ACTA UNIVERSITATIS LODZIENSIS
FOLIA LINGUISTICA 36, 1997

https://doi.org/10.18778/0208-6077.36.14

Ewa Waniek-Klimczak

HOW TO STUDY SECOND LANGUAGE SPEECH: THE ISSUE OF THEORY

1. INTRODUCTION

The present article is an attempt to bring together findings and problems centring around the issue of the dynamic study of the second language speech production. In particular, we shall review and discuss theoretical prerequisites for the empirical study aiming at uncovering a complex pattern of conditioning present in the acquisition of non-native sound structure.

As the study of second language sound system involves phonological as well as socio-psychological perspective on non-native phonetics, we shall discuss the the compatibility of major theories with the demands of the dynamic account in the following order: first, the applicability of the phonological theory to the phonetic data will be discussed, and secondly, the functional perspective will be adopted, i.e. chosen socio-psychological theories relevant to the study of second language use will be reviewed and dicussed.

The article is organised as follows: section 2 introduces basic assumptions for a second language speech study, section 3. contains an overview of theoretical phonological and phonetic problems with the model of second language acquisition (3.1.) and the construction of phonetic representation which would enable us to compare speech across subjects on the level of phonetic implementation (3.2.); section 4. is devoted to the introduction of basic sociolinguistic models applicable to the second language speakers in general (4.1.), and in an immigrant situation in particular (4.2.).

2. BASIC ASSUMPTIONS

Undertaking a study of second language use, one is faced with a number of dilemmas which need to be solved before proper investigation. The basic question concerns general beliefs as to the nature of linguistic study, stemming from the attitude towards language as a phenomenon.

The dichotomy between two approaches to the study of language: empirical and rational, bears directly on the study of speech. Seen as a multidimensional phenomenon, speech can be approached and studied as a physical reality within the realm of experimental phonetics; phonetic implementation of a particular speaker's phonological, i.e. linguistic system constructed by phonology; and more generally, the functional perspective can be added to view speech as the manifestation of speakers' beliefs, attitudes, values, etc., studied within socio-psycholinguistics. The unified paradigm for the functional study of phonetic implementation strategies in second language speech production should incorporate elements of all the three approaches, aiming at finding the common ground between them.

The present discussion focuses on the use of the second language in a natural social setting, i.e. in the second language environment. Recognizing social conditioning for the language use, we are concerned with the speakers' acquisition of the second language, the organization of their linguistic knowledge and the conditioning of their actual performance.

3. THE ACQUISITION OF SECOND LANGUAGE PHONETICS: LOOKING FOR A THEORETICAL MODEL

Having decided about the background approach to the speech analysis study, we can begin the discussion of theoretical models of grammar from the point of view of their applicability to the second language production data. The basic requirements on the theory reflect the characteristics of second language acquisition and learning, which is a dynamic process; we need tools to describe, explain and predict language production at a given point of language acquisition.

It is impossible to make aprioristic assumptions about the competence of the second language user: the crucial question is then about the phonological representation constructed by the second language speaker and the strategies employed in phonetic implementation of the phonological system.

Second language user acquires a second language in a process similar, although not identical to the first language [Hatch 1983; Locke 1983;

James 1988]: confronted with a variety of sounds, he/she categorises them, searching for a system of contrasts which would enable him/her to use the sounds in the most native-like way. The mechanisms used in the structuring of the data can be expected to differ from the first language acquistion to the extent of the first language competence influence on new data categorisation.

The first language experience may result in categorising second language sounds into "new" and "similar" [Flege 1987]; it may result in using the same or different strategies in the implementation of phonological contrasts [Keating 1984]; whatever the hypotheses as to the relationship between two types of acquisition, they can be studied and verified on the basis of the phonological representation constructed by the learner.

The comparability of representations forms a prerequisite for the comparability of rules, "if the representations are incorrect, then the rules cannot be correct" [Ard 1989: 243]. Phonological analysis is based on the recognition of a given level of representation of speech. The degree of abstractness of the representation believed to reflect the speakers' sound system depends on the tenets of the theory and constitutes one of the criteria for the assessment of the psychological reality of a given theory.

The considerations concerned with the problem of speech representation, the degree of abstractness understood as the distance between physical reality and its linguistic idealization fall within the scope of the general dilemma worded by A. Einstein in 1933, in Spencer Lecture, Oxford "On the Method of Theoretical Physics" as follows:

> We are concerned with the eternal antithesis between the two inseparable components of knowledge, the empirical and the rational. The structure of the system is the work of reason; the empirical contents and their mutual relations must find their representation in the conclusions of the theory. In the possibility of such a representation lie the sole value and justification of the whole system, and especially the concepts and fundamental principles which underlie it. Apart from that these latter are free inventions of the human intelect, which cannot be justified either by the nature of the intellect or in any other fashion a priori. [quoted after M. Halle and K. N. Stevens 1979: 335]

The representations posited for phonological system of the speakers and the representation system for phonetic implementation strategies employed by these speakers are two sides of the same coin: the relationship between them requires that they meet and permeate each other.

The acoustical signal produced by the human vocal tract and perceived by human auditory system needs to be represented in a way which enables comparison. The basic assumption underlying the representation of speech remains the ability of fluent speakers of a language to perform segmentation of utterances in this language in spite of variability of the acoustical signal.

The decomposition of segments into a matrix of distinctive features provides a tool for an analysis of speech system with regards to well-defined properties of these segments. The decomposition of segments into a set of properties enables us to look for cross-language as well as within language regularities, compare the segments and predict changes as well as areas of interference. However, in order for distinctive features to be effective in the case of languages-in-contact or interference study, they need to be well specified with reference to their phonetic contents.

The general acceptance of the Naturalness Condition formulated by Postal [1968] and the assumption concerning the existence of non-arbitrary relations between phonological or lexical representations and the corresponding phonetic ones results in the placement of phonetic constraints on phonological representations. It is the phonetic contents of distinctive features which forms the background for cross-linguistic studies of sound structure.

