasic output in different situations. Therefore, adaptation theory is to a great extent still theoretically and methodologically underspecified.

For these reasons, I had to formulate the theoretical foundations of my understanding of adaptation theory. They are as follows:

•regarding **language**:

Language is only a cognitive tool secondarily. Primarily, it is an interpersonal activity. That means that social aspects of language cannot be excluded from linguistic analysis (Steiner 1993:311). Since a linguistique de la parole has not yet been developed, its systematic character is generally neglected in linguistics.

•regarding **aphasia**:

Aphasic language is not a novel kind of behaviour, but is produced by normal speakers' adaptations to abnormal constraints (Lesser/Milroy 1993:334f). As a consequence, there is a logic in aphasic verbal behaviour which can be described with regard to the communicative functions it serves and the interactionally produced mutual understanding it is part of. The orderliness in aphasic output is of the same kind as is revealed by conversation analytic methods in non-aphasic conversations (Lesser/Milroy 1993:186).[23]

I assume a relationship of mutual influence between verbal interaction, repair and syntax that can be represented by a triangle. Aphasic syntax can adequately be investigated only within this relationship. The central aspects of this relationship are the following:

•regarding the relationship between **repair** and **verbal interaction**:

Errors and repairs are natural components of conversation, i.e., they occur everywhere in verbal interaction (Heeschen 1993:27). The dialogic character of talk-in-interaction requires a mechanism to deal with mishearings, misunderstandings and the noise of passing aircrafts (Schegloff/Jefferson/Sacks 1977:381, Streeck 1983:85ff). On the other hand, it means that one has to investigate talk-in-interaction to find verbal repairs, because it is only here that it makes sense to produce them.

•regarding the relationship between **syntax** and **verbal interaction**:

Syntax and interaction are interrelated where talk-in-interaction is concerned. In conversation, grammatical (in a rather traditional usage of the term) structures are interactional structures, i.e., they are an excellent resource for doing social, interactional work (Schegloff/Ochs/Thompson 1996:34). With regard to aphasic syntax I will argue throughout this study that, while aphasics produce so-called paragrammatic utterances-in-interaction, they orient themselves to an interaction grammar beyond the sentence-level. Here the structuring principle is not the well-formedness of the utterances, but rather their completeness at a certain point where turn-taking becomes relevant.

•regarding the relationship between **repair** and **syntax**:

Schegloff maintains that repair must be investigated together with syntax because both are relevant in the same environment, i.e., both work in turns-in-talk (1979:277). The form and sequential placement of repair are organized according to syntactic structures.

The combination of a psycholinguistic and a conversation analytic perspective in analyzing verbal self-repairs was first announced by Levelt:

> Contrary to certain claims in the linguistic literature, repairs are constructed in a highly regular fashion. They are subject to strict linguistic rules and strict conversational rules. (1989:460)

In this study, verbal self-repairs of a Wernicke's aphasic are investigated with regard to these linguistic and conversational rules. The leading questions are: Do these repairs obey the linguistic rules Levelt (1983) described for non-aphasic repairs and do they obey the conversational rules Schegloff (1979) described for non-aphasic repairs? Do the aphasic self-repairs deviate from normal self-repairs? If so, is the deviation quantitative or qualitative in character? Do the characteristics of the repairs have an impact on the syntactic structure of the utterances in which the repairs occur?

1.2 Methodological Issues

The difficulty that arises from the preliminary character of adaptation theory is at present the lack of adequate methods. The task to be fulfilled is two-fold: first, comparing aphasic to non-aphasic repairs and second, accounting for the differences within the framework of adaptation theory. With regard to the first aspect, Heeschen states that

> research on disorders has to commit itself strictly and consistently to models of normal language use. Accounting for the deficit and errors (to the extent that they reflect the deficit) requires application of psycholinguistic models. (1993:30)

By applying Levelt's psycholinguistic model of self-repairs, a comparison between aphasic and non-aphasic repairs is possible. Since Levelt's model is primarily quantitative, an analysis that is based on it matches the theoretical assumption of adaptation theory: that the differences between aphasic and non-aphasic verbal behaviour are mainly quantitative. By applying Schegloff's conversation analytic model, it is possible to decide whether the aphasic obeys the conversational rules which verbal repairs are subject to.

The crucial issue is the second methodological step: Kolk/Heeschen state that

> in the characterization of the deficit, the functional nature of the adaptive process must be taken into account. This means that the impairment must be described in such a way that it becomes understandable why adaptation helps. (1990:225)[24]

In this study, I combine Levelt's and Schegloff's approaches in order to take the multi-dimensional origins of adaptations into account. A positive symptom may help either in reducing processing costs and/or turn-holding and/or face-saving. I maintain that an adaptive strategy is more likely to be used, the more advantages it offers the aphasic in the various above mentioned dimensions.

To make Levelt's and Schegloff's approaches compatible with each other, it is important to adjust the data bases. Schegloff exclusively analyzes data from natural, dialogic interactions, whereas Levelt collected his data in an laboratory setting, where utterances were generally monologues with no time-constraints put on those who participated in the experiment. Since data from real-life interactions are methodologically vital to conversation analysis, an analysis based on Schegloff's model must use this type of data. Fortunately, Blackmer/Mitton (1991) used Levelt's model to analyze the verbal self-repairs of callers in a radio phone-in programme, so some data exist that come up to the methodological requirements of conversation analysis.[25] This means that my analysis is based on **on-line** data, i.e. the first conversation between the aphasic and her speech and language therapist in the rehabilitation centre. Lesser/Milroy mention an important reason for supplementing psycholinguistic research with conversation analytic studies.

One area in which a conversation analysis of aphasic interaction may illuminate psycholinguistic analysis more effectively than experimental laboratory studies is in specifying the effects of limited computational space and/or attention, in that competition for resources will be involved. It is under naturalistic conditions that real-life pressures, springing from the need to communicate, expose restrictions on the communicator's capacity to do so. (1993:336)[26]

This idea matches my concept of trading off exactly. In other words, conversation analysis provides aphasiology with a systematic basis to account for the **real-time character** of spoken language.

With regard to the importance of naturalistic data, I disagree with Kolk/Heeschen. They maintain that analyzing spontaneous speech is useless because it does not tell us anything about the language impairments of the aphasic. The reason they give is that in conversational talk the aphasic can adapt to his impairments. Therefore, they have to be put into a situation in which they cannot adapt, so that the impairment symptoms come to the fore. This means formal testing with aphasia test batteries (Kolk/Heeschen 1990:225)[27]. In the following, I want to raise three objections to this point of view. All of these objections deal with methodological aspects that are regarded - at best - as side-issues in contemporary aphasiology. This means that there do not exist any studies dealing with these issues and therefore no empirical evidence in favour of my point of view so far.

Firstly, according to Benveniste there is a quantum jump between the verbal sign, for example the word, as part of the langue and the utterance (énonciation). Because the word and the utterance belong to different levels of analysis, the meaning of an utterance is more than the combined meaning of all the words the utterance consists of. Accordingly, Benveniste relates different cognitive abilities (facultés d'esprit) to the decoding of either a word or an utterance. In his opinion, man **recognizes** the verbal sign but **understands** the utterance (Auer 1999:52ff). The lesson is that one cannot compare the aphasic's performance in spontaneous speech to that in formal testing situations, because this would mean comparing the results of two distinctive cognitive abilities.

Secondly, if one compares aphasic performance in spontaneous speech and in formal testing, the distinction between on-line-tasks and off-line-tasks becomes relevant. In spontaneous speech, the aphasic has to perform several tasks simultaneously under real-time constraints. In this situation, there is a competition for processing resources which may lead to the occurrence of either impairment symptoms because of a shortage of processing resources or adaptation symptoms used to save processing costs. Conversely, in performing an experimental task the patient has time to concentrate on it without real-time pressure. Therefore, the distribution of energy within the language processing system is completely different. This insight highlights once again that the comparison of data obtained under such different conditions can only be confusing.

Thirdly, I would like to mention an aspect that Kolk/Heeschen themselves have placed in the foreground. According to them, the aphasiologist cannot know for certain that the aphasic really does do what the scientist thinks he does when performing a special task (1990:229f).

1.3 Data

The data analyzed in this paper have been extracted from an interview between an aphasic and her speech and language therapist at a rehabilitation centre. The semi-structured interview is part of the Aachener Aphasie Test (AAT), the most widely used German aphasia test battery.[28] On the basis of the above mentioned interview, the spontaneous speech of the aphasic was assessed as paragrammatic.[29] At the time of the interview, the patient was 57 years old. She became aphasic following a left middle cerebral artery infarct two months earlier. There were no previous neurological illnesses. The aphasia was diagnosed as a mild form of Wernicke's aphasia. The data was transcribed using CA conventions (Selting et al. 1998) and, where relevant, IPA symbols were used to capture phonetic aspects of the aphasic person's speech. The number of lines mentioned in the extracts relate to the transcript of the whole interview.

2. Results

2.1 Repair and Syntax I: Levelt

In this chapter, the self-repairs of the Wernicke's aphasic are investigated on the basis of Levelt's model of self-repairs (Levelt 1983, 1989). The investigation aims at clarifying the relationship between repair and syntax in Wernicke's aphasia.

Levelt developed his systematics of self-repair on the basis of almost 1.000 self-repairs which were elicited in an experimental, monologic setting.[30] A self-repair consists of three

parts: 1. the original utterance (OU) which contains the trouble spot or reparandum, the item to be repaired. The OU ranges from the last sentence boundary before the reparandum to the moment of interruption;[31] 2. the editing phase, a shorter or longer period of hesitation which may or may not contain an editing term (ET), 3. the repair proper (R) (Levelt 1983:44).[32]

This chapter is subdivided as follows: In section 2.1.1 the frequency distribution of the various repair types is presented, in section 2.1.2 the different repair types are analyzed qualitatively, and in section 2.1.3 the repairs produced by the aphasic are analyzed with regard to their wellformedness.

