A MORPHOLOGICAL ANALYSIS OF FOUR PERSIAN WORDS

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نگارنده در این مقاله ابتدا واژه‌شناسی را که یکی از زیرشاخه‌های زبان‌شناسی است به اختصار معرفی می‌کند و سپس چهار کلمهٔ فارسی: "تاریک"، "باریک"، "تاجیک" و "نزدیک" را از نظر زبان‌شناسی و واژه‌شناسی مورد تجزیه و تحلیل قرار خواهد داد. مقاله حاضر نشان خواهد داد که چهار کلمه فوق کلماتی ساده و یا تک‌واژه نبوده بلکه هریک از دو واژک تشکیل می‌گردد. برای واژکهای پیشنهادی معنی و مفهوم مشخصی نیز ارائه خواهد شد.

Since the object of this article is to give a morphological analysis of the four Persian words, ***bārik***, ***tārik***, ***tājic***, and ***nazdik***, the present writers feels that a very brief explanation of morphology is in order.

In addition to phonemics, grammar and semantics, normally thought to be the main areas where linguistics is divided into, there came a time when linguistics decided that morphology, ordinary regarded as a sub-branch of grammar has to be recognized as an independent branch of linguistics. This came to pass when they noted that while word like 'book', 'teach', 'young' cannot further be analyzed into smaller meaningful units, words like 'nationalization', 'requirement', 'reorganizations' and 'carelessness' are practically divisible into still smaller meaningful units. Morphology can thus be defined as the identification, analysis, and description of morphemes - the smallest meaningful units of a given language - as well as the study of word formation processes. Within the framework of morphology 'reorganization' would then be analyzed into the following morphemes: ***re-***, ***organ***, ***-ize***, and ***-ation***

The identification of morphemes or the analysis of comlex words into morphemes is not always as easy as it might seem at the first glance. One of the difficulties is created by words which on the basis of their comparison

with other words are analysable into two or more smaller parts, but for one or more of its parts no specific meaning comes to mind. An example is the case of the words: 'conceive', 'perceive', 'receive', and 'deceive'. A comparative analysis of these words and their juxtaposition with other English words such as 'protect', 'reject', 'consult', and 'deject' reveals that they are analysable into 'con-', 'per-', 're-', 'de-' and 'ceive'.

Having identified the morphemes constituting the above words, the next step would be to determine their meaning. While it is relatively easy to state the meaning of the prefixes in the above words, most English speakers would find it more difficult to assign a single meaning to ***ceive*** without the aid of information on the history of words. In fact, because of this problem some linguists prefer to consider the words containing ***ceive*** as consisting of a single morpheme.

the second problem is posed by words like 'sheep', 'deer', (in the plural sense), 'is' and 'was'. These words are not practically analysable into smaller meaningful parts, in the same way that e.g. 'import' and 'export' are. At the sam time, when sentences like *the sheep is grazing* and *the sheep are grazing* are contrasted, it will be revealed that even though the word 'sheep' has the same phonlogical form in these two sentences it does not have the same semantic structure. In the fromer sentence it expresses one single meaning, but in the latter it can be seen as the product of two morphemes {sheep} and {plural}; Just as *cows* in *The cows are grazing* is the product of two morphemes {cow} and {plural}. In other words, in terms of meaning 'sheep' in the second sentence above consists of two morphemes. Of these two morphemes, the first one has a concrete realization, but the second one does not have such an exponent. Morphologists have given the name *zero morpheme* to such analytic entities which have no overt realization.

In spite of the above-mentioned difficulties, morphology remains a valid and useful branch of linguistics, since there is no doubt that words are not the primary and basic units of grammar, and have internal structure, As already noticed ***morphemes*** are the mininmal units of grammatical analysis.

Having briefly introduced morphology, it is now time to embark on a morphological analysis of four Persian words ***bār.ik***, ***tār.ik***, ***tāj.ik***, and ***nazd.ik***. As far as the present writer knows, these words have always been treated as basic froms, not being divisible into smaller meaningful units called morphemes in Modern linguistics. Nonetheless, a quick glance at these words ***re***veals that the sequence ***-ik*** recurs in all of them. Thus, it might be suggested that each of them be analyzed into two morphemes ***nazd.ik*** , ***bār.ik*** , ***tār.ik*** , and ***taj.ik.*** Such an analysis would however be justifiable and acceptable provided that two conditions are met. First, a meaning is found for

each of suggested morphemes. Second they recur in other words or as independent words.