The theoretical framework allowing for the cross-language comparison on phonetic level needs to be adequate to the study of the phonetics of the first language of the speaker, i.e. the mother tongue, as well as the phonetics of the second language. Thus, in the study concerned with the physical properties of second language, we need to look for the theoretical model of grammar capable of describing, explaining, and predicting the processes obtaining both at the physical and classificatory phonetic level of the first and the second language used by the speaker. Moreover, we need the representation of the second language phonetics and the methods of mapping the phonetic transcription onto the physical representation, and *vice versa*.

3.1. Generative grammar as a theory of second language acquisition

Generative grammar has been the most influential theoretical framework of recent times. The phonological component of the grammar was developed in the SPE [*The Sound Pattern of English*, Chomsky and Halle 1968] and later modified with the modification of the grammar. Although the impact of the theory cannot be overestimated, the practical application of the descriptive techniques of classical generative phonology in the studies of second language phonetics and phonolology has been extremely limited. The main reason for difficulty in application of the theory in the second language context lies in the lack of the native speaker competence which one might refer to in constructing individual grammars of the speakers.

In classical formulation, Chomsky and Halle state that the phonological component is a system of rules which relate surface structures, i.e. the

output of the syntactic component, to phonetic representation. The surface structures contain lexical representations which are specified for those phonological properties which are not supplied by general rules; the general rules are determined by linguistically significant generalisations, observed in alternations. As the result, the organisation of the grammar assumes that the whole lexicon is available for the ideal speaker-hearer: such a requirement is clearly too strong and untenable in the second language user situation.

The competence of a non-native language speaker needs to be determined individually on the basis of what an individual speaker knows at a given moment, the task extremely complicated, if not impossible. Since the prerequisites for generative phonological analysis are not met in the second language learning/acquisition situation, the application of the theory cannot be straightforward.

Although Chomsky [1980] believes that the knowledge of language involves the knowledge of grammar, he claims that "pragmatic competence might be a cognitive system distinct and differently structured from grammatical competence" [Chomsky 1980: 90]. There are certain general principles, rules and representations which are believed to be included in the human genotype. The unified system of principles with a deductive structure and some open parameters to be specified by experience form Universal Grammar (UG).

The basic elements considered by the grammar are sentences, composed of words organized into phrases; the grammar generates mental representation of the phonetic form of the sentences (form) and logical representation (meaning), the elements of which must be set by experience to a large extent. It is under the conditions set by experience that human mind develops, finally reaching the steady state grammar. Language Acguisition Device (LAD), or UG may be thought of as "an abstract partial specification of the genetic program that enables the child to interpret certain events as linguistic experience and to construct the system of rules and principles on the basis of experience" [Chomsky 1980: 187]. The UG forms a matrix, a framework within which the experience is processed; at a relatively fixed age the stage of 'steady state' is finally reached, and subsequent modifications of the grammar are of minor character.

Language acquisition is consequently viewed as a period of reaching the steady state, but the intermediate stages, i.e. between the beginning of acquisition and the steady state attained, are of no interest to the grammar. In fact, Chomsky proposes that the input-output system, with experience forming the input for Language Acquisition Device which maps experience into the grammar, and the grammar as the output, be idealized as an instantaneous model, ignoring the intermediate states.

The approach to language acquisition presented so far offers many insights to the nature of second language acquisition as well; however, a number of problems need further discussion. The most imminent question regards the developmental aspect of acquisition, viewed as a function of time. Further questions concern the nature of linguistic experience determining the development of the grammar: the relationship between the components of linguistic capacities of the speaker, i.e. competence and performance in view of the first and second language acquisition as well as the influence of the first language grammar on the second language acquisition require consideration.

The implications of generative theory of acquisition for the developmental aspects of second language learning have been investigated by Cook [1985, 1988], who concluded that certain principles of Universal Grammar may have a determining effect on the order and type of structures acquired in the process of second language learning. The notions of core and periphery of the grammar and parameter setting have been mentioned as highly significant for the study of the development of second language grammar.

In the case of phonology, it is proposed by James [James 1987, 1988] that although certain parameters of Universal Grammar, such as left vs. right branching prosodic structure, might be set in the process of establishing the core of the phonological grammar of target language, the role of Universal Grammr in foreign language phonological development can be seen in 1) the type of structures, such as representations, rules, units and features, which constitute a subset of universally possible ones, 2) the order of emergence of the three main sub-representations of phonological structure: lexical, prosodic and rhythmic, with the lexical representation being acquired prior to the prosodic one and the prosodic prior to the rhythmic one in the development of the foreign language phonology.

Phonetic representation is specified as a product of feature values of three phonological sub-representations; thus the specification will reflect the development of different components at relatively different stages. Underlying representation is believed to be the basic one, central for the whole system, to which prosodic and rhythmic specifications are added in the process of grammar development.

It can be claimed that the underlying lexical representation forms the core of the phonological representation; the specification of the lexical properties of words needs to be detailed with regard to the their syntactic role as well as the morpho-lexical and structure-regularizing function, which is in the focus of attention of the theory of Lexical Phonology, as proposed by Kiparsky [1982, 1985], Mohanan [1982, 1986] and Rubach [1984, 1985].

Generative grammar has been formulated as a theory of language acquisition and use with the ideal speaker-hearer relation in mind. Consequently, some of the basic tenets of the theory are untenable in the second language learner/user case; the basic problem is connected with the assumed availability of the linguistic input for setting parameters of core grammar and the structure of underlying representations. However, it is the very difference between the first and second language acquisition, especially in the case of the adult second language learner, which makes the theory insightful into the language development in both cases.

The problem of the influence of the first language on the development of the second one has long been a central issue for the second language acquisition studies. Contrastive analyses have been attempted with the use of several methodologies within generative framework, contrasting rules, features and surface representations. The contrast of units, attributes, rules and representations is based on their universal typology and may be claimed to constitute part of the Universal Grammar; however, the individual values or forms of these universal categories vary from language to language, which has been recognized as a major problem for contrastive phonological studies [James 1988].