2.1.1 The frequency distribution of the repair types

Before presenting the distribution of the different repair types I would like to say something about the relationship between repair and "smooth", i.e. untroubled talk of the aphasic. During the interview, which lasted for twenty-three minutes, the aphasic produced 261 self-repairs in 72 turns. Of the 147 turns which contained no repairs, 98 consisted of minimal responses only.[33] On an average, the patient produced more than three repairs per turn. 60% of all overt repairs were part of a repair sequence, i.e. a repair that consisted of at least two attempts at uttering the targeted item. Here we find a first and striking contrast between normal and aphasic repair behaviour. Whereas non-aphasic speakers self-repair successfully und quickly in most cases (Schegloff/Jefferson/ Sacks 1977:364), the aphasic takes great pains with self-correcting. This is highlighted by the fact that the corresponding rate of repairs consisting of at least two attempts by second language learners, whose situation resembles the aphasic's in some respects, amounts to 22,7% (Dietrich 1982:129).

As a result, one can question the validity of the hypothesis that Wernicke's aphasics suffer from anosognosia. Second, the differentiation between initiating and making the repair, which was introduced in Conversation Analysis, seems to be very useful in assessing aphasic repair, because the aphasic recognizes the reparandum quite easily, but has great difficulties in executing the repair properly. Third, the frequency of repair sequences highlights the fact that the aphasic under study here tries very obstinately to show high verbal competence by correcting her faulty output. This hints at the social dimension of language. Only on successful completion of her repairs can the aphasic - who by definition produces verbal mistakes frequently - prove to be a competent interlocutor and thereby save her face. As a consequence, the importance of adaptation processes that influence the (surface) structure of verbal repairs becomes apparent.

The aphasic repair types are compared initially to Levelt's frequency distribution and then to the distribution found by Blackmer/Mitton (1991). Blackmer/Mitton analyzed repairs from callers in a Canadian phone-in programme. Consequently, these data were produced in an

interactional context. The speakers were put under real-time constraints and – in addition – they tried to repair in a face-saving manner, due to being live on the air.

Interestingly, the frequency distribution of aphasic repair types differs from non-aphasic repairs both in monologic and dialogic contexts.

Table 1: Distribution of repair types

	Levelt	Wernicke's aphasic	Blackmer/ Mitton
overt repairs	73,0%	37,3%	16,3%
conceptually based repairs	31,0%	21,5%	13,3%
D-repairs	1,0%	17,3%	2,6%
A-repairs	30,0%	4,2%	10,7%
production-based repairs	42,0%	15,8%	3,0%
(= E-repairs)			
a) lexical errors (EL)	38,0%	3,8%	
b) syntactic errors (ES)	2,0%	2,7%	
c) phonetic errors (EF)	1,0%	9,2%	
covert repairs	25,0%	43,5%	72,9%
C-repairs	25,0%	42,7%[34]	72,9%
a) repetition of lexical elements	7%	4,2%	34,4%
b) editing term	17%	14,6%	38,5%
c) repetition with editing term		2,3%	
d) lengthening of sounds		17,3%	
e) suprasegmentally altered repetition		4,6%	
R-repairs	2,5%	19,2%	10,7%

There exists a striking difference between aphasic and non-aphasic repairs in the percentual distribution of **covert** and **overt** repairs. Levelt defines covert repair as delays in speaking in the form of either an interruption of the flow of speech plus a signalling of trouble by means of editing terms (e.g. uh) or repetition of one or more lexical items.

(1) interruption plus editing term (l.41-42)[35]

```
P:    wei:l (--) das das SCHLIMMste ist; (1.0)
      und (--) ähm (1.0) .h sie SACHT,

P:    becau:se (--) this is the WORST; (1.0)
      and (--) uhm (1.0) .h she SAYS,
```

(2) repetition of lexical items (l.11)

```
P:    so .h fing fing das AN.
P:    that's the way it began began.
```

To Levelt, both forms of covert repair show that the speaker has difficulties in continuing speaking, but since there is no substitution of elements of the utterance-in-progress, the hearer does not know where the speaker locates the source of trouble (1983:55).

Of all repairs, the aphasic patient repaired overtly in 37,3% and covertly in 43,5% of the instances. Blackmer/Mitton (1991) counted 16,3% overt and 72,9% covert repairs. In his data Levelt found 73% overt and 25% covert repairs (1983:55). The reversed distribution of covert and overt repairs in Blackmer/Mitton's and Levelt's data clearly shows the significance of the interactional context. Speakers try to repair covertly as often as possible in spontaneous, real-time interactions, especially when it is part of a public radio programme. In this sense the interview at the rehabilitation centre resembles the radio phone-in programme. Both callers and the aphasic try to give a good impression, which means that they try to act as verbally competent interlocutors.

Most likely, the aphasic patient repairs overtly more often than non-aphasics, because she has too little time to repair covertly. Indirect evidence for the hypothesis that the aphasic does not have enough time for repairing covertly can be seen in the great many instances where the aphasic tries to increase the tempus utile or available time by slowing down her speech rate with pauses, long in-breathing and/or lengthening of sounds.

(3) increase in available time (l.18f)

```
P:    .h (---) bis DAhin is (--) <<rall><<f>BERNbach. (0.8)
      BER::N(--)back. (--)
              /BεK/ (--)

P:    .h (---) up to HERE is (--) <<rall><<f>BERNbach. [phonemically
      deviant form of the name of the hospital the aphasic was in
      previously] (o.8)
      BER::N(--)back. (--)
              /BεK/ (--)
```

This hypothesis is supported by Butterworth's (1979) study of the relation between neologisms and the length of pauses directly preceding them. Butterworth proved that neologisms are more likely to occur the longer the preceding pause lasts. Butterworth concluded that aphasics are well aware of the fact that they do not have an unlimited amount of time at their disposal to plan their utterances. Therefore, they continue speaking after a pause of more than half a second, even if they have not found the word they were searching for, in order to signal to their interlocutor that they are still in the process of speaking. I want to argue that, similarly, the aphasic prefers to repair observably when it is impossible to camouflage the repair.

Levelt maintains that the speaker monitors his speech for different phenomena:

1) Do I want to say this now? If not, the speaker initiates a **different-repair** (D-repair). The speaker realizes that an idea other than the current one has to be expressed first and interrupts his speech to start anew. The current message is replaced by a different one (Levelt 1983:51).

(4) different-repair (l.52f)

```
P:    <<acc>und ich hab AUCH (0.6)
      das ist AUch (1.0) <<dim><<rall>SCHULarbeiter, (--)

P:    <<acc>and I had in adDItion (0.6)
      this is in addItion (1.0) <<dim><<rall>HOMEwolk, (--)
```

Both Levelt (1983) and Blackmer/Mitton (1991) counted only small numbers of D-repairs (Levelt: 1%, Blackmer/Mitton: 2,6%). Interestingly, the percentage of D-repairs is very similar in both studies, whereas there is a great variety in the distribution of all other repair types. One can conclude that the context is not important for this type of repair. Levelt accounts for the small number of D-repairs in his corpus by stating that the various monitoring foci are not equally important. The speaker spends most of his energy on generating the message (Levelt 1983:47, 1989:463). Therefore, it is plausible to assume that only small faults are produced, and that faulty items are recognized very early so that overt repairs occur quite seldomly. In contrast, the Wernicke's aphasic produced 45 D-repairs (17,3%). Since D-repairs are characterized by a change of the syntactic pattern, the aphasic produced many syntactic break-offs. This is exactly the syntactic pattern labelled **paragrammatism** by classical aphasiology. These researchers rightly observed the much higher number of break-offs in Wernicke's aphasics compared to the syntactic patterns produced by non-aphasic speakers. In contrast to this, I want to argue that the break-offs are a useful way out of the aphasia-related difficulties in repairing, i.e. a positive symptom. In the following, I will present four arguments in favour of the hypothesis presented here that syntactic break-offs can be interpreted as an **adaptation symptom**.

First, the D-repair is the morpho-syntactically simplest way of repairing. The aphasic under study here has great difficulties with morphological aspects of her utterances. In addition, the close structural relation between original utterance and repair requires in most cases the morpho-syntactic adjustment of the reparans. The D-repair reduces the possibility of additional (morpho-syntactic) faults and minimizes processing costs, because there is no need to keep information about the OU in the buffer. Secondly, by making a D-repair the aphasic prevents her interlocutor from taking the turn or making an other-repair. Both activities require a high amount of predictability as to what the current speaker will say next, either syntactically or semantically/pragmatically.[36] Thirdly, a D-repair makes it possible for the aphasic to camouflage her word-finding difficulties, since she does not have to search for a word overtly. By starting a new syntactic construction, the aphasic maintains fluency in her verbal output and avoids showing verbal deficiency. Thereby, she minimizes the danger of being regarded as an incompetent interlocutor, which would harm her social self. Furthermore, one can argue in favour of D-repairs being an adaptation symptom by applying Goffman's theory of stigma-management to aphasic communication. According to Goffman, a person who is stigmatized has to reduce the tension which is engendered by the stigma when interacting with a person that is not stigmatized. Goffman coined a term for one way of dealing with this tension: **covering**. In the process of covering, the stigmatized person prevents the stigma from intruding into the interaction in an embarrassing manner (Goffman 1963:102). Because the process of finding the adequate expression in most cases is exactly this: lengthy, frequent and excruciatingly embarrassing. D-repairs are a means to avoid this and so prevent the aphasia from becoming the focus of the ongoing interaction.

2) Do I want to say it this way? If not, the speaker initiates an **appropriateness-repair** (A-repair). While speaking, the speaker may become aware that the way he expresses the intended information needs qualification in view of the context of expression (Levelt 1983:51f).

(5) AA-repair: speaker tries to reduce ambiguity of expression (l.178)

```
P:      =wir HAM ja mal (.) dAs (--) dIEses, (1.4)

P:      =we had sometime (.) thE (--) thIs, (1.4)
```

(6) AL-repair: speaker tries to find the appropriate level of expression (l.112f)

```
P:      da sind wohl (--) der (--) .h (--) die nE:v: (--) ner:v: (.) ge=äh
        (0.9) bestÖrt oder überhaupt <<rall>geTÖ:tet. (1.9)

P:      there are presumably (--) the (--) .h (--) the nE:v: (--) ner:v:
        (.) da=uh (0.9) lamaged or in general <<rall>DEA:dened. (1.9)
```

A third form of appropriateness-repair is called AC-repair: here the speaker tries to establish coherence with the previous text, especially previously used terminology. There is no example of this type in my data.