The three morphemes ***nazd, tār,*** and ***taj*** meet both of these two conditions. ***nazd*** means 'before' and occurs as an independent word. ***Tāj*** means 'crown' and also occurs as an independent form. ***Tār*** which means 'dark' is used as an independent form as well.

The situation is not so straightforward in the case of the remaining morphemes ***bār***, and ***-ik***. Two questions still remain to be answered. First, what do these proposed morphemes mean? second, do they recur either as bound or free morphemes? There exists a free morpheme ***bar*** meaning 'load'. But this morpheme is not even remotely related to the word which means 'narrow', 'slender'. The phonlogical sequence ***bār*** is also discernible in ***bārān*** 'rain' normally considered as an indivisible unit. Yet, it might tentatively be proposed that ***bārān*** consists of two morphemes ***bār*** and ***ān***, the second being the plural morpheme ***ān.***

This proposal would be acceptable, if and if only a meaning could be found for the basic form ***bār-*** common to ***bār.ik*** and ***bār.ān***. The present writer would suggest that ***bār-*** is a cognate morpheme which also exists in modern English that, like Persian, is an Indo_European language. In English ***bār*** means "a piece of wood, metal, etc. That is longer than it is wide" (OED) The present author's suggestion is that the Persian morpheme ***bār*** has exactly the same meaning, i.e. something long and slender.

Having established the meaning of ***bār***, it is time to find out what the last remaining morpheme ***-ik*** means. The present writer maintains that ***-ik*** is also most probably a cognate item which exists in Modern Persian as well as in Modern English. OED difines ***ic*** as a suffix which is added to some nouns and makes an adjective, and means "of, like, or connected with". The present author holds that the Persian suffix-***ik*** has the same meaning as the English suffix ***-ic.***

The meanings proposed for the morphemes constituting the word ***bār.ik*** might actually be confirmed by the fact that the meaning of this adjective is almost the same as the sum total of the meanings of its constituents: ***bār*** meaning something long and narrow.

The only question which remains to be answered is whether ***ik*** recurs in other words than ***bār.ik, tār.ik, tāj.ik,*** and ***nazd.ik*** (and probably in ***nāz.ok*** where ***ok*** is an allomorph of ***-ik***) or not. The answer seems to be in negative. This is not, however, incompatible with its morphemic status; and it can still be considered as a morpheme. In the same way that the English suffix-***th*** is considered as a morpheme, even though it only occurs in a handful of English nouns like ***truth, width, length, warmth,*** and strength, and does not

occur productively in other words. Morphemes like the English ***-th,*** and the Persian ***-ik*** that recur in only a few words of the language, and unlike morphemes such as ***-ly*** in English and ***bi-*** in Persian cannot be used productively to form new words are labeled as unproductive morphemes.

The present article was an attempt to find out whether the Persian words ***bār.ik, tar.ik, taj.ik,*** and ***nazd.ik*** should be considered as consisting of a single morpheme, or two morphemes because they have the phonlogical sequence ***-ik.*** The second analysis was eventually selected. Two reasons were offered in support of this slection. First, these words have this in common that they are all adjectives. Second, a meaning could be found for any of the five morphemes detected in them.

NOTES

[1] Within the framework of transformational linguistics, the term grammar has a much broader sense, and refers to the whole body of knowledge that the native speaker has about his language.

[2] Decimal points are used to represent morphememm boundries.

[3] This morpheme is spelled ***-ic*** in English and is seen in froms ***economic, comic, melodic,*** etc.

[4] In this sense ***bār*** is synonymous with the other Persian word mile.