The comparison of underlying structures and rules across languages involves problems for all frameworks. Generative theory faces the dilemma with the comparison between the form and ordering of rules, which are language-specific and consequently incomparable; as Gussmann put it: "Whatever can be compared in strict, unambiguous terms relates to phonic substance and is of little significance, while the crucial formal aspects of structure can only be approached in an indirect approximative and partly impressionistic fashion" [Gussmann 1984: 34].

A possible way out has been suggested by Rubach [1983, 1984b], who proposes that the comparison of rules be made with the reference to the level at which particular rules operate in the grammars. He shows that the results of the contrastive analysis depend on the framework chosen for the study to a large extent: in the case of interference studies, he points to the fact that "phonological interference finds its source not only in the structure of phonemic/underlying systems and in the laws of phonotactics/morpheme structure conditions but also in phonological rules of the native language" [Rubach 1983: 149]. The powerfulness of the standard model is shown to be responsible for the inadequacy of the model for studies of phonological interference. However, most problems are believed to be overcome by the cyclic model of generative phonology, which has been further developed into Lexical Phonology.

The framework of cyclic phonology has been further refined in the formulation of Lexical Phonology. In Lexical Phonology, the subset of

postcyclic rules operating in an exceptionless, context sensitive way has been postulated as a separate, post-lexical level. As the rules responsible for interference belong to the exeptionless group, they have been assigned the post-lexical level of application.

Generally speaking, rules which are closer to surface representation are claimed to be more likely to transfer from the first language to the second. In the case of the distinction between morphophonemic rules and phonological rules [Linell 1979], phonological rules and processes [Donegan and Stampe 1979] or morphophonemic and phonetic rules [Hooper 1979], it is always the lower level type of rules which are believed to be conducive to the transfer.

The study of second language production with reference to the first language needs the basis of comparable representations to which the rules apply, and comparable set of features which rules operate on. Representations must be clearly specified by means of a set of features which they are claimed to represent. The existence of a minimal set of features proposed in the SPE seamingly provides the basis for comparability of phonetic segments in two languages; however, despite the fact that the SPE features are defined in terms of articulatory and acoustic properties, they do not relate in a direct way to the physical parameters of the speech signal.

3.2. The Structure of Phonetic Representation

The study of live speech invariably begins with the speech signal produced by the speaker and perceived by the hearer. The linguistic construct closest to the physical reality is the phonetic representation of speech. The relevance of clear definition of the phonetic representation stems from the basic need for tertium comparationis on the one hand, and the importance of theoretical implications for the availability of a given framework for second language acquisition studies on the other.

The search for phonetic representation system which would enable acoustic speech data analysis in the framework assuming permeability between phonological and phonetic level in the grammar is crucial for the present study. The discussion of different possibilities of representation of chosen phonetic parameters, i.e. Voice Onset Time, closure duration and vowel duration in a representation system will be offered in Chapter Three; on the basis of this discussion, a temporal parameter representation system will be proposed in Chapter Five. At present, however, let us review the classical generative grammar views on the nature of phonetic representation and more recent development of alternative solutions.

The definition of phonetic representation in generative grammar is far from straightforward; in the SPE, it is said to be "a representation of what the speaker of a language takes to be the phonetic properties of an utterance", determined by the speaker's "hypothesis as to its surface structure and his knowledge of the rules of the phonological component" [Chomsky and Halle 1968: 294]. Thus, the representation is believed to be a linguistic construct, embodying "all grammatically determined facts about the production and perception" [Chomsky and Halle 1968: 294], reflecting the phonetic (physical) properties at the same time.

Phonetic transcription is understood as the representation of the speaker-hearer's interpretation of the properties of the signal rather than the directly observable properties themselves; consequently, there is no discrepancy between the quasi-continuous nature of speech signal and the discrete symbols used in the representation system, or the problem of identical signals having different representations, etc. A person's interpretation of a speech event is an active process, "a process in which the physical stimulus that strikes the hearer's ear is utilized to form hypotheses about the deep structure of the sentence" [Chomsky and Halle 1968: 295].

Although Chomsky and Halle say that not each deep structure determines a single phonetic representation due to the existence of optional rules, given the deep structure and the rules of the language the representations, including the terminal one, i.e. the phonetic representation, can be generated.

Phonetic transcription is said to be related to the surface representation of syntactic structure of a sentence by rules of the phonological component. However, the lexical items which are the formatives of the syntactic structure cannot be represented by the phonetic form if we want to keep the explanatory power of the theory. Insofar as the variation in the phonetic form is concerned, we need the representation capable of rendering regularities: in the SPE terms, phonetic representation results from the application of phonological rules to the "two-dimensional matrix in which the columns stand for the successive units and the rows are labeled by the names of the individual phonetic features" (SPE: 296); the matrix is represented by a three-dimensional featural composition when feature geometry is applied.

Phonological representation as a lexical matrix is abstract in a sense that it is not necessarily a submatrix of a phonetic representation. The phonetic features used in the lexical entries are of classificatory, binary nature; the phonological features are abstract, although not arbitrary, categorial markers. The phonetic features in the phonetic representation do not need to be binary: they are "physical scales, assuming numerous coefficients, as determined by the rules of the phonological component". (SPE: 297).

The ambiguity of the SPE definition of phonetic representation provoked the suggestions that an additional level of phonetic representation needs to be introduced. Ladefoged (1980) proposes to distinguish between a systematic phonetic level and a physical or articulatory phonetic level [Ladefoged 1980]; Keating [1984] introduces three levels: a phonological level, a modified systematic phonetic level, which contains phonetic categories contrasting in a language, and a pseudo-physical level, which contains all parameters necessary for a phonetic description of a language. The SPE model represents lexical items as matrices of binary phonetic features; each segment is represented by a bundle of distinctive features given a "+" or "−" value. The inventory of binary features is static, phonological rules may change the values of the features, add or delete a segment. Phonetic rules, on the other hand, convert the binary values into the quantitative values corresponding to a continuous phonetic scale.