The Wernicke's aphasic produced only eleven A-repairs (4,2%), which is a small number when compared to Levelt (30%) and Blackmer/Mitton (10,7%). This results from a combination of impaired and adaptive aspects in the aphasic's speech. A-repairs deal with the coherence or distinctiveness (precision) of expressions. Since all aphasics suffer from impairments in this part of their language-processing system, this type of repair is the most difficult to make for aphasics in general, even for those who are regarded as only mildly impaired. In addition, the non-aphasic interlocutor can help the aphasic quite easily in establishing coherence or clarifying utterances. Therefore, one adaptive strategy might be to rely on the cooperation of the interlocutor with regard to this aspect of understanding. It seems plausible to assume that the aphasic often neglects this monitoring focus considering the overload on all processing components.

3) Am I making an error? If yes, the speaker initiates an **error-repair** (E-repair).

(7) EL-repair: lexical error repair (l.100)

```
P:    im letztigen (0.6) <<p>(lenzt)> (--) <<rall>am (--) DONnerstag?

P:    in the latst (0.6) <<p>(lanst)> (--) <<rall>on (--) THURSday?
```

(8) ES-repair: syntactic error repair (l.63f)

```
P:    .h (--) und (--) frau:: (--) <<rall>SCHUSter,
      .h (--) äh (.) da' (--) war damals (--) in (--) in a' (--) in (--)
      ba (--) EILbek,
      .h äh ((spricht staccato)) hat (.) meine (.) logo'
      <<rall>((spricht staccato)) WAR (.) meine (.) logo (--) Pädin.

P:    .h (--) and (--) Ms.:: (--) <<rall>SCHUSter,
      .h (--) uh (.) the' (--) was then (--) in (--) in a' (--) in
      (--) ba (--) EILbek ((name of the hospital)),
      .h uh ((speaks in staccato)) had (.) my (.) speech and'
      <<rall>((speaks in staccato)) WAS (.) my (.) speech and (--)
      language therapist.
```

(9) EF-repair: phonetic error repair (l.30f)

```
P:    .h und das (.) äh war nur (.) von der Ärau (--)
<<rall>E:rokerapie;
      (--) [erau] (--) [kerapie];
T:         [ja  ] (--) [ja      ]

P:    .h and this (.) uh was only (.) of the ecci (--)
<<rall>occipa:tional
      kerapy>; (--) [occi] (--) [pational kerapy];
T:                  [yes ] (--) [yes              ]
```

The Wernicke's aphasic produced 41 E-repairs (15,8%). When compared to Blackmer/Mitton's data (3%), this means that she makes five times more E-repairs than non-aphasics in a similar context. One can explain this with the higher prevalence of errors in the aphasic's speech.[37]

The majority of E-repairs consists of EF-repairs (9,2% of all repairs). This corresponds to the phonemic difficulties that prevail in the aphasic's output.[38] Another interesting result is the existence of ES-repairs in my data. Again, this contradicts the opinion that paragrammatism is a syntactic deficit. If the aphasic suffered from an impairment of processing correct syntactic structures, how could she be capable of detecting and correcting syntactic errors in her output?

4) Finally, there is a set of repairs which are so completely confused that they defy any systematic categorization other than '**rest category**' (R-repair) (Levelt 1983:55).

(10) R-repair (l.10)

```
P:    {blättert} so: (1.0) hab ICH (--) (fät fä fä) {stöhnt} ich habe
      <<p>(immer)> so .h fing fing das AN. (zeigt erste Seite der
      Schreibmappe)³⁹
```

```
P:    {turns over the leaves of the exercise book} in this wa:y (1.0) I
      had (--) (fät fä fä) {sighs} I have <<p>(always)> in this way .h it
      all beGAN. {shows first page of exercise book}
```

The aphasic produced 50 R-repairs (19,2%). In comparison to Levelt's (2,5%) and Blackmer/Mitton's data (10,7%), this is a high percentage. This prevalence could be accounted for by reference to the difficulties in assessing spontaneous speech in general. This holds true for both my and Blackmer/Mitton's data. In addition, the aphasic sometimes produces paraphasias, which make it difficult to decide which item the aphasic tried to repair.

To sum up the quantitative analysis of repair types, one can find all repair types that Levelt described with regard to non-aphasic speech in this aphasic's speech as well. This result shows quite clearly that Wernicke's aphasics do monitor their verbal output and repair faulty parts of it. An explanation for the hypothesis of anosognosia in Wernicke's aphasia could be the quantitative differences of repair types in Wernicke's aphasics' and non-aphasics' speech. The aphasic under study here produced only a small number of A-repairs when compared to non-aphasics. This repair type is easily recognizable as a repair. The lesson from this is that aphasiologists tend to ignore or overlook conscious repairs of aphasics, because there are fewer repairs of the type which are considered ‚proper‘ repairs. These two factors combined might lead to the impression that Wernicke's aphasics repair only seldomly or not at all.

I have accounted for the different frequency of repair types by stating that the higher frequency of D-repairs and E-repairs are positive, i.e. adaptive symptoms. Heeschen/Kolk subdivide the category adaptation symptom into **preventive adaptation** and **corrective adaptation**. The frequency of D-repairs in the data is a preventive adaptation because the adaptation prevents the aphasic from revealing word-finding difficulties resulting in loss of face. In contrast the frequency of E-repairs is a corrective adaptation because the aphasic corrects the massively occurring phonemic paraphasias.

2.1.2 Qualitative differences between aphasic and non-aphasic repair

The structure of repairs the aphasic produces differs in various aspects from those produced by non-aphasics. As will be shown in this chapter in detail, these deviations mainly result in a higher amount of unclarity on the listener's side. Nevertheless the repairs show an orientation towards the patterns Levelt described for non-aphasic speakers. This means the repair knowledge is still available to the aphasic implying an adaptation of repair behaviour to these fundamental systematic requirements.

In the following, I will deal solely with differences between aphasic and non-aphasic repair patterns that are relevant for my leading question: is paragrammatism really a syntactic deficit?

2.1.2.1 D-repair

In this paragraph, a description is given of a special form of D-repair that the aphasic produced twice during the interview.

D-repairs are mostly characterized by a change in the proposition plus an intonational break-off. However, the data in this study show up two cases where a D-repair is not accompanied by an intonational break-off.

(11) (l.11)[40]

```
P:    {blättert} so: (1.0) hab ICH (--) (fät fä fä) {stöhnt} ich habe
      <<p>(immer)> so .h fing fing das AN. (zeigt erste Seite der
      Schreibmappe)

P:    {turns over the leaves of the exercise book} in this wa:y (1.0) I
      had (--) (fät fä fä) { moans} I have <<p>(always)> in this way .h
      it all beGAN. {shows first page of exercise book}
```

(12) (l.84)

```
P:    .h (--) äh was ich (--) <<rall>verKEHRT is (--) immer,

P:    .h (--) uh what I make WRONG is always [German word order
      maintained]
```

Both repairs have the syntactic form of an apokoinu (Scheutz 1992:248ff). Schegloff terms this repair type pivot construction (1979:275f). A pivot element (l.11: so, l.84: verKEHRT) is part of two different syntactic constructions simultaneously. The "left" construction is incomplete, which the hearer realizes only quite late because of the intonational integration of the "right" construction. In the two apokoinu-constructions, the pauses are placed differently: in example (11) there is a filled pause after the pivot element, in example (12) there is a silent pause before it.[41] Classical aphasiology terms these syntactic patterns sentence blends, which are considered to be part of the symptom of paragrammatism. According to Heeschen, this repair type gives the speaker two advantages over a break-off: first, the break between old and new constructions is camouflaged, so that there is no danger of turn-taking; second, the speaker gains fluency (Heeschen 1993:20). Heeschen is right in pointing out that the pivot construction has to be re-evaluated since it is very common in the speech of non-aphasics (1993:20).[42] Franck adds that non-aphasic speakers regard this construction as syntactically well-formed since they do not attempt to repair it (1985:235).

2.1.2.2 E-repair

Quite often, the aphasic E-repairs found in this study differ formally from those described by Levelt.

ES-repairs are of special importance since they give clues to the syntactic aspects the Wernicke's aphasic monitors her output for. This in turn makes it possible to draw conclusions with regard to intact or impaired syntactic abilities. I have suggested that the syntactic break-offs the aphasic produces are quite frequently a compensatory strategy, i.e. a positive symptom. By saying this I do not want to exclude the possibility of syntactic deficits. However the question must be posed from a different angle. In the following, a detailed analysis of different ES-repairs is given.

(13) repair of syntactic construction (l.1ff)[43]

```
P:    <<rall>ich (.) war (.) in> (2.0) in: (--) BEI (--) BA:RM (--) bek,
      (--) <<rall>hatte einen (--) SCHLAGanfall, (--)
      <<rall>.h u:nd (--) hab=ich (0.8) (ko)> (--)
      und habe auch (.) SCHON (--) .h (--) ei:ne logoPÄdin (--) bek
      (0.8) bek (--) geHABT. (--)

P:    <<rall>I (.) was (.) in> (2.0) in: (--) BEI (--) BA:RM (--) bek,
      (--) <<rall>had a (--) STROKE, (--)
      <<rall>.h a:nd (--) had=I (0.8) (ko)> (--)
      and have also (.) already (--) .h (--) a: speech and LANguage
      therapist (--) rec (0.8) rec (--) HAD. (--) [German word order
      maintained]
```

The aphasic starts her narration of what has happened since she became aphasic by listing certain events. In l.3 she breaks open this construction by repeating the subject after the finite verb. After a pause and a unidentifiable item she resumes the aborted construction

by uttering and plus finite verb plus object. Therefore, one can state that the aphasic is able to plan complex syntactic constructions and repair mistakes in the course of their realization.

(14) repair of the auxiliary (l.60ff)

```
P:      .h (--) und (--) frau:: (--) <<rall>SCHUSter>,
        .h (--) äh (.) da' (--) war damals (--) in (--) in a' (--) in
        (--) ba (--) EILbek,
        .h äh ((spricht staccato))hat (.) meine (.) logo'
        <<rall>((spricht staccato))WAR (.) meine (.) logo (--) PÄdin.⁴⁴
```

```
P:      .h (--) and (--) Ms.:: (--) <<rall>SCHUSter>,
        .h (--) uh (.) the' (--) was then (--) in (--) in a' (--) in
        (--) ba (--) EILbek,
        .h uh ((speaks in staccato))had (.) my (.) speech and'
        <<rall>((speaks in staccato))WAS (.) my (.) speech and (--)
        language therapist>.
```

This repair is striking because of its prosodic pattern. The repair in l.64 copies the staccato in the part of the original utterance in l.63 containing the reparandum.⁴⁵ The repair is not well-formed because the auxiliary is uttered both in l.61 and l.64. This results in an anacoluthon.