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MENTAL LEXICON

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روان‌شناسی زبان به عنوان شاخه‌ای از علم زبانشناسی به بررسی ارتباط بین رفتارهای زبانی و فرآیندهای روان‌شناسی که مبنای آن رفتارها هستند، می‌پردازد. هدف پژوهشگران آموزش زبان انگلیسی از بررسی نتایج آزمایشهایی که در روان‌شناسی زبان صورت می‌گیرد، آشنایی با نحوهٔ ساختار زبان در ذهن فراگیرندگان و نهایتاً بررسی امکان استفاده از این یافته‌ها در آموزش زبان خارجی می‌باشد. یکی از مسایلی که در روان‌شناسی زبان به آن می‌پردازند نحوهٔ ذخیره‌سازی لغات در ذهن افراد می‌باشد. بعنوان مثال یکی از سؤالاتی که در این زمینه مطرح است این است که لغاتی که دارای پیشوند و پسوند هستند چگونه در ذهن ذخیره می‌شوند. آیا اینگونه لغات براساس ریشهٔ لغت طبقه‌بندی می‌شوند و جهت دسترسی به معنای آنها اول باید پیشوندها و پسوندها کنار گذاشته شوند، معنای ریشهٔ لغت جستجو شده و سپس پیشوندها و پسوندها اضافه شوند؟ سئوال دیگر این است که آیا ذخیرهٔ لغتی که در ذهن برای تولید و ادای کلمات وجود دارد با ذخیرهٔ لغتی که برای درک کلمات بکار می‌رود از هم مجزا هستند؟ و یا فقط یک ذخیره لغت در ذهن وجود دارد و برای هر دو امر بکار می‌رود؟

این مقاله پاسخ این سئوالات و نمونه‌های دیگر از این قبیل را فراهم می‌کند و در پایان به طرح مسایلی در این زمینه که هنوز پاسخی برای آنها فراهم نشده و احتیاج به تحقیق بیشتر دارند، می‌پردازد.

What is the nature of the human word store or mental lexicon? How do people produce words from their mental lexicon when they are speaking and how does recognition take place? An understanding of the processes

involved in word production and word recognition will give us some clue as to how the various sections of the mental lexicon are organized.

The problems of word recognition and the nature of lexical representations have been long-standing concerns of cognitive psychologists. Although the intractability of these problems has resulted in voluminous body of literature on the production and perception of words, researchers are still attempting to explain precisely how access to the internal lexicon takes place. The aim of the research reported here is to outline what is considered to be the major phases in lexical processing and indicate how different theoretical positions have dealt with each of them.

Before looking at the intersecting processes involved in word recognition, the problem of the terminological confusion which plagues word recognition research should be mentioned. Basic terms like "word recognition" and "lexical access" are often used to refer to very different processes and a theory of lexical access is not considered the same as a theory of word recognition. Lexical access, as Garnham (1985) puts it, "is the retrieval of a word from the lexicon on the basis of perceptual and contextual information" (p. 43). At this step, a whole set of words will turn to be candidates. The context then would narrow the choice down to the one which is identical to the input, and it is said that recognition has taken place. So word recognition, as Garnham (1985) says: "is achieved when there is only one remaining can didate, and the input has been identified" (p. 43). A theory of word recognition might be said to deal with a broader problem: it considers how the information yielded by the access system is used to derive inferences about the lexical item.

In the next parts of this article, attempt will be made to provide answers to some basic questions related to the major processes that contribute to word recognition.

IS WORD RECOGNITION AUTONOMOUS OR IS IT AFFECTED BY THE CONTEXT?

As Aitchison (1987) puts it: "Humans behave like jugglers when they use the mental lexicon, in that they have to deal with semantic, syntactic and phonological information at the same time" (p. 165). But as Forster (1976) puts it, word recognition processes cannot be directly affected by the syntactic or interpretative context in which the word is occurring. This controversy has brought about an issue which represents one of the most important theoretical problems in language perception: Is language processing an autonomous or an interactive process? Does language perception take place as a result of simultaneous cooperation of different

sources of knowledge? Or does it take place through processes which are performed by single phonological, or syntactic or semantic components in a hierarchical way? And if the former is true, when and how does contextual information exert its influence in lexical interpretation? Here we will look at a number of models of word recognition and the way they envisage the various phases of lexical processing.

Besides, since a well-established fact about mental lexicon is that high-freqency words are recognized faster than low frequency ones (Aitchison, 1987; Gibson and Levin, 1975), it will be shown how each of these models account for the frequency effect.

FORSTER'S (1976) AUTONOMOUS SEARCH MODEL

Forster's theory is autonomous in that word recognition and lexical access are not at all influenced by higher-level knowledge sources and are exclusively bottom-up. In Forster's model, processing is serial. In the first stage, information from the perceptual system enters the lexical processor. The lexical processor then locates an entry in three peripheral access files: an orthographic file for visual input, a phonetic file for auditory input and syntactic-semantic file for both visual and auditory input. When the peripheral access files locate an entry, it is then located in the master lexicon which contains all the information about the word. In this way the word is recognized. According to this theory, there are strong constraints on the way contextual information can affect the bottom-up analysis; context cannot have its effect prior to the completion of the phases of lexical processing which lead up to word recognition. Rather, it is only after a word emerges as the single best fit with the sensory input that context can begin to have an effect. The role of context, therefore, is restricted to the post-access phase of lexical processing. (Swinney, 1979).