Generally speaking, phonetic implementation is believed to be a purely automatic consequence of the translation of phonological surface forms into a set of instructions for the vocal tract, which reacts in a predictable, conventional way, on the basis of universal principles. And although articulatorily-motivated phonetic features are used in the SPE specification of phonological representation, the lack of the organisation of features does not let them prevent highly abstract representations.

Under the theory of universal phonetics proposed by Patricia Keating [1985, 1990], the surface structure of phonological representation serves as input for the universal phonetic level, providing the phonetic category mapping system, which is connected to the low-level phonetic level by means of the phonetic detail rules. Phonetic rules account for the variation within these categories. Thus, the non-categorial phonetic continuity has been divided into two parts: the first phonetic component 'intermediates' between discreteness of phonology and continuity of phonetics.

The categorical phonetic representation is defined as "clusters of feature values aligned with elements of internal segment structure" [Keating 1990: 324]. The features used in this representation are still open to discussion, but the basic inventory is based on traditional, phonetically motivated phonological features. This categorical representation, the output of phonology, needs to be mapped onto two other phonetic representations, which correspond to the idealised physical representations referring to continuous spatial and temporal relationships. The representations are domain-specific: articulatory parametric representation is the output of articulatory rules, while acoustic parametric representation is the output of acoustic rules. The parameters used in these representations are related to features: the term parameters stresses the physical nature of both representations.

In articulatory phonology model [Browman and Goldstein 1986, 1990] the proposed nature of phonetic representation is different: rather than suggesting the extension of discreteness and categorical phonological world into the domain of phonetics as in the case of the universal phonetics model, it is proposed that articulatory based, multi-tiered phonetic representation be the output of phonology. Phonological forms are represented by means of units organised in terms of spatio-temporal relations; these relations form a four-dimensional representation corresponding to the phonetics of the speech units.

The division of labour between phonological rules and phonetic implementation bears directly on the nature of phonetic representation. When phonetic implementation principles prove to be responsible for most regular, although nondistinctive aspects of language-specific sound structure, which needs to belong to the internalised system of the language users, surface phonological representation becomes more abstract. The categorical component of the theory of phonology seems to have less work to do: it is the phonetic, non-categorial component which needs to be investigated in order to represent the dynamics of language use.

In the SPE, the comparability of phonetic representations within-language and across languages, is based on the assumption that two units are distinct if they differ in the value of at least one feature; sequences of units are distinct if they contain distinct units or units in a different order or number. In terms of more recent formulations of generative grammar, the structural entities form subsystems of rules and principles of Universal Grammar; the comparability is based on the parameters, or parameter setting across different language-specific grammars.

The actual phonetic representations need to be constructed by the learner of the second language; the construction is believed to be based on the core grammar, while the parameters can function as reference points for the recognition of new vs. similar elements [Flege 1987]. The correct underlying forms must be learned: the observation made by Kiparsky and Menn [1977] with reference to the first language acquisition, offers an important insight into the second language learner situation. In view of the fact that the ideal speaker-hearer knowledge of the lexical items of a language is unavailable to the second language learner, we must look for another basis for the construction of phonetic representation.

The recognition of the need for the construction of the representation on the basis of actual data available to the speaker seems to be the basic assumption for the study of second language acquisition and use. The explanatory and predictive power of the phonological theory for the second language use study remains in close relationship to the degree of abstractness

allowed in the phonological representations. The construction of the phonetic representation involves a certain degree of abstractness in the categorization of the speech signal in perception and production; how far removed from the physical reality can the phonological representation be without losing relevance to the actual speech analysis, is an open question.

4. FUNCTIONAL PERSPECTIVE: THE INFLUENCE OF SOCIAL AND PSYCHOLOGICAL FACTORS ON THE ACQUISITION OF SECOND LANGUAGE PHONOLOGY

The study of the second language speech production can concentrate on theoretical aspects of the compatibility of a given linguistic theory with the real-life data, or on the investigation of the extra-linguistic factors influencing the studied performance. The aim of the present article is to check the compatibility of existing models with the specific type of study, aiming at a wholistic view of the phenomenon of second language speech. The development of second language proficiency can be studied from the point of view of second language acquisiton as a dynamic process or as a certain stage of language proficiency which enables second language users to function within the majority, i.e. second language community. As we shall discuss the use of phonetic parameters by the speakers at one moment in their linguitic development, it is the latter approach we we shall use. However, the dynamism of language development will be present in the comparisons across subjects and groups of subjects: we shall compare the use of individual phonetic parameters and the combination of these parameters in the relation to socio-psychological conditioning of second language acquisition. The influence of social and socio-psychological factors on the second language acqusition and production has long been recognized and studied. However, recent years seem to have brought a true wealth of studies and models offering numerous insights into the nature of the second language speech. The sociolinguistic quantitative analysis introduced by Labov in the studies of *The Social Stratification of English in New York City* [1966], and *Sociolinguistic Patterns* [1972b] although concerned with monolingual communities in the first place, offers an excellent framework for the study of variation within bilingual or multi-lingual communities as well.

Bilingualism has been extensively studied within the framework of social psychology; the studies of Lambert and his associates [Lambert 1967; Gardner and Lambert 1972] were devoted to the investigation of the effect of subjects' attitudes and cultural beliefs on individual differences between subjects; the studies of social markedness in speech led to the

formulation of Accommodation Theory advocated by Giles and associates [Giles, Bourhis and Taylor 1977; Giles, Scherer and Taylor 1979; Beebe and Giles 1984]; according tothe Acculturation Model formulated by Schumann [1978, 1986] social and affective factors combined constitute a primary cause of variation.

Numerous studies discussed the interrelations between the two languages of a bilingual on the basis of the concept of interference introduced by Weinreich [1953], Briere [1968] and others. The model developed by Cummins [1979, 1984] stresses the fact that the efficiency of second language acquisition can be predicted on the basis of the level of the first language development.