(15) morphosyntactic adaptation to a changed syntactic construction (l.360f)

```
P:      dann BRAUCH ich den' (.)
        mit den (0.8) <<rall>mit dem ARZT nich (.) zu (--) spra:ch
        (--) <<acc>SPREChen; (--) nä?
```

```
P:      so I don't HAVE to ask the' (.)
        spo:ke (--) <<acc>SPEAK> with the (0.8) <<rall>to the DOCtor; (-
        -) do I?⁴⁶
```

(16) morphosyntactic adaptation to a changed syntactic construction (l.503f)

```
P:      ähm (0.8) .h (---) MIT der (--) hm (--) mit (--) m:it (.) dem (--)
        kleinen (1.8) <<rall>TOHL (--) <<p>band,
```

```
P:      uhm (0.8) .h (---) WITH the [feminine definite article] (--) hm (--
        ) with (--) w:ith (.) the [masculine definite article] (--) small
        (1.8) <<rall>TALE (--) <<p>recorder,
```

I assume that the aphasic changes the plan of her utterance in the middle of its realization due to word-finding difficulty – in example (15) the infinitive fragen (to ask), in example (16) the technical term dictaphon (dictating machine).⁴⁷ Prospective corrections like this are typical of inflected languages like German.⁴⁸ They show how difficulties in aphasic word-finding strongly influence the morphosyntactic shape of the whole utterance and that to cope with this difficulty the aphasic has to repair items that are due several syllables before the source of difficulty itself. This is hard work for a language-processing system which is constantly overloaded. In repairing, the aphasic has to do two things simultaneously: she has to search for an alternative candidate and she has to monitor the utterance-in-progress for necessary alterations of the morphosyntactic frame.

2.1.2.3 C-repair

Repetitions of lexical elements that are phonetically or prosodically altered are more frequent than identical repetitions of lexical elements (4,6% to 4,2% respectively).[49]

(17) repetition of lexical element with reduced loudness (l.558f)

```
P:    =die KANnen (--) verker (--) äh=ver (--) verSTIHL (--) <<p>ver::>
      (--) stihl (--) SCHIEden (---) sein;
```

```
P:    =they CON (--) wro (--) uh=wro (--) diffi (--) <<p>dif::>
      (--) fi (--) FErent (---) be; [German word order maintained; the
      aphasic talks about keyboards of typewriters]
```

According to Laver, reduced loudness indicates that the inner speech was monitored and that this monitoring resulted in replanning because of a discrepancy between the targeted item and the phonetic string (1980:23f). Due to a lack of planning time and/or overload of the language-processing system, a covert repair just in time was impossible. So, the aphasic repeats the faulty item but signals by means of reduced loudness that she is aware of the fault. There is a second systematic suprasegmental alteration in this study that goes with the repetition of lexical elements: lengthening of sounds (examples (3), (13), (16)).

The aphasic not only repeats lexical items, but also paraphasic ones.

(18) repetition of a paraphasic item (l.10)

```
P:    {blättert} so: (1.0) hab ICH (--) (fät fä fä) {stöhnt} ich habe
      <<p>(immer)> so .h fing fing das AN. (zeigt erste Seite der
      Schreibmappe)
```

```
P:    {turns over the leaves of the exercise book} in this wa:y (1.0) I
      had (--) (fät fä fä) { moans} I have <<p>(always)> in this way .h
      it all beGAN. {shows first page of exercise book}
```

The Wernicke's aphasic has great difficulties in repeating lexical items because of phonemic impairment. Often she cannot repeat unaltered the phonetic string and therefore produces a deviant form (fät fä). To my mind, this is the reason why this repair is rarely seen in this study compared to non-aphasic speech (Wernicke's aphasic: 4,2%, Levelt: 7,2%, Blackmer/Mitton: 34,4%). As a consequence, the aphasic lacks a very effective possibility to repair covertly. Does the aphasic have alternatives to gain additional processing time in order to repair her inner speech? There are four ways to increase the tempus utile in the data: first, the aphasic makes use of editing terms (14,6% of all repairs). This strategy is not unproblematic because a number of editing terms can be used in special contexts only. The unmarked editing term äh is called a prepositioned repair initiator (Schegloff 1979:23). Schegloff states that äh signals an upcoming repair. This in turn at least partly counteracts the intention to not only fill, but primarily camouflage the verbal gap. The three other

strategies used to gain additional processing time are the very frequent instances of breathing in, the reduction of the speech rate and the lengthening of segments.

2.1.3 The well-formedness of aphasic repairs

Levelt formulated a well-formedness rule for repairs. In doing so, he underlined the structural similarities between repairs on the one hand and other conversational devices used to establish coherence and fluency, e.g. question-answer sequences, on the other hand. I want to emphasize another aspect that is related to the listener's task of sorting out whether a repair is under way and, if so, where the reparandum and reparans are located.[50] This task which the listener has to perform is called the continuation problem. Therefore, it makes sense to assume that a repair which destroys the syntactic well-formedness of an utterance is organized in such a way that it is in itself well-formed. This aspect of repair is relevant for the question whether the syntactic aspect of paragrammatism reflects a syntactic deficit.

The well-formedness rule for repairs is:

> A repair $<\alpha\gamma>$ is well-formed if and only if there is a string β such that the string $<\alpha\beta$ and* $\gamma>$ is well-formed, where β is a completion of the constituent directly dominating the last element of α. (*and to be deleted if γ's first element is itself a sentence connective.) (α = OU, γ = repair proper) The rule ignores all editing expressions used. (Levelt 1983:78)

(19) corresponding well-formed coordinations of the repair in example (7) (EL-repair)

α = im letzigen[51]

β = monat

and

γ = am donnerstag

α = lenzt

and

γ = am donnerstag

(20) corresponding well-formed coordination of the repair in example (5) (AA-repair)

α = wir ham ja mal das

and

γ = dieses

There are only three instances in the data where the repairing leads to ill-formed constructions.

(21) ill-formed repair (l.18ff)

```
P:     .h (---) bis DAhin is (--) <<rall><<f>BERNbach. (0.8)
       BER::N(--)back. (--)
       BECK (--)
       ['bɛk]
T:     (h)barm(h)BEK, (--)
       [(h)ba:m(h)'be:k(h)]
P:     barmBECK.
       [ba:m'bɛk]


P:     .h (---) up to HERE is (--) <<rall><<f>BERNbach. ((phonemically
       deviant form of the name of the hospital where the aphasic
       stayedpreviously)) (o.8)
       BER::N(--)back. (--)
       BECK (--)
       ['bɛk]
T:     (h)barm(h)BEK, (--)
       [(h)ba:m(h)'be:k(h)]
P:     barmBECK.
       [ba:m'bɛk]
```

(22) corresponding coordination

α = bis dahin is bernback

and

γ = bɛk

(23) ill-formed repair (l.558f)

```
P:     =die KANnen (--) verker (--) äh=ver (--) verSTIHL (--)
<<p>ver::>
       (--) stihl (--) SCHIEden (---) sein;


P:     =they CON (--) wro (--) uh=wro (--) diffi (--) <<p>dif::>
       (--) fi (--) FErent (---) be; [German word order maintained; the
       aphasic talks about keyboards of typewriters]
```

(24) corresponding coordination

α = die kannen verstihl

and

γ = schieden sein

In example (21), the aphasic repairs by instant replacement (Levelt 1983:85) a phonemic error in the second syllable of BER::N (--) back. Instead of repeating the whole word, she only repeats the syllable containing the erroneous element. The application of the well-formedness rule proves the ill-formedness of the construction (example (22)). Levelt did not explicitly mention the intactness of words as part of his well-formedness rule, but it is a logical consequence that if all constituents have to be complete, all words must also be complete. Since the well-formedness rule primarily serves the purpose of solving the listener's continuation problem, an ill-formed repair renders it more difficult than a well-formed

one.[52] In example (23), the violation of the well-formedness rule resembles the one in example (21). Both violations are positioned at the end of a multiple repair sequence. It seems plausible to assume that it results from an overload of the language-processing system. A **trade off** takes place between making the repair as such, but in an ill-formed manner, and continuing the repair sequence because the aphasic cannot do both tasks at the same time.

(25) ill-formed repair (l.265ff)

```
      (1.7)
T:    [also das wäre]
P:    [ich verSUCH  ] huch es,
T:    =ja
P:    =ich versUch DAS, (1.0)
```

(26) corresponding coordination

α = ich versuch

and

γ = huch es

Here, the aphasic does not repair a personal speech error, but an "interactive" trouble-source, i.e. the mishearing that was caused by overlapping speech.[53] In repairing, the aphasic makes two faults: first, she disregards the left boundary of the word /versuch/ which is a violation of Levelt's well-formedness rule, and second, she does not repeat everything that was spoken simultaneously, which is interactionally problematic since the danger of misunderstanding still exists. Interestingly, the aphasic repairs both faults in l.269, although in l.268 the therapist has already signalled understanding.

With regard to the leading question, two aspects are remarkable: first, the aphasic repairs two out of three violations of the well-formedness rule. In doing so, she demonstrates linguistic, i.e. syntactic knowledge. The difficulty seems not to be knowing how to repair, but performing it under real-time constraints. These are two completely distinct cognitive skills which are often - somewhat recklessly - equated with each other. This is caused by the neglect of the **real-time character** of spoken language.[54] The aphasic chooses first to repair the error and then to repair the violation of the well-formedness rule as her way out of the dilemma. Second, Levelt did not find violations of the integrity of words in his set of data. Therefore, this could be a kind of behaviour found only in aphasia as a strategy to simplify the task at hand. Third, it is important to notice that the aphasic monitors her verbal output for interactive aspects as shown in example (25).

Apart from these rare violations of the well-formedness rule, there are a number of cases in doubt. In these instances, it is impossible to decide where the repair begins, thus making a well-formedness judgement impossible.