As Tyler and Marslen (1982) put it, Forster's autonomous search model is not without its shortcomings: "... it is inconsistent with the assumption of optimality... Our claim is that speech understanding is interactive in the sense that it permits the integration, during processing, of all available sources of information..." (p. 171).

As for frequency, the theory suggests that high-frequency words are searched before low-frequency words because the peripheral access files are arrayed based on frequency.

MORTON'S (1969) LOGOGEN THEORY

In contrast with the autonomous model, interactive models predict that context can influence what information is accessed during lexical processing.

In Morton's (1969) logogen theory, each logogen represents a word in the mental lexicon. All information about a word, including its meaning, its syntactic function, and its phonetic and orthographic structure is included in each logogen. A logogen checks the sensory and contextual information of the input and when the relevant information is encountered, the level of activation of individual logogens is raised. When the logogen is sufficiently activated, the logogen crosses the threshold. At this time, the information in the logogen becomes available in the response system. Being an interactive model, rather than an autonomous one, in logogen theory, information from any level can be used in order to push a logogen over its threshold. According to this model, once the activation threshold of a logogen is reached, the word is recognized. The logogen theory is a highly interactive one in that each logogen is affected not only by visual and acoustic information, but also by semantic information.

The word frequency effect is handled in this theory, too. Logogens have different thresholds: high and low. High-frequency words have thresholds lower than low-frequency words. A word with low-frequency which cannot be associated with higher-level knowledge will require precise sensory input to permit the activation level to reach the threshold. But high-frequency words would not need that much sensory input because their thresholds are low enough.

MARSLEN-WILSON AND TYLER'S (1980) COHORT THEORY

Marslen-Wilson and Tyler's (1980) Cohort theory is a different interactive model which evolved out of Morton's Logogen model and Forster's autonomous model. In the initial stage, acoustic-phonetic information of the first part of the input word activates all the words that begin with the initial sequence. The words which are activated in this way comprise the cohort. Up to this stage, the process is an autonomous one in that information flows through the processing system in one direction only-from the bottom-up. Word-initial cohorts are activated and there are many candidates; the word is recognized when it is distinguished from other candidates beginning with the same initial sound sequence. Once the word initial cohort is accessed, the top-down factors begin to affect. Here context is used to deactivate candidate words and in this way reduce the size of the word-initial cohorts. The uniqueness point is the phoneme at which the word differs from every other word in the lexicon. So the role of context at this stage is to provide all

sources of information so that the appropriate word can be selected from the cohort.

But the problem with the cohort model is error recovery. As Aitchison (1987) puts it: "...[the model] requires undistorted acoustic signals at the beginning of the word" (p. 186). For example, if due to some misperception the word "foundation" is heard as "thoundation", the word initial cohort will not contain "foundation" as a candidate. But it is quite true that people interpret such words accurately and sometimes do not even notice the mistake.

As for word frequency, the cohort theory "incorporates no mechanism by which word frequency can be accounted for" (Pisoni and Luce, 1987).

The interactive models, as mentioned above, depend on the interaction of a set of constraints provided both by sensory input and context in order to recognize a word. But these same models vary considerably in the extent to which they allow contextual information to intervene in any of the phases of lexical processing. In Morton's (1969) interactive model, from the very early phases of lexical processing, both contextual and sensory information contribute to the act of processing. High-level knowledge produces expectations which will propose lexical candidates to be considered even before any sensory input has been perceived. In other words, context in this model is allowed to increase the level of activation of logogen even before the sensory input makes contact with the lexicon. However, as Tyler and Marslen-Wilson (1982) put it, this theory, too, has its shortcomings; they say with this variety of an interactive model, we "run the risk of hallucinating what we hear, rather than creatively synthesizing it..." (p. 171).

But in Marslen-Wilson and Tyler's (1980) model, context plays a role but in a different, more constrained way. In this model, the flow of information is more constrained and context is not allowed to propose candidates, rather, the lexical candidates which are appropriate from the point of view of context will be combined with higher-level information and if they are not appropriate, they will be eliminated.