The distinction between second language acquisition vs. learning has been studied by Krashen [1982; 1985]: language acquisition is claimed to be an unconscious process, stimulated by the input and progressing according to a certain predictable order, whereas formal learning equips the learner with the monitor used for 'editing' the speech. Krashen's model offers yet another angle in viewing variation in the speech of the second language user who is a member of a given minority language speech community. All subjects participating in our experiment have experienced some second language learning: regardless of the type of formal training, they are all conscious of the rules of the grammar and pronunciation when they speak of 'correct' English.

4.1. Theories of Second Language Acquisition relevant to language minorities

The discussion of a particular second language acquisition or learning theory in the context of the actual speech data elicited from the members of a minority group is mainly concerned with such aspects of the theory which offer insights into the differences in performance between individual speakers of the same group, i.e. sharing the same linguistic background. The first language is the same, so is the second, target language; thus, the same conditions for interference obtain, and yet there is high variability in overall proficiency, or in particular aspects of the target language: in our case, it is the variability in acquisition of the phonetic parameters used in the second tongue.

Clear definition of the variables of pertinent importance to the second language acquisition serves two purposes: it sets guidelines for the research procedures into the second language production on the one hand, and offers the basis for practical application in formal and informal language instruction on the other. Insofar as we exclude the individual language

systems, our search for the sources of variation can be speaker-internal or speaker-external. In other words, it is the influence of the outside world that causes variation, or/and certain characteristics of an individual speaker's mind and emotions that modify his/her linguistic performance.

Close relationship between social and psychological factors is present in socio psychological approach developed by Lambert [1967, 1968], who stresses the fact that the development of second language proficiency has important implications for an individual's self-identity. He distinguishes attitudes, i.e. attitudinal reactions to the language use within or across communities, from aptitudes, i.e. cognitive abilities, intelligence, etc., and orientation, i.e. the reasons for learning the language. Attitudes and orientation are responsible for the level of motivation to learn the target language; aptitudes, attitudes and motivation are claimed to have a direct impact on the development of language proficiency.

When proficiency of the second language reaches a high level, it is believed to have an influence on self-identity of the learner, resulting in additive or subtractive bilingualism, depending on the intergoup relations. If the proficiency in the second language does not entail the reduction of the first language importance, or its replacement, the resulting bilingualism is called additive, i.e. positive for self-identity; the second language proficiency seen as a threat to the first language results in subtractive bilingualism, which may lead to loss of cultural identity or alienation.

Second language acquisition is viewed as one aspect of a general process of acculturation of a non-native speaker of a language in the target language speech community in Schumann's theory. Acculturation and second language proficiency are determined by the distance between a learner and the target language speech community; a number of social and psychological situations which determine social and psychological distance are recognized, e.g. social equality between target and second language groups functions as a positive factor, reducing the distance, whereas the lack of social equality increases the distance; no culture or language shock is a psychologically positive factor, while the experience of culture or language shock increases the distance, acting as a negative factor, etc. [Shumann 1978; McLaughlin 1987].

The main factors influencing the variability in second language acquisition according to Schumann are the following:

(1) Affective variables in acculturation:

Language shock
Culture shock
Motivation
Ego-permeability

(2) Social variables in acculturation:
Dominance
Integration strategy
Enclosure
Cohesiveness
Size
Cultural congruence
Group attitude
Intended length of residence

The two types of variables: social and affective are jointly treated as 'acculturation' variable in this model. Social factors operate on a group level, in contacts between speech communities; the individual variables can be seen as modifying factors acting against the group ones. The social factors determining second language acquisition on the group level include social dominance, integration strategy, enclosure, size, cohesiveness, congruence, attitude and intended length of residence. Affective variables are language shock, culture shock, motivation and ego-permeability.

In Schumann's formulation of the conditions for second language acquisition, psychological distance dependent on the value of affective variables for individual speakers is a major factor. However, the social environment of the second language, i.e. social conditioning, although idependent of the speaker, forms conditioning factors for psychological condicyioning. Clearly, it is the influence of social factors that decides about the psychological distance.

Both Lambert's and Schumann's models are concerned with second language acquisition in "natural" settings, understood as an everyday contact with the native speakers of the target language in non-instructional situations. They stress the importance of the relationships obtaining across idividual communities which the learner belongs to, and between an individual learner vs. each community. However, these relationships are viewed as relatively stable, static conditions determining the process of second language acquisition. In providing the tools for the formulation of certain predictions about the degree of proficiency as the function of social/psychological distance or attitudes, orientation and aptitude, the theories fail to account for a constant process of negotiation in language use, the relativity of group membership and self-definition of group membership.

Another model of second language acquisition rather than language use, concerned with the final outcome of the process in the form of the level of competence reached by the learners, has been proposed by Gardner [1979, 1983]. His work, based on his and Lambert's experience, incorporates some of the issues already discussed here; however, the model hasso-

cio-educational basis, i.e. it assumes relevance to both formal and informal language acquisition settings.

The main claim of the model concerns the importance of social milieu, i.e. cultural beliefs, in determining the relative importance of individual differences, such as intelligence, aptitude, motivation and so on. These individual factors have an impact on the development of bilingual proficiency, depending on whether the learner has experienced formal language learning or informal language experience. The importance of individual attitudes as major variables stressed in all the above mentioned models as well as the relationship between social and psychological factors gives ground to the prediction that grouping of subjects on the basis of social variables allows certain predictions as to the value of affective variables. Consequently, the native speakers of Polish whose English speech production is investigated in the course of our experiment can be divided into two groups on the basis of social conditioning [e.g. integration strategy, enclosure, cultural congruence], and certain predictions as to the nature of affective variables can be made. The distance between each group and the majority language community can be expected to depend on the value of social and psychological variables.

However, before the discussion of sociopsychological variability can be attempted, the existence of linguistic correlates of the variability, referred to as sociolinguistic markers, need to be established.

4.2. Social Marking in Speech

As frequently mentioned, speech as a phenomenon can be analysed from various perspectives, depending on the objectives of the study.