(27) case of doubt with regard to well-formedness (l.42ff)

```
P:      und (--) ähm (1.0) .h sie SACHT,
➔       äh (1.5) <<p>lü'> (--) äh (.) ich (--) hm (--) <<acc>wie soll
        ich dAs ihnen SAG'■; (--)

P:      and (--) uhm (1.0) .h she SAYS,
➔       uh (1.5) <<p>lü'> (--) uh (.) I (--) uhm (--) <<acc> how can
        I EXplain thAt to you; (--)
```

(28) case of doubt with regard to well-formedness (l.479f)

```
P:      und (--) .h (1.6) (goll) (0.8) (gonz) (0.8) ELF (1.0) nee (--)
        ELF oder (--) <<rall>ZW:ÖLF <<p>jaHA:> (--) JAHre

P:      and (--) .h (1.6) (goll) (0.8) (gonz) (0.8) eLEven (1.0) no (--)
        eLEven or (--) <<rall>TW:ELVE <<p>yEE:r> (--) YEARS
```

(29) case of doubt with regard to well-formedness (l.611f)

```
P:      man KA' (--) me' (--)
        <<f>man kAnn (--) ALles (--) äh e' e' erle:rnen.

P:      one CA' (--) om' (--)
        <<f>one cAn (--) uh le' le' lea:rn Everything.
```

In all these examples, the listener cannot decide where the repair begins because of a cut-off in the middle of the word (example (29)) or phonemic paraphasias (example (28)) or both (example (27)).[55] The crucial point seems to be uncertainty on the listener's side, which is characteristic of the way the aphasic makes the repair.

2.2 Repair and Syntax II: Schegloff

Schegloff's focus of interest is diametrically opposed to Levelt's. Whereas the latter is interested in repairs in order to understand how speakers monitor their own speech, the former concentrates exclusively on the interactional dimension of repairs. In the remainder of this section, I will outline Schegloff's conception of repair and syntax-for-conversation. In the following sections, the aphasic repairs are analyzed with regard to Schegloff's conception.[56]

According to Schegloff, sentences in spoken interaction are always **sentences-in-turns**. This results from the assumption – central to Conversation Analysis -, that talk is substantially determined by the principle of turn-taking. This principle dominates the internal structure of turns-at-talk, which all are planned with regard to the possibility of a next speaker taking the turn (Sacks/Schegloff/Jefferson 1974). Schegloff maintains that the syntactic structure of sentences-in-turns is determined by this principle – as are the repairs in these sentences-in-turns (1979:262). As every sentence-in-turn can be disturbed at every point, repair is relevant for every sentence (Schegloff 1979:276f).

Schegloff speaks of the "left" and "right boundary" of repair in order to define his object of investigation (1979:277). The "left" boundary is marked by the incursion of repair into the sentence-in-production. The "right" boundary is marked by syntacticity and "smooth" (i.e., without hitch) production of the turn-unit to its completion (Schegloff 1979:277).[57]

The structural pressures of discourse organization, e.g. turn-taking, imply a certain pattern of repair distribution in the turns-at-talk: in most cases, the repair takes place in the turn in which the trouble source is located. What is more, it mostly takes place in the same sentence. Schegloff explains this distribution with the organization of turn-taking in spoken interaction. When the next turn is used to initiate a repair on something in the current turn the sequential implicativeness of the current turn is displaced from its primary home and is lost at least for that turn. The best way to avoid this, is the self-initiation of repair by the current speaker. Since turns can be complete whenever a turn-constructional unit is completed and sentences are turn-constructional units, their possible completion can constitute possible completion of the turn. This means that transition to a next turn becomes relevant. Therefore, in order to be methodically sound, a repair in current turn has to be initiated before the next possible completion of the sentence in which the trouble source occurs (Schegloff 1979:267ff).

This aspect will be discussed with regard to the aphasic's repairs in section 2.2.1. In section 2.2.2, the question of whether the syntactic structure of sentences-in-turns is changed by repair is addressed. This issue is important with regard to the assessment of preserved or impaired syntactic abilities of the aphasic. In section 2.2.3, different forms of repair initiation are analyzed with regard to their relevance for aphasic repair. Since the methodological aim of this study is to combine psycholinguistic and conversation analytic research in aphasiology, repeated reference to the results of the psycholinguistic analysis in Chapter 2.1 will be made.

2.2.1 The distribution of repairs within the turn

The best "left" boundary is no boundary at all. If the listener did not realize that the speaker is repairing, there is no threat of revealing verbal incompetence and in addition there is no danger of turn-taking (Hoffmann 1991:103). There are four repairs in the data where the left boundary of the repair cannot be exactly located or only ex post factum. These are the two repairs on the fly and the two D-repairs which contain a pivot element (examples (11) and (12)).

These fundamental remarks hold true also for the analysis of the sequential distribution of **same turn-repairs** of the aphasic, which will be analyzed in the rest of this section. As Schegloff has described in the case of language-unimpaired speakers, the majority of turn-internal repairs of the aphasic (52,4% of all overt and R-repairs) were produced within the same sentence as the trouble-source. This means that the aphasic prefers to repair within

the sentence boundaries to avoid turn-taking at that point of the interaction. 34,7% of all repairs are sentence-external but same turn-repairs, i.e., they are produced not within the syntactic gestalt that contains the trouble-source but later on in the turn. I have already discussed the advantages of these fresh starts in chapter 2.1.1. In the present context, it is important to stress the fact that this type of repair has no interactive disadvantages. The production of a syntactic gestalt is interrupted too early for an interlocutor to take the turn.[58] At the begin of a new gestalt the aphasic once more has the opportunity to produce a complete turn-constructional unit. With regard to the leading question of this study, i.e. the relationship between repair and syntax in Wernicke's aphasia, one could speak of a non-existing relationship when sentence-internal repairs are concerned. By putting it like this I want to emphasize that the aphasic quite often repairs in a way that is independent of the syntax of the turn-so-far. I interpret this verbal behaviour as a strategic option[59] to simplify the task of repairing.

In the data, there are only four examples of repairs in the transition space, two after and two before syntactic completion. The interactive "danger" of a repair in this position is this: if the reparandum is an element that completes the syntactic gestalt-in-production, the interlocutor could take the turn and prevent the aphasic from making the repair herself. Schegloff does not differentiate between completed and nearly completed turn-constructional units. In the following examples, this differentiation is made.

(30) repair in the transition space after syntactic completion of the TCU (l.18ff)

```
P:      .h (---) bis DAhin is (--) <<rall><<f>BERNbach. (0.8)
        BER::N(--)back. (--)
        BECK (--)
        ['bɛk]
T:      (h)barm(h)BEK, (--)
        [(h)ba:m(h)'be:k(h)]
P:      barmBECK.
        [ba:m'bɛk]

P:      .h (---) up to HERE is (--) <<rall><<f>BERNbach. ((phonemically
        deviant form of the name of the hospital where the aphasic
        stayedpreviously)) (o.8)
        BER::N(--)back. (--)
        BECK (--)
        ['bɛk]
T:      (h)barm(h)BEK, (--)
        [(h)ba:m(h)'be:k(h)]
P:      barmBECK.
        [ba:m'bɛk]
```

The paraphasic item BERNbach completes the syntactic gestalt. In addition, the aphasic produces an intonation contour that falls to low, i.e. signals turn completion. A (long) silence follows.[60] The length of the pause shows that the aphasic did not intend to maintain the turn. By continuing to speak, the aphasic turns the silence into a turn-internal pause

(Uhmann 1989:157). She repairs the phonemic error by way of instant replacement, copying the pitch fall to low that accompanied the reparandum (l.19). Again, this item completes the syntactic gestalt. Since the repair itself is again a phonemic paraphasia, both interlocutors reiterate their behaviour during the first attempt to repair, except that this time the silence is slightly shorter. The second repair is not well-formed.[61] This time the therapist takes the turn and makes an other-repair (l.21).

(31) repair in the transition space after syntactic completion of the TCU (l.30ff)

```
P:     .h und das (.) äh war nur (.) von der Ärau (--)
<<rall>E:rokerapie;
       (--) [erau] (--) [kerapie];
T:          [ja ] (--) [ja    ]
P:     .h also dAs war alles (--) ziemlich in ORDnung,

P:     .h and this (.) uh was only (.) of the ecci (--)
       <<rall>occipa:tional
       kerapy>; (--) [occi] (--) [pational kerapy];
T:                   [yes ] (--) [yes            ]
P:     .h so thAt was all (--) quite allRIGHT,
```

The aphasic makes an EF-repair. The reparans completes the syntactic gestalt. This example differs from ex. (30) with regard to the overlap of speaking that follows. The aphasic then makes a second EF-repair, while the therapist simultaneously produces two continuers. The relevant fact is the overlap itself. Thereby it becomes obvious that the aphasic cannot be certain to hold the turn as long as she needs to finish the repair.

(32) repair in the transition space before syntactic completion of the TCU (l.26ff)[62]

```
P:     und (.) DIE:ses (--) is Alles (--) von ((blättert)) ei:m (--)
       <<rall>ei:lnbek,
T:     ja:?
P:     =<<p>eilnbek,

P:     and (.) THI:S (--) is All (--) of ((turns over the pages of her
       exercise book)) ei:m (--),
       <<rall>ei:lnbek ((name of the hospital the patient received
       treatment before coming to the rehabilitation centre)),
T:     yeah:?
P:     =<<p>eilnbek,
```

In l.26, the reparandum completes the syntactic gestalt. The aphasic maintains the turn because she interrupts herself in the production of the reparandum. After a silent pause, she makes the repair. Then the therapist takes the turn, but produces only a continuer (l.28). As shown by the repair in l.29 which followed directly, i.e. without a pause, the aphasic had not yet finished planning the repair when the therapist started to speak. If the therapist had produced a full turn, the opportunity for a self-repair would have been lost.

Apart from same-sentence repairs and repairs in the transition space, there are cases in which the syntactic position of the repair is doubtful. They amount to 9,5% of all repairs analyzed (overt and R-repairs). The phenomenon of doubt and uncertainty on the side of an interlocutor who speaks with an aphasic person appears to be typical of aphasic communication.