This part has looked at the various word recognition models. But a number of questions remain. These will be discussed in the next parts.

ARE AFFIXED WORDS DECOMPOSED IN THE PROCESS OF BEING RECOGNIZED?

One of the issues in the study of mental lexicon concerns the way a morphologically complex word is accessed. How are these words represented in the mind? Are affixed words stored in their base form? Must morphological decomposition be incorporated into models of word recognition?

The clearest evidence to answer these questions comes from a study reported by Taft and Forster (1975). They compared the reaction times for classifying two kinds of non-words: a) none-words which are stems of derived words (e.g. juvenate as the stem of rejuvenate), and b) non-words which are not stems, rather those which do not exist in the lexicon (e.g. pertoire as the stem of repertoire). If words are entered in the mental lexicon in their stem form, the prediction is that when subjects are asked to determine whether an item is or is not a word, the latency time for those from the first group would be longer than for those from the second group. And this longer latency time is due to the search, after finding the stem in the lexicon, to ascertain whether the stem can stand alone, and this abortive attempt takes time, while the pseudo-stems, not present in the lexicon, are easily rejected. Analysis of the reaction times showed, as predicted, that real stems took significantly longer to classify than the pseudo-stems. Based on these results, it can be assumed that the real stems are directly represented in the mental lexicon. To incorporate these results into a model of word recognition, Taft and Forster concluded that mental lexicon consists of both free and bound morphemes.

The question which arises here is about words which can be considered as both free and bound, like "card" or "vent". What is the criterion for ordering such words? Which one can be accessed before the other one? To answer these questions, Taft and Forster (1975) compared for frequency-matched words such as "vent" and "card". Vent could be taken as a stem, that is, "-vent" (as in prevent, invent) or as a word in its own right. The input "card" has a similar ambiguity, except that the bound form "-card" (as in discard) has a lower frequency than the form "card". In a lexical decision task, the prediction is that the reaction time for items such as "vent" should be longer than for items such as "card". Since "-vent" has a higher frequency than "vent", this interpretation is encountered first. As the subject checks the entry for "-vent" to see whether the stem can occur as a free form as well, more time is needed, while for "card" there should be no such interference because the lower frequency alternative is never consulted when the match has already provided the response. The results of the experiments supported the predictions. This conclusion, too, supports the fact that stems of derived words are stored as lexical items.

The advantages with this kind of model for mental lexicon, i.e., storing the stems of a number of different words just once, are three fold; a) it is economically plausible; b) it allows the semantically related words to be next to each other, even if the stems would be phonologically and orthographically similar; c) it would make access to words easier and faster

because a word like prevent can be located without having to search through so many words beginning with "pre-".

In another experiment, conducted by Murrell and Morton (1974), again it was concluded that the process of recognizing a word involves assigning it to a morpheme. In this experiment, Murrell and Morton presented the subjects with three different kinds of words. Group 1 and Group 2 words had the same root but different inflectional morphemes like "reader" and "reading". Group 3 words had no semantic-relationship with Groups 1 and 2, but they had the same letter sequence, like "ready" as a counterpart for "reader" and "reading". The question in this experiment was to see if the recognition of a word (such as "reading") is facilitated when it is accompanied by an earlier exposure to a word which has visual and phonetic similarity with it (like "ready") or when it is accompanied by an earlier exposure to a word which, in addition to visual and acoustic similarity, enjoys a morphemic similarity with it, too. Of course, looked at only as visual-acoustic patterns, the words in the three groups have the same degree of similarity. The results of the experiments showed that, as Murrell and Morton (1974) put it: "there is reliable facilitation only when there is morphemic identity in addition to visual acoustic similarity" (p. 966). In other words, the experimenters interpreted this result as indicating that "reading" and "reader" led the subjects to the same lexical entry "read", the stem of the two words.

In this part we discussed whether the mental lexicon contains words or morphemes. The available data allow the conclusion that the morpheme, and not the word, is a basic unit in the mental lexicon.

ARE THERE TWO DICTIONARIES USED FOR PRODUCTION AND COMPREHENSION?