Analysing speech from a purely linguistic standpoint, we are mainlyconcerned with aspects of the signal as the carrier of the message. However, as it is not possible to divorce the referential meaning from the information about the speaker's individual and social identity encoded in the signal, the discussion of the clues for attitude formation, which underlie communication in a social context, forms an integral part of the speech oriented research. Insofar as we accept the idea of language being part of a system of social norms, a background against which an individual can act and vary within certain limits [Sapir 1927], we take a sociolinguistic view. A social psychological perspective, on the other hand, affords the possibility of concentrating on the process of attitude formation.

It was already in 1929 that Sapir noticed the need for interdisciplinary study of linguistics; his statement, quoted by Briere [1980] in the paper

discussing the problem of communicative competence, variable rules and interdisciplinary research seems not to have lost its relevance today: "Linguists [...] are often accused [...] justly, of failure to look beyond the pretty patterns of their subject matter [...] They must become increasingly concerned with the many anthropological, sociological and psychological problems which invade the field of language" [Briere 1980: 89; cf. Sapir 1929: 214].

As Briere [1980] notices, at the same time when Chomsky claimed that "lingustic theory is primarily concerned with an ideal speaker-listener, in a completely homogenous speech community, who knows its language perfectly and is unaffected by [...] irrelevant conditions" [Chomsky 1965: 3; Briere 1980], Gumperz introduced the notion of different repertoires available to various members of speech community. Shortly afterwards, Fishmann introduced the concept of 'domain' [home, school, church, etc.], and Hymes defined the notion of 'communicative competence' which complements Chomsky's concept of purely grammatical competence by adding a functional perspective.

Interdisciplinary studies of linguistics focus on variability in speech: the variability within monolingual communities, bilingual/multilingual communities, within one speaker, and across speakers of the same, or different speech communities. Influenced by the investigation of socially conditioned variability in phonology and phonetics of the first language by Labov [1966, 1972a, b], the research into the sociolinguistics of the second language variability was begun in early 1970s, and has been continued by a growing number of researchers [Dowd, Zuengler, Berkowitz 1990].

The central domain of sociolinguistics can be defined as the "variety and diversity of language related to the social framework of its speakers" [Loveday 1982]. Thus, the sociolinguistic perspective points to the study of linguistic markers providing social information: in the study of speech signal, these are the components of what is generally referred to as accent. Understood as a set of systematic pronunciation variables, or systematic differences in acoustic properties of speech sounds of a given language [Wells 1982], accent is a subject-matter of sociophonetics.

The social aspects of being bilingual or multilingual, a very important issue for the users and learners of non-native languages, have been extensively studied by sociolinguists. The study has concentrated on minority groups in different countries, the conditions for social acceptance and language maintenance, the problem of ethnic identity and solidarity. The theories which seem most insightful for the second language acquisition conditioning in the bilingual situation are based on Lambert's social psychology model of second language acquisition [Lambert 1967] as a precursor: the before-mentioned Schumann's theory of acculturation, and the Accom-

modation Theory proposed by Giles [1977, 1979] and associates [Giles, Bourghis, Taylor 1977].

The phenomenon of style-shifting and social marking in the second language of bilingual speakers has been noticed at different levels of proficiency, even at the beginning level [Bebee and Giles, 1984]. Consequently, the dynamics of speech variation needs to be included in all types od second language studies if we want to be able to interpret the second language production in a systematic way and draw any conclusions from the variation inherent in it. The explanatory theory which seems very insightful in this respect, is the Accommodation Theory proposed by Giles and associates [Giles 1977; Giles, Schrerer and Taylor 1979].

The model is based on the claim of social psychology [Giles 1977] that sociolinguistics should not limit itself to the discussion of the reflection of large scale sociological categories of the language; there is a need for an integrated model which would combine sociolinguistic variables with such social psychological variables as: interlocutors' feelings, motives and values, their perception of each other and the interaction in general. In this sense, Accommodation Theory can be viewed as an extended version of Schumann's concept of relatively fixed social and psychological distance, enriched by the idea of dymanic relationship between interlocutors, whose feelings of social and psychological proximity fluctuate all the time.

The observation that people tend to adjust their speech in order to express their values and intentions, has led to postulating two terms for two distinct types of style shifting: convergence – the speaker's style-shift towards the interlocutor; divergence – the shift away from the interlocutor, employed in order to maintain or assert distinctiveness. Divergence tends to occur when intergroup categorization is explicit, consequently provoking a threat to distinctiveness or identity [Beebe and Zuengler 1983].

Speech is believed to contain social markers operating at two levels [Giles, Schrerer and Taylor 1979]. Level 1 is argued to serve to categorize speakers at a general biological or social level; the level 1 markers convey information about gender, social class, ethnic group or physical size. Level 2 markers reflect such more subtle and changing states as beliefs and motives. The evidence for the existence of two levels of marking in speech comes from the studies of Beebe [1977], Beebe and Zuengler [1983], Zuengler [1988], but there is a need to conduct further studies in order to determine the relationship between social markers in the pronunciation of a language as the first or the second one.

The studies conducted by Berkowitz, Dowd and Zuengler [Dowd, Zuengler and Berkowitz 1990] point to the use of earlier atested social marker of English as the first language, i.e. consonant clusters, dental fricatives and /r/, in English as the second language. The use of /r/ as

a social marker in L2 English was evident in all three studies, whereas consonant clusters proved to be social clusters in the two first studies. The case of /r/, consistently appearing as a marker in the studies, suggests the tendency for some sounds to be more likely to function as social markers than others. There is hardly any way to predict which sound will play this role; according to Trudgill [1981] sounds produced with the greatest consciousness by native speakers tend to undergo shifts, i.e. become markers, referred to as stereotypes by Labov [1972].

However, the degree of consciousness involved in the choice of markers can vary; Dowd, Zuengler and Berkowitz [1990] suggest that Trudgill's claim covers only the most common markers, whereas other markers operate on a less conscious or unconscious level. According to Giles, Schrerer and Taylor [1979], both prosodic and phonetic variants can carry social meaning. The nature of phonetic data, the continuity of the investigated signal posits problems with assessment of the L2 production i.e. judgement concerning the degree of conformity of a given sound with the L1 norm. The range of acceptability is necessary in order to render our judgement as to the closeness of a given sound to the L1 sound reliable. Moreover, we need to know the range of acceptability and the value judgement for the comparable L1 production.