(33) case of doubt with regard to syntactic position of the repair (l.75ff)

```
P:     sie kann das (--) GUT, (0.6)
       SACHT sie,
       <<acc>also sie beHA'> .h (--) sie behA:l:te ich (1.0)
       <<f>ich HALte etwas; (--)
       <<acc>ich ich> beHALL alltes.
       WAS sie (--)
➔      was i' (--) (ger) .h <<f>nIch wieder (--) (de) (--)
       nIcht verGESsen. (--)


P:     she can do it (--) WELL, (0.6)
       she SAYS,
       <<acc>so she reME'> .h (--) she/you kEE:ps I (1.0)
       <<f>I HOLD something; (--)
       <<acc>I I> reMEM alls.
       WHAT she (--)
➔      was I' (--) (ger) .h <<f>nOt again (--) (de) (--)
       nOt forGET ((infinitive)). (--)
```

In l.81, the aphasic interrupts herself (i') after having produced just one sound of a word. It is not clear whether the sounds that follow are part of the actual utterance or the beginning of a new one. The same holds true for the sounds (de). Although there are a number of silent pauses, the therapist remains silent.

2.2.2 The Effects of Repair on the Syntactic Form of Sentences

Schegloff lists the following changes brought about by repair: expansion of a noun phrase by inserting a descriptor or "modifier", change of the syntactic form by subsuming it under another, "frame" sentence, conversion of what started as a sentence into a subordinate clause, reordering of the elements of projected talk, insertion of a sequence of turns within the boundaries of a sentence (1979:263ff).

This aspect is relevant for the objective of this study in that it stresses the argument that repair causes major syntactic "disorders", i.e. changes. By repairing the speaker aims at the interactive goal of mutual understanding. If necessary, he sacrifices the syntactic integrity of a sentence-in-turn in order to reach understanding. I disagree with traditional aphasiology in emphasizing the continuity of interactive competence in aphasia, whereas subtractive loss-aphasiology stresses the discontinuity of grammatical competence. Since interactive and grammatical competence do not have equal rights in the production of utterances, the former overrules the latter when both are in conflict.

(34) reordering of the elements of projected talk (l.65ff)

```
P:      ich ha:be: (--) früher? (0.6)
➔       .h <<acc>also (--) jetzt (.) IMmer noch; (--)
        ich ha:be .h (--) äh
        ich (--) in der (--) inner (--) BANK (--) GE:A:Rbeitet, (0.7)


P:      I ha:v:e (--) in the past? (0.6)
➔       .h <<acc>I mean (--) I still (.) DO; (--)
        I have .h (--) uh
        I (--) WORKED (--) in a (--) in=a (--) BANK, (0.7)
```

In l.66, the aphasic inserts additional information, contextualizing this insertion by the accelerando. In l.67, she resumes the production of the main clause. This structure is frequently found in unimpaired speakers' discourse. Therefore, cases like this demand from aphasiologists to rethink their approach of assessing (only) isolated syntactic structures.

By stressing the "normal", i.e. non-pathological character of a number of syntactic patterns characteristic of Wernicke's aphasia, I do not intend to deny syntactic impairments in Wernicke's aphasia. As example (34) clearly shows, the aphasic has difficulties producing the main clause correctly. She repeats the subject in l.68 without adding a finite verb. So, the utterance in l.68 is ill-formed. Combining the words in l.67 with those in l.68 excepting the repeated item would result in a well-formed sentence. Apart from grammatical errors, another phenomenon is very striking when looking for the effects of repair on the syntactic form of sentences: almost none of the changes Schegloff mentioned in his paper could be found in the aphasic's repairs. Break-offs did not change the syntactic relationship between the incomplete structure and the one that followed. Most other repairs instantly replaced one item by another of the same syntactic category. In general, one can speak of either "pauperization" or simplification of the complex syntactic patterns found in unimpaired speakers' repairs. This phenomenon can be either regarded an impairment symptom or an adaptation symptom. At this moment, we do not know enough about syntactic impairments in Wernicke's aphasia in spoken language to decide whether the complexity reduction expresses a syntactic processing deficit or an adaptation to a – not necessarily – syntactic impairment.

2.2.3 Repair initiation and repair conversion

In this section the discussion of D-repairs and C-repairs is resumed. In the terms of CA the interactive consequences of both repair types can be accounted for. The conversation analytic approach thus highlights a very important aspect of repair that is neglected in psycholinguistics. Again, I therefore advocate a combination of both paradigms in aphasiology. The analysis of the interactive effects of D-repairs and C-repairs helps to explain why the misconception that Wernicke's aphasics do not or only seldom self-repair prevails in present aphasiology.

The idea that is central to the following analysis is that both the initiation and the making of the repair have a "direction in time". They refer to either what was already said or what has not been said yet. Schegloff terms hesitation phenomena like filled pauses or lengthening of sounds **repair initiators**. Interestingly, in the interactive perspective these elements signal to the interlocutor that a repair is underway, whereas in the psycholinguistic approach these elements indicate that a repair within the language-processing system has been made (Schegloff 1979:272f and 1992:1315).[63] In other words, Schegloff confines phenomena of repair to what Levelt terms overt repairs. This point of view accords with Garfinkel's "Don't look under the skull, there's nothing but brains", but becomes problematic with regard to repair initiators. In non-impaired speech, quite frequently a repair initiator is not followed by a repair. One can conclude that in this respect the conversation analytic approach mirrors the common knowledge of speakers that repair initiators alone are not repairs. This accords with the finding of Cutler that listeners have great difficulties in remembering the production of hesitation phenomena in a speaker's verbal output.

According to Schegloff, repair initiators work both ways. They have either a "backward" or "forward" orientation with regard to the position of the reparandum.

> Generally, but not invariably, the cut-off initiates repair on some already-produced element of the turn; it is POSTPOSITIONED. Uh or a pause, standing in the place of a next-due element, is more likely to initiate repair on a next-due item; that is, it is generally PREPOSITIONED. (Schegloff 1979:273)

Significant for the aphasic repairs analyzed here is the variability of these orientations. Schegloff maintains that the

> variability is exhibited when, for example, an uh initiates repair, indicating a forward-oriented repair – prototypically a "search" of some kind – but the repair segment itself ends by operating on earlier elements of the turn. One basis for this type of variation lies in the capacity for REPAIR CONVERSION, that is, for a repair initiated for one type of trouble (e.g., a word is "missing") to be recast and solved by repairing another (e.g., circumlocution to avoid the need for the "missing" element). (Schegloff 1979:273)

Schegloff describes precisely the mechanism underlying the D-repairs of the aphasic under study here. An example follows:

(35) repair conversions (l.51ff)

```
P:    und (--) <<p>ä'> (0.6) wAs ((blättert)) mir eben: (0.6) SEHR, (1.2)
➜     <<acc>und ich hab AUCH (0.6)
➜     das ist AUch (1.0) <<dim><<rall>SCHULarbeiter, (--)


P:    and (--) <<p>ä'> (0.6) whAt I very: (0.6) MUCH, (1.2)
➜     <<acc>and I had in adDItion (0.6)
➜     this is in addItion (1.0) <<dim><<rall>HOMEwolk, (--)
```

According to Levelt, both utterances in l.52 and l.53 are D-repairs. The words SEHR and AUCH are followed by a silent pause of 1.2 sec. and 0.6 sec. respectively. Since they stand in the position of a next-due element, both pauses are **prepositioned** repair initiators. Then the repair follows. In both cases, the aphasic does not produce the missing word, but substitutes a new proposition for the incomplete utterance. As a result of the analysis, one can state that aphasic repair conversions do not differ from those produced by non-aphasics. Nevertheless classical aphasiology does not regard them as what they are: a special form of repair. I suppose that the neglect results from the unobtrusive character of this strategy. As a rule, the aphasic utters the beginning of the sentence fluently and faultlessly. When the next-due item cannot be produced, she avoids an open search for it. In addition, she converts the repair. Schegloff maintains that the orientation of the repair initiators is not invariant, but one can add that one orientation occurs more often than the other. So, there are three factors which reinforce the prejudice of anosognosia in Wernicke's aphasics: hardly any open search for words plus repair conversion plus no hints at problems in the part of the utterance that was produced before the initiation of the repair. This pattern of repair has two advantages for the aphasic: first, she gains fluency in speaking and, second, she manages the tension that accompanies the searching for a word successfully by simply avoiding it. According to Goffman (1963), the management of the tension that goes with the stigma in an encounter between a stigmatized and a "normal" person plays an important role in guiding the behaviour of the stigmatized person. Since word-finding difficulties are an obtrusive symptom of aphasia which interrupt a verbal interaction obviously, it seems very logical that the aphasic tries to avoid the open search for words whenever possible. Perhaps she is a bit too successful for aphasiologists.

3. A Summary and Some Conclusions

Aphasiologists are people who play jigsaw puzzles without knowing what the picture that they are trying to piece together looks like. Most scientists suppose that the picture is a castle on a hilltop, whereas some assume that it is a lighthouse at Cape Point. Thus far, evidence in favour of either position is both indirect and fragmentary. In the following, the main results of this study are summarized. In addition, some consequences of the results for aphasiology in general are discussed.

a. psycholinguistic results
The quantitative analysis of repair types (chapter 2.1.1) - based on Levelt's model -, has proved the point that the Wernicke's aphasic under study here differs from non-impaired speakers with regard to the distribution of the various repair types. The differences resulted from the preference for those repair types with relatively small processing costs. This holds especially true for the frequent use of D-repairs. According to my notion of trading off D-repairs are likely to occur because they are advantageous in all respects that are relevant

for adaptations: they reduce processing costs and are helpful with regard to interaction and face.

The quantitative analysis of repair types was complemented by a qualitative analysis (chapter 2.1.2). The leading questions were: What are the structural conditions of the different repair types? Does the aphasic have specific difficulties due to her impairment? Does she make use of compensatory strategies? The analysis has shown that the aphasic has only a limited number of ways at her disposal for the organization of repairs. With regard to compensatory strategies, these limitations function like a straight-jacket. This explains why aphasic repairs differ quantitatively from those produced by non-impaired speakers, but not qualitatively. The aphasic produced most of her repairs correctly and in doing so she displays syntactic competence with respect to the grammaticality of repair, not that of sentences. Since all types of repairs – except C-repairs – alter the syntactic form of the sentence-under-construction, assessment of aphasic syntax has to take into consideration the close relationship between syntax and repair. Examples of syntactic impairment in Wernicke's aphasia would be all instances of syntactic ill-formedness **minus** those cases which are adequately explained by reference to repair. I suppose that there will not be much left to be explained.