Another basic question in the study of mental lexicon is whether there are two separate mental dictionaries: one for comprehension and one for production, or there is only one mental lexicon. Collecting errors, malapropisms, and comparing the targets with the erroneous intrusions, Fay and Cutler (1977) have come up with strong implications for a theory of mental lexicon. Evidence from malapropisms suggests that there is only one mental lexicon. The comparison between the errors and the targets showed that they were quite similar in the number of syllables, the stress pattern, and the grammatical and semantic characteristics. Examples of malapropism include: equivocal for equivalent; convention for confession; confidence for competence; and operations for occupations. This coincidence is not by chance. It suggests how lexicon is organized in the mind. Let's see what mental processes are carried out prior to the occurrence of malapropism. In

the process of producing a sentence, the structure which is planned to convey the intended meaning can be thought of as a form which embodies the meaning and the syntactic structure of the words to be used. The important point is that no specification of the phonological features of the form is present at this stage of planning. To go to the stage of production, the planning device looks into the mental dictionary to find the entry which matches the characteristics of the chosen words. In the process of looking for the precise words, the device might make a mistake by switching the value of a particular semantic feature (finger for toe, for instance).

Thus, for production purposes, "the device that searches for a word takes as input a meaning and a grammatical category, and gives as output a sound representation... [while for comprehension of a word], some representation of the sound of the word is input and the meaning and syntactic category must be retrieved from the [mental] dictionary (Fay and Cutler, 1977, p. 510). For the purposes of production, the favourable condition for the search would be on the basis of meaning while the favourable condition for search in comprehension would be based on sound. In other words, in order for the access to be the most favourable one, there should be two separate mental dictionaries; one for production arranged on the basis of meaning and one for comprehension based on sound. While producing, then, one would expect syntactic and semantic errors to show up because in that process, search is made among words which are arranged on the basis of meaning of the words. But the malapropisms show a coincidence in phonological properties of the target and the error. If there were two separate mental lexica, one would never expect the sound of the error to be similar to sound of the target. Thus, if we think of the existence of a mental dictionary arranged on the basis of semantic lines for the purposes of production, then, there would be no justification for this systematic phonological relationship between the target word and the malapropism. But if we believe in the existence of a single mental dictionary, which is arranged in a way which is favourable for comprehension purposes, too, i.e., based on sound, then, neighbours of any one word would be phonologically similar to it. While producing a target word, its next-door neighbour which sounds like it would be picked up resulting in malapropisms. The results of the study of malapropisms suggest that the requirements of the comprehension device have functional priority. And this might be due to the fact that comprehension develops earlier than production.

Malapropisms suggest a mental dictionary the properties of which include the following:

a) There is a single dictionary used for production and comprehension.
b) In this dictionary, words are arranged by phonemic structure in a left-to-right manner, and based on a distinctive feature system.
c) The major partitioning of the dictionary, however, seems to be by number of syllables, with stress patterns as a second categorization within syllable categories.
d) Words may also be arranged by syntactic category.

(Fay and Cutler, 1977, pp. 514-516).

This part presented evidence suggesting that the word store in the mind relevant to recognition is used in production as well. In the next part, the way a written word is perceived will be discussed.

WHAT IS THE PATH TO UNDERSTANDING WRITTEN WORDS?

Does the sound of a visually presented word affect the way it is accessed? Or is a direct visual access possible? A clear-cut answer to this question will clarify the nature of the processes that govern access to the mental lexicon. When a word is presented graphically, readers may use the visual properties of words as bases for access to meaning. Alternatively, they may use their knowledge of the correspondence between spelling and sound to derive the sound properties of words and in this way find access to meaning. Several possibilities have been mentioned in this regard. One of these possibilities is that internal recoding is an automatic activity which takes place as part of lexical access (McCutchen and Perfetti, 1982). Another possibility in this regard is that direct visual access is possible. If phonological recoding occurs, it occurs subsequent to access to meaning, (Forster, 1976). Or if phonological recoding occurs, it is quite optional and not an obligatory process (Martin, 1982). Evidence supporting each of these possibilities will be reviewed.

PHONOLOGICAL RECODING AS AN AUTOMATIC ACTIVITY

As McCutchen and Perfetti (1982) suggest, phonological activation is a process which can never be abandoned when facing a written word. Their reason for this claim is that judgements about the acceptability of tongue-twister sentences_sentences that repeat initial consonants_took longer than the phonetically neutral sentences in a shadowing condition,i.e., while they were repeating another piece of message presented to them