5. CONCLUSIONS

The present review of current theories and frameworks pertaining to the dynamic study of second language speech production data was meant to introduce basic problems rather than provide answers. The main issue, i.e. the question of the possibility of achieving the goal of a unified analysis of such data within a unified framework, remains open for further investigation. We have not managed to provide any solutions; however, what we hope to have achieved is the preview of numerous problems that need to be addressed by a holistic functional study of speech.

The analysis of speech data elicited from the second language language users requires unified representation system, which would be readable by the phonological theory in order to attempt any generalisations as to the acquisiton of the phonological system; the elicitation of the data needs to be performed within strict methodological guidelines of an adequate socio-psychological theory in order to allow socio-psychological generalisations of the results; finally, the variables chosen for the analysis need to be carefully selected and motivated with respect to the phonological theory as well as the socio-psychological framework.

Once the theoretical prerequisits for the study are met, the dynamic nature of physically real speech patterns can be included into the analysis of speech variability. Bridging the gap between physical reality and the structure of the category-based system means getting closer to the process of system formation; the importance of finding new insights into the actual work of a bilingual mind cannot be overestimated. We believe that it is only through the holistic methodology that we can learn more about systems at work; and we need to know more about the dymamic linguistic system of the second language user in order to widen the scope of language production studies and practical applications of the theoretical studies to language teaching and learning.

REFERENCES

Ard, J. (1989) A constructivist perspective on non-native phonology. In S. M. Gass and J. Schachter (eds) *Linguistic Perspectives on Second Language Acquisition*. Cambridge: Cambridge University Press.

Beebe, L. M. (1977) The influence of the listener on code- switching. *Language Learning* 27/2: 331–339.

Beebe, L. M. and Giles, H. (1984) Speech accommodation theories: a discussion in terms of second language acquisition. *International Journal of the Sociology of Language* 46: 5–32.

Beebe, L. M. and Zuengler, J. (1983) Accommodation theory: an explanation for style shifting in second language dialects. In N. Wolfson and E. Judd (eds) *Sociolinguistics and Language Acquisition*. Rowley: Newbury House Publishers.

Briere, E. J. (1968) *A Psycholinguistic Study of Phonological Interference*. The Hague: Mouton.

Briere, E. J. (1980) Communicative competence, variable rules and interdisciplinary research. In R. C. Scarcella and S. D. Krashen (eds) *Research in Second Language Acquisition*. Rowley: Newbury House Publishers.

Browman, C. and Goldstein, L. (1990) Tiers in articulatory phonology, with some implications for casual speech. In J. Kingston and M. Beckman (eds) *Papers in Laboratory Phonology. Between Grammar and Physics of Speech*. Cambridge: Cambridge University Press.

Chomsky, N. (1980) *Rules and Representations*. Oxford: Basil Blackwell.

Chomsky, N. (1988) *Language and Problems of Knowledge*. Cambridge, Mass.: MIT Press.

Chomsky, N. and Halle, M. (1968) *The Sound Pattern of English*. Harper & Row.

Cook, V. J. (1985) Chomsky's universal grammar and second language learning. *Applied Linguistics* 6/1: 2–18.

Cook, V. J. (1988) *Chomsky's Universal Grammar. An Introduction*. Oxford: Basil Blackwell.

Cummins, J. (1979) Linguistic interdependence and the educational development of bilingual children. *Review of Educational Research* 49/2: 222–251.

Cummins, J. (1984) *Bilingualism and Special Education: Issues in Assessmentand Pedagogy*. Clevedon, England: Multilingual Matters.

Donnegan, P. J. and Stampe, D. (1979) The study of natural phonology. In D. A. Dinnsen (ed.) *Current Approaches to Phonological Theory*. Indiana University Press.

Dowd, J., Zuengler, J. and Berkowitz, D. (1990) L2 social marking: reserch issues. *Applied Linguistics* 11/1: 16–29.

Flege, J. E. (1987) The production of "new" and "similar" phones in a foreignlanguage: evidence for equivalence classification. *Journal of Phonetics* 15: 47–65.

Gardner, R. C. (1979) Social psychological aspects of second language acquisition. In H. Giles and R. N. Clair (eds) *Language and Social Psychology*. Baltimore: University Park Press.

Gardner, R. C. (1983) *Social Psychological Aspects of Second Language Learning*. London: Edward Arnold.

Garner, W. R. (1978) Aspects of a stimulus: features, dimensions and configurations. In E. Rosch and P. B. Lloyd (eds) *Cognition and Categorization*. Hillsdale: Erlbaum Ass.

Giles, H., Bourhis, R. Y. and Taylor, D. M. (1977) Towards a theory of language in ethnic group relations. In H. Giles (ed.) *Language, Ethnicity and Intergroup Relations*. New York: Academic Press.

Giles, H., Schrerer, K. R. and Taylor, D. M. (1979) Speech markers in social interaction. In K. R. Schrerer and H. Giles (eds) *Social Markers in Speech*. Cambridge: Cambridge University Press.

Giles, H., Ball, P., Gasiorek, B., Korytkowska, M. and Young, L. (1989) Ethnic identification, language and values: the case of Polish emigres. *Journal of Multilingual and Multicultural Development* 10, 2: 107–116.

Halle, M. and Stevens, K. N. (1979) Some reflections on the theoretical bases of phonetics. In B. Lindblom and S. Ohman (eds) *Frontiers of Speech Communication Research*. New York: Academic Press.

Hatch, E. (1983) *Psycholinguistics: A Second Language Perspective*. Newbury House Publishers.

Hooper, J. (1979) Substantive principles in natural generative phonology. In D. A. Dinnsen (ed.) *Current Approaches to Phonological Theory*. Indiana University Press.

James, A. R. (1988) *The Acquisition of Second Language Phonology*. Tübingen: Gunter Varr Verlag.

Keating, P. (1984) Phonetic and phonological representation of stop consonant voicing. *Language* 60/2: 286–319.