The third part of the psycholinguistic analysis deals with the well-formedness of repairs (chapter 2.1.3). Repair distorts the well-formedness of sentences, but is itself subject to a rule of well-formedness. The well-formedness of repair has a single function: it helps the listener in recognizing fast and easily what item or part of the utterance-in-progress to replace by another. It follows from the investigation into aphasic repairs that there is no problem of well-formedness at all in the majority of the repairs the aphasic makes. These are D-repairs because in these cases the repair goes with a syntactic break-off and fresh start. This reduces the processing costs at this stage of the planning process considerably with regard to the language-production system as a whole. This fact stresses the importance of **simplification** as a mechanism that drives adaptation. D-repairs are a very effective means to simplify repairing. If one subtracts D-repairs and R-repairs from all overt repairs, only 47,6% of all overt repairs remain where well-formedness is of any concern. Only a small number of these repairs are "ill-formed" with regard to Levelt's model. This means that the aphasic still has repair-specific syntactic competence at her disposal. It does not seem plausible to explain syntactic patterns as paragrammatic, i.e. pathological when simultaneously the aphasic makes use of syntactic abilities that are well preserved.

b. conversation analytic results
Whereas Levelt stresses the close relationship between repair and syntax, Schegloff adds a third aspect that becomes relevant when investigating repair-in-interaction: turn-taking. In general, aphasics need more time to plan their utterances than non-aphasics. They cannot gain sufficient additional processing time by just making a silent or filled pause. This is due

to the fact that speakers cannot not speak for an unlimited amount of time. The non-aphasic interlocutor might take the turn. The strategic choice of aborting the actual syntactic gestalt and beginning a new one is a helpful adaptation since it is not very probable that the interlocutor takes the turn as long as the gestalt is incomplete. With regard to syntax, this adaptation is characterized by incomplete syntactic structures, i.e. break-offs. From a conversation analytic perspective, break-offs are not regarded as a syntactic impairment, but as a useful adaptive strategy to maintain the turn. The interactive advantages of syntactic break-offs become even more apparent when one compares fresh starts to repairs in the transition space. In these cases the aphasic is constantly in danger of losing the turn. From the conversation analytic perspective, the syntactic structures produced b y the aphasic can adequately be accounted for as ways to prevent the non-impaired interlocutor from taking the turn.

This line of argument is also valid for the cases of doubt which occur frequently in the speech of the aphasic. The quantitative analysis of repair types has shown that a fairly high percentage of repairs (19,2%) is so completely confused that the listener cannot recognize either reparans or reparandum. From an interactive perspective, one can infer that doubt about the syntactic status of a word or word fragment can be a great advantage for the aphasic interlocutor since it prevents the non-impaired interlocutor from taking the turn. To most aphasiologists this way of thinking is unfamiliar at best. They regard it as axiomatic that aphasics try to speak as faultlessly as possible in conversation. In the light of studies that point out the relationship between syntax and interaction this view becomes problematic. Based on the results of the investigation in the relationship between aphasic syntax and interaction, I want to raise two objections against the concept of the prime importance of correctness: first, there are structural similarities between aphasic and non-aphasic syntactic patterns, e.g. apokoinu-constructions. What is regarded a typical pattern of spoken language in unimpaired speakers, cannot be regarded a syntactic impairment in aphasic speakers. Second, syntactic patterns of spoken language cannot be assessed solely as well-formed or ill-formed. With regard to their interactive consequences, they can be more or less useful. Syntactic ill-formedness can be useful in interactive terms as in the above mentioned cases of doubt. I assume that aphasic verbal output is the manifest result of continual **trading off**-decisions between what is correct and what is interactively advantageous. It is characteristic of aphasic speech that these aspects diverge more often than in unimpaired speech.

At this point, the results of the psycholinguistic and the conversation analytic study regarding syntactic break-offs converge. From both perspectives, this phenomenon is advantageous for the aphasic in that it either saves processing costs or camouflages word-finding difficulties. As a result of this study not only paragrammatism, but also the symptom of **anosognosia** has to be reconsidered. The aphasic produced so many repairs of all types Levelt had described that one cannot maintain that she is ignorant of her verbal

faults. The question is: why have aphasiologists so far disregarded the fact of repair in Wernicke's aphasia? The strategies the aphasic under study here uses point to reasons for this neglect: firstly, the aphasic is eager to camouflage her lack of verbal competence and, secondly, she does not simplify in an easily discernable way. The lack of obvious simplifications is due to the preference of **repair conversions**. The aphasic under study here makes use of a very unusual strategy in converting her repairs: instead of producing a missing next-due item, she replaces the whole utterance-under-construction by a new one. With regard to the orientation of repairs in time, this means that she substitutes a repair with a forward orientation by one that is oriented backwards. Since this strategy is only seldom found in non-aphasics' repair, it could be that this pattern is not recognized as repair at all. The aphasic avoids threats to her face in choosing this way to deal with her word-finding difficulties. I suppose that aphasics who suffer from more severe forms of Wernicke's aphasia than the aphasic under study here also make repairs. These repairs might not be easily recognizable due to the aphasics' taking pains to hide their verbal lacunae. We need further research into this question.

The upshot of all this is that we are facing a paradigm shift. Since the aphasic under study here repairs correctly with regard to both syntactic and conversational rules, it does not make sense to rate the resulting syntactic structures as pathological. Consequently, this implies a **functional**, **non-pathological** interpretation of paragrammatism.[64]

Sequential Structure

[ ]	overlap and simultaneous talk
[ ]	
=	latching

Pauses

(.)	micropause
(-), (--), (---)	brief, mid, longer pause of ca. 0.25 — 0.75 secs.
(2.0)	measured pause

Other segmental conventions

und=äh	assimilations within units
:, ::, :::	segmental lengthening, according to duration
äh, öh	hesitation signals, so-called 'filled pauses'
'	cut-off with glottal closure
[ ]	phonetic transcription according to IPA
'	strong, primary accent according to IPA

Laughter

so(h)o	laugh particles within talk
haha hehe hihi	laugh syllables
((laughs))	description of laughter

Recipiency tokens

hm, ja, nein	monosyllabic signals
hm=hm, ja=a	disyllabic signals
'hm'hm	disyllabic signal with glottal stops, usually used for negative responses

Accentuation

ACcent	strong, primary accent
accEnt	weaker, secondary accent

Pitch at the end of units

?	rising to high
,	rising to mid
-	level
;	falling to mid
.	falling to low

Changes in loudness and speech rate

<<f>	>	forte, loud
<<ff>	>	fortissimo, very loud
<<p>	>	piano, soft
<<pp>	>	pianissimo, very soft
<<all>	>	allegro, fast
<<len>	>	lento, slow
<<cresc>	>	crescendo, continuously louder
<<dim>	>	diminuendo, continuously softer
<<acc>	>	accelerando, continuously faster
<<rall>	>	rallentando, continuously slower

Breathing

.h, .hh, .hhh	inbreath, according to duration
h, hh, hhh	outbreath, according to duration

<u>Other conventions</u>
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((coughs))          para- and extralinguistic activities and events
<<coughing> >       concomitant para- and extralinguistic activities and
                    events with notation of scope
(   )               unintelligible speech, according to duration
(such)              uncertain transcription
al(s)o              uncertain sounds or syllables
(such/so)           possible alternatives
((...))             omissions in the transcript
→                   indication of relevant lines for the discussion
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Notes

[1] Cf. Lesser/Milroy 1993:17f & 356, Kean 1988:771.

[2] In 1990 Kolk/Heeschen replaced the terms negative and positive symptoms by impairment and adaptation symptoms to prevent them from being confused with Hughlings Jackson's terms (1990:222).

[3] Goldstein underlines his opinion that adaptations are reactions of the whole organism to abnormal constraints by stating that "normal" persons would perform in a structurally similar way if they had to fulfill a task with a suboptimal system, e.g. if they had to write with their left hand too (1971a:167; cf. Heeschen/Kolk 1988:48f).

[4] Heeschen/Kolk rightly point out that psycholinguistic modelling has to include parameters like (e.g. syntactic) complexity. Only then can one explain why aphasics adapt (Kolk/Heeschen 1990:225). The question is: what do they gain by adapting? Connected with the point mentioned by Heeschen/Kolk is the lack of models which represent speech production in real time. In my opinion time-gaining is another important factor that facilitates adaptation.

[5] For neurological objections to the subtractive loss-methodology cf. Goldstein 1971:VII. Technical progress in functional neuroimaging has recently enabled scientists to watch the brain working. The studies unequivocally prove the existence of functional reorganization following a stroke (Heiss et al. 1997, Karbe et al. 1997, Weiller 1998). For the relevance of physiological facts in psychological reasoning cf. Goldstein 1971a:170.

[6] The within subject-variation has always proved difficult to explain within aphasiological speech production models (Kolk 1987:384).

[7] Heeschen connects the term option with the conversation analytical approach: „In terms of CA, in the minimal responsibility situation telegraphic style is preferred, in a more marked situation it is dispreferred. Thus, the notion of 'option' can be reinterpreted as a purely technical term closely related to 'preference' which has the advantage that one does not have to attribute to the patient's conscious intentions." (1993:22f).

[8] WHO consequently differentiates between impairment, disability and handicap to describe the results of a disease or damage (Weikert 1994:228). In this concept handicap means that the person is hindered from social participation. Cf. WHO 1997 for the reformulation of categories.

[9] In its emphasis on the interdependence of the various persons' behaviour (in an encounter) Goffman's definition of self resembles Hegel's definition of self-confidence which is only existent if another person acknowledges it (cf. Hegel 1996:145).

[10] "As Schegloff/Ochs/Thompson rightly point out, Goffman "was cautious about himself taking up a scholarly stance on the details of linguistic matters [...] for fear that he lacked adequate technical understanding"." (Hudson 1996:114).

[11] If this supposition were right, it would pose serious problems for therapeutic approaches that propagate effective communication as their primary goal, e.g. PACE. Since most communication facilitating techniques are in some way **socially marked**, aphasics might refuse to use them because it would present a social image which is undesirable. Heeschen/Kolk observed that Broca's aphasics used elliptic structures in fairly informal situations only. In formal situations they tried to produce elaborate sentence structures. Heeschen/Kolk explain this variation with the similarity between elliptic sentences and syntactical forms used by non-native speakers of German (1988:51).