Keating, P. (1985) Universal Phonetics and the organization of grammars. In V. Fromkin (ed.) *Phonetic Linguistics*. New York: Academic Press.

Keating, P. (1988) The phonology-phonetics interface. In *Linguistics: The Cambridge Survey*, vol. 1. Cambridge: Cambridge University Press, 281–302.

Keating, P. (1990) The window model of coarticulation: articulatory evidence. In J. Kingston and M. Beckman (eds) *Papers in Laboratory Phonology. Between Grammar and Physics of Speech*. 451–470. Cambridge: Cambridge University Press.

Kiparsky, P. (1982) From cyclic phonology to lexical phonology. In H. Van der Hulst and N. Smith (eds) *The Structure of Phonological Representation*. Foris.

Kiparsky, P. (1985) Some consequences of lexical phonology. In C. Ewen and J. Anderson (eds) *Phonology Yearbook 2*. Cambridge: Cambridge University Press.

Kiparsky, P. and Menn, L. (1979) On the acquisition of phonology. Reprinted in: G. Ioup and S. H. Weiberger (eds) (1987) *Interlanguage Phonology: The Acquisition of a Second Language Sound System*. Rowley London: Newbury House Publishers.

Kluender, K., Diehl, R. L. and Wright, B. A. (1988) Vowel length differences before voiced and voiceless consonants: an auditory explanation. *Journal of Phonetics* 16: 153–169.

Krashen, S. D. (1982) *Principles and Practice in Second Language Acquisition*. Oxford: Pergamon Press.

Krashen, S. D. (1985) *The Input Hypothesis: Issues and Implications*. London: Longman.

Labov, W. (1966) *The Social Stratification of English in New York City*. Washington D.C.: Center for Applied Linguistics.

Labov, W. (1972) *Sociolinguistic Patterns*. Philadelphia: University of Pennsylvania Press.

Ladefoged, P. (1980) What are linguistic sounds made of? *Language* 56/3: 485–502.
Lambert, W. E. (1967) A social psychology of bilingualism. In J. B. Pride and J. Holmes (eds) 1972. *Sociolinguistics*. London: Penguin.
Lambert, W. E. (1968) A study of the roles of attitudes and motivation in second language learning. In J. Fishman (ed.) *Readings in the Sociology of Language*. The Hague: Mouton.
Linell, P. (1979) *Psychological Reality in Phonology: A Theoretical Study*. Cambridge: Cambridge University Press.
Linell, P. (1982) The concept of phonological form and the activities of speech production and speech perception. *Journal of Phonetics*: 37–72.
Locke, J. L. (1983) *Phonological Acquisition and Change*. New York: Academic Press.
Loveday, L. (1982) *The Sociolinguistics of Learning and Using a Non-Native Language*. Pergamon Institute of English.
McLaughlin, B. (1987) *Theories of Second-Language Learning*. London: Edward Arnold.
Mohanan, K. P. (1982) *Lexical Phonology*. PhD Dissertation MIT, circulated by Indiana University Linguistic Club, Bloomington.
Mohanan, K. P. (1986) *The Theory of Lexical Phonology* D. Reidel Publishing Company.
Postal, P. (1968) *Aspects of Phonological Theory*. New York: Harper and Row.
Rosch, E. (1978) Principles of categorization. In E. Rosch and B. Lloyd (eds) *Cognition and Categorization*. Hillsdale: Erlbaum.
Rubach, J. (1983) Applied contrastive linguistics: in search of a framework. *Iyvaskyla Cross-Language Studies* 9: 141–156.
Rubach, J. (1984) *Cyclic and Lexical Phonology: The Structure of Polish*. Foris Publications.
Rubach, J. (1985) Lexical phonology: lexical and postlexical derivations. *Phonology Yearbook* 2: 157–172.
Sapir, E. (1929) The status of linguistics as a science. *Language* 5: 207–214.
Schumann, J. M. (1978) The acculturation model for second language acquisition. In R. C. Gingras (ed.) *Second Language Acquisition and Foreign Language Teaching*. Arlington, VA: Center for Applied Linguistics.
Schumann, J. M. (1986) Research on the acculturation model for second language acquisition. *Journal of Multilingual and Multicultural Development* 7/5: 379–392.
Trudgill, P. (1981) Linguistic accommodation. In *Papers from the Parasession on Language and Behavior*. Chicago Linguistic Society: University of Chicago Press.
Weinreich, U. (1968) *Languages in Contact: Findings and Problems*. Mouton: The Hague.
Wells, J. C. (1982) *Accents of English*. Vol. 1–3. Cambridge: Cambridge University Press.
Zuengler, J. (1986) Identity markers and L2 pronunciation. *Studies in Second Language Acquisition* 10/1: 33–50.

Ewa Waniek-Klimczak

TEORETYCZNE PROBLEMY BADAŃ NAD MÓWIONYM JĘZYKIEM OBCYM

Badanie dynamicznego systemu dźwiękowego, jakim dysponują użytkownicy drugiego języka wymaga uwzględnienia różnorodnych uwarunkowań determinujących ten system. Ponieważ uwarunkowania te pochodzą z dwóch źródeł: systemu językowego oraz psychospołecznej sytuacji mówcy, badanie nabywania systemu języka drugiego i jego użycia powinno uwzględniać to podwójne uwarunkowanie w metodologii oraz sposobach przeprowadzania badań. Głównym

celem autorki jest przedstawienie w artykule problemów związanych z doborem odpowiednich metod badania użycia drugiego języka w szerokim kontekscie: przedstawiono w nim wybrane teorie fonologiczne oraz modele socjo-psycholingwistyczne, ktore omówiono pod względem ich przydatności w całościowym badaniu dynamicznych danych językowych. Wnioski z takiego krytycznego przejrzenia niektórych teorii wskazują na możliwość wykorzystania pewnych elementów modeli, które wymagają dostosowania do potrzeb badania mającego na celu przekroczenie bariery pomiędzy fizyczną realnością mowy a jej fonologiczno-funkcjonalną interpretacją.