[12] That maintaining the flow of conversation by disregarding mutual problems of understanding is a "normal" strategy of dealing with communicative difficulties, i.e. is employed by non-aphasic speakers as well, is highlighted by Auer's (1981) analysis of an encounter between an aphasic, who suffers from a middle-graded Broca's aphasia, and a non-aphasic who has no experience in talking to aphasics. His problem is that he is unable to establish thematic coherence between his questions and the answers of his aphasic interlocutor. But instead of trying to solve this problem he simply moves on to his next question. Auer explains this as a preference to "keep the conversation going" with the aim of maintaining face (1981:509).

[13] Interestingly, Carl Wernicke himself very vividly describes the ordeal both he and his patient have to go through, while the patient, a Broca's aphasic, searches for a word: "The patient speaks falteringly with long pauses in which he visibly struggles to express himself; after long exertions the patient often resigns and begins a new sentence. The beginning is uttered fluently, then the same

faltering occurs, **the same embarrassing situation**." (1874:27, translation B.R., emphasis added)

[14] Goffman coined the term covering for behaviour that aims at hushing up physical - including verbal – handicaps (1963:102). In a German TV talk-show a stutterer reported that she learned to plan three sentences ahead to avoid uttering "dangerous" words (Boulevard Bio, Oct 6, 1998, 11pm, ARD). For a similar example cf. Heeschen/Kolk 1988:52. Because of these behavioural similarities I strongly propose that the "non-anomalous nature of anomalous speech" (Fromkin 1971) is not limited to the systematic aspects of language, but can be discovered in language use as well.

[15] Excepting Heeschen 1993.

[16] Adaptation theory and research in spoken language face a similar methodological problem. Both approaches are just beginning to grasp the relationship between communicative functions and syntactic structures. Plank compares sentences to screw-drivers which have exactly the right form to serve a certain purpose (1986:305). Auer adds that linguists sometimes find it hard to understand what kind of screws are dealt with by the screw-drivers. In addition, linguists have not yet developed a method to adequately assess the matching of certain screws and screw-drivers (1998:20). Hopefully, progress in either approach will facilitate research into these questions.

[17] The notion of trading off is based on the idea of O'Connell/Kowal that "there should [...] be a trade off between time and errors under the constraints of real-time speech production." (1980:6). Cf. Heeschen/Kolk 1988:52.

[18] Cf. Lesser/Milroy 1993:123.

[19] Wallesch et al. speak of attention resources with regard to the processing of complex syntactic structures (1998:3).

[20] The term is based on Schegloff's syntax-for-conversation. Cf. below Ch.2.2.

[21] In fact, there is one example of agrammatic syntactic structure in my data. Since it is the fourth (or fifth) attempt at repairing, the question arises whether the aphasic under study here (and aphasics in general) use(s) these structures under certain circumstances only, e.g. in contexts where there is enormous pressure to produce an utterance which is rich in content. This would both strengthen the assumption that these structures are adaptations to an underlying deficit and the assumption that paragrammatism as such is not a syntactic deficit. Therefore, one can argue that Wernicke's aphasics sometimes adapt similarly to Broca's aphasics, but for the most part they adapt differently.

[22] Cf. Heeschen 1993:30 for a criticism of Levelt's speech production model.

[23] This is the "interactional version" of the transparency assumption of cognitive neurolinguistics. I reject the "cognitive version" because of the existence of adaptations which veil the relationship between verbal output and underlying deficit.

[24] This principle parallels Plank's claim that it has to be made plausible in detail **why** certain communicative functions correspond to certain morphosyntactic forms (1986:305, emphasis added).

[25] Indeed, the frequency of different repair types varies widely between the studies of Levelt (1983) and Blackmer/Mitton (1991). Therefore, one can conclude that the context strongly influences the shape of verbal self-repairs. For a corresponding conversation analytic criticism of Levelt's model cf. Schegloff/Ochs/Thompson 1996:25.

[26] Cf. Goldstein 1971a:179.

[27] Cf. Wilkinson 1995.

[28] For details see Huber et al. 1983.

[29] The aphasic frequently produces faulty morphological forms, which is included in the definition of paragrammatism in German aphasiology. This mirrors the definition of agrammatism: telegraphic sentence structure plus the absence of morphological information. In my opinion, morphological and syntactic aspects of Wernicke's aphasia should be investigated separately. My interpretation of paragrammatism ,which differs from classical theory, is limited to syntactic aspects of this symptom.

[30] Levelt developed his systematics of repairs within a theory of monitoring (cf. Levelt 1989:467ff, Blackmer/Mitton 1991, Berg 1986).

[31] For the problem of the term 'sentence' in spoken language cf. Rath 1992, Werner 1995.

[32] In the examples - cited below - the reparandum is underlined, the **reparans** is printed in bold letters.

[33] That is not to say that the minimal responses are not adequate in the context they are produced in. But, as Lesser/Milroy rightly point out, many patients tend to produce minimal responses

especially in interview situations. Their interactional advantage lies in their ability to mask comprehension problems and their unproblematic production.

[34] The difference between the total numbers of covert repairs and C-repairs, respectively, came about due to the production of two "repairs on the fly".

[35] All examples stem from the interaction described in detail in chapter 1.3, p.12. P denotes the Wernicke's aphasic and T the speech and language therapist.

[36] See Chapter 2.2.1, p.30ff below.

[37] It seems plausible to assume a relation between the ability to detect and correct errors in one's verbal output and the severity of the (fluent) aphasia since in patients suffering from jargonaphasia there is indeed anosognosia. Further investigations are needed to clarify this point.

[38] This prevalence is highlighted by the AAT score regarding the phonemic structure of the aphasic's spontaneous speech. It was assessed a <3> which means that the aphasic's utterances consist of many phonemic paraphasias but only very few neologisms.

[39] Since it is the characteristic feature of R-repairs that the hearer does not know where the reparandum is, no marking was possible in this example.

[40] In examples (11) and (12), it is not the reparans, but the pivot element that is printed in bold letters.

[41] The existence of pauses differentiates this repair type from repairs on the fly.

[42] Cf. Schegloff 1979, Franck 1985, Scheutz 1992.

[43] The definition of the beginning and end of the repair given by Levelt is problematic where spontaneous speech is concerned. The definition is orientated to a sentence definition of written language. According to Levelt, the repair begins at the last sentence boundary before the repair proper and ends at the first sentence boundary after it (1983:63). See Note 29 above.

[44] Maybe the aphasic repairs the word order in l.61 in cutting off the adverb and uttering the auxiliary first.

[45] Apart from the deviant prosodic pattern, the repair is very interesting with regard to the relationship between trouble source and point of interruption. In this case, there are four syllables between them. This is the longest span in the whole interview. In most cases, the aphasic interrupts herself immediately. This behaviour is very different from that of non-aphasic speakers, who both pay attention to word boundaries and sometimes continue speaking for up to ten syllables (Levelt 1989:479). The reason for this behaviour could be that the verbal output buffer or another component of the language-processing system is impaired so that it is difficult for the aphasic to store the utterance-so-far. Therefore, the immediate interruption can be interpreted as a simplification strategy. Because of the lack of studies on the delay of interruption in non-impaired spontaneous speech, my explanation remains speculative.

[46] The English translation cannot model the exact character of the repair. In German, in order to change the utterance plan from to ask the doctor to to talk to the doctor, the aphasic must alter the accusative object to the prepositional object **before** she utters the infinitive.

[47] Dietrich terms this repair type **prospective** since the morphosyntactic adaptation occurs before the item which dominates the repairable (1982:147).

[48] For German-English language-specific aspects of repairs cf. Egbert 1996.

[49] See above Table 1, p.15.

[50] Flores d'Arcais maintains that the well-formedness of utterances is very important with regard to the perception of speech (1988:110f).

[51] In both examples ((7), (5)), the original utterance contains a phonemic paraphasia which would make the repair ill-formed corresponding to Levelt. Since the aphasic in these cases did not repair the phonemic error, but the expression, the repair was regarded an EL-repair.

[52] Auer (personal communication) maintains that the language-unimpaired interlocutor manages very well to infer the intended word. Although I agree, this is not the point in question. The well-formedness of both sentences and repairs is a means to facilitate the comprehension of spoken language. Since time is the limiting factor in spoken interaction everything that causes a delay in comprehension should be avoided. If the listener has to decode ill-formed utterances, he just has to work harder. In general, it seems to be characteristic of aphasic communication that both interlocutors do not "share the communicative burden" (Perkins/Milroy 1997), but that the language-unimpaired speaker carries the majority of it.

[53] For recycled turn-beginnings as a special type of repair cf. Schegloff 1987.

[54] The observation that the aphasic can quite easily initiate a self-repair, but takes great pains in making the repair proper can be accounted for by a lack of sufficient processing time as well.

[55] As shown in detail in Rönfeldt 1997, the aphasic differs from non-impaired speakers in cutting off very early and very often in the middle of a word. In normal repairs, there is a complex relationship between within-word or after-word self-interruption and the repair type that follows (Levelt 1983:56-70). It seems plausible to assume that the immediate interruption is a strategy used to simplify the repair. The outcome is, again, a higher amount of uncertainty on the listener's side about what exactly is going on.

[56] Repair has been one of the most prominent topics of Conversation Analysis ever since its introduction in the 1970s. However, apart from Schegloff 1979 and Fox/Hayashi/Jasperson 1996, the relationship between repair and syntax seems to have been of no interest.

[57] Since the subject of this paper is the relationship between syntax and repair in Wernicke's aphasia, the analysis concentrates on the left boundary. For the right boundary cf. Rönfeldt 1997:119ff.

[58] In this context, it it important to add that in most cases the break-off is not marked prosodically. Both factors combined facilitate holding the turn.

[59] By using the term 'option' I do not intend to suggest that this verbal behaviour is consciously controlled. Cf. Heeschen/Schegloff 1999:374.

[60] The silence was assessed long with regard to the kairotic aspect of time. Cf. Schegloff/Ochs/Thompson 1996:20. The silence is positioned at a transition relevance place. Since the systematics of turn-taking is designed to minimize the length of silences between turns (cf. Sacks/Schegloff/Jefferson 1974), this occurrence is striking.

[61] See above example (21).

[62] The first repair in example (31) (Ärau **E:rokerapie**) is positioned before syntactic completion, too and in that respect the analysis of example (32) also holds true in that case.

[63] Cf. Schegloff/Jefferson/Sacks 1977:374.

[64] The adaptionistic re-interpretation of the symptom of paragrammatism does not concern the morphological deficits which form the other part of the symptom.

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