

SOME PRACTICAL FACTORS IN THE EARLY DEVELOPMENT OF LINGUISTICS AS A SCIENCE

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1. INTRODUCTION

This essay shows how some external, practical factors of seventeenth century Europe contributed to what we now think of as the science of linguistics. The factors considered here can be divided into two groups: (1) travel and trade, and (2) printing and literacy. These two factors converged in creating a need for wider communication among peoples and a new, more objective, way of viewing language. In turn these advances led to the creation of universal language plans which contributed to the beginnings of modern phonetics and lexical semantics.

1.1 LINGUISTIC HISTORIOGRAPHY

Intellectual histories can be written from either of two points of view: internal or external. Internal histories trace the ideas and contributions of individual scholars and movements while external histories focus on the external social, cultural and economic forces that influence the course of a discipline. Most historiographers of linguistics concentrate on internal histories, documenting the contributions of specific individuals and tracing the developments of particular schools of thought. (Some notable exceptions to this generalisation are Padley 1976, 1985; Percival 1975, 1986; Robins 1976, 1979, 1988.) A problem with such exclusive attention to individuals and schools is that other contributing factors are, as a consequence, often ignored, and we are left with the impression that discoveries, innovations and trends occurred isolated from any real-world environment. This essay attempts to show how some of the changes that took place in England and France during the seventeenth century affected how language was viewed, and that these changes influenced the subsequent development of scientific linguistics.

1.2 LINGUISTICS AS A SCIENCE

Linguistics as an empirical science is generally considered to have begun in the nineteenth century. In Pedersen's (1931:1) words, "Until the close of the eighteenth century, European linguistic science had advanced but little beyond the knowledge of linguistics achieved by the Greeks and Romans". The immediate reasons for the sudden growth in the development of linguistics as a science were the

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rapid expansion of knowledge about newly discovered languages (both Indo-European and non-Indo-European) and the creation of the comparative method. Both these advances and others in the areas of phonetics and semantics can be seen to have been stimulated by the earlier practical concerns stemming from travel and trade on the one hand and printing and literacy on the other. These influences are external in the sense that they are external to the discipline of linguistics. They are practical in that they developed from the social and economic needs of the times, not primarily from intellectual curiosity about the nature of language.

2. THE PRACTICAL FACTORS

The practical factors considered here were not, of course, the only external factors affecting the development of linguistics. An enormously important factor which will not be discussed here has been the work of Christian missionaries throughout the world from the Middle Ages to the present. As Robins (1988:475) notes: "...linguistic scholarship marched in step with Christian evangelism, as it has continued to do. The *Propaganda Fide* department of the Roman Church was as prominent in the sixteenth and seventeenth centuries in high-grade linguistic work as the Protestant Summer Institute of Linguistics is today".

2.1 TRAVEL AND TRADE

One of the most significant aspects of the seventeenth century was that the known world was expanding as it never had before. Explorers, traders and missionaries were travelling widely for the first time and discovering new peoples, cultures and languages. This had the direct and well-documented effect on linguistics of producing data from a wide variety of languages (see, for example, Pedersen 1931), but it also had another less well-recognised effect. It brought to the attention of scholars the need for communication between speakers of different languages and fostered the idea of creating a new, universal language.

2.2 PRINTING AND LITERACY

In the two centuries following the introduction of printing to England in 1476, reading and writing became widespread; this new literacy also contributed to the development of universal languages. In Slaughter's words (1982:10-11):

From all available evidence, it appears that in the middle quarters of the seventeenth century, England became a literate culture as opposed to an oral one. This is not to say merely that some people read or that some people wrote. It is to say the written language and its media and all the social, cultural and cognitive change that goes with it, became institutionalized and predominant. One of the things made possible by printing/literacy was the collection and transmission of vast amounts of information; this required first that there be an adequate language with which to represent that information.

Slaughter also points out that printing had another, cognitive, effect on linguistic scholars of the time in that they began to consider language and its forms in a more objective way. In her view, writing causes language to become decontextualised; it changes language "from an aural, temporal dimension to a visual, spatial one" (Slaughter 1982:40). And this decontextualisation is a crucial step on the way to language becoming an object of scientific study. An important consequence of this

new attitude is that for the first time those concerned with pronunciation were able to clearly make the crucial distinction between letters and the sounds they represented. This innovation is especially prominent in the phonetic sections of Wallis's 1653 grammar (Kemp 1972).

3. INTERNATIONAL COMMUNICATION

What we see happening in the seventeenth century is a convergence of two independent kinds of factors in the need, for very practical reasons, of an international language and a rational way of representing that language.

3.1. LATIN AS AN INTERNATIONAL LANGUAGE

Until this time in Western history scholars had used Latin as a universal language of communication, an academic lingua franca. Indeed one of the most significant developments of seventeenth century grammar is a direct consequence of this fact. In 1644 the Port Royal linguist and logician, Lancelot, published his *Nouvelle méthode pour apprendre facilement et en peu de temps la langue latine*; this was the first of many editions of the grammar and was noteworthy for at least two reasons. It was one of the first pedagogical grammars written in the vernacular; but more important in terms of the development of scientific linguistics was its relationship to its companion volumes, *Grammaire générale et raisonnée* (Arnauld and Lancelot 1660) and *La logique, ou, L'art de penser* (Arnauld and Nicole 1662). As Padley (1985:232) points out, "Most authors of vernacular grammars between 1500 and 1700 have no higher aim than the simple – and necessary – production of practical manuals for the classroom or for the use of travellers abroad". *Nouvelle méthode* was no exception to this; it was originally produced for the very practical purpose of teaching Latin as a second language. However, with later editions and the publications of the *Grammaire générale* and *La logique, Nouvelle méthode* (in combination with them) presented some innovative ideas about the nature of language. One such idea was the fundamental distinction between intension (the attributes of what is described by a word) and extension (the things referred to by a word) (Kretzmann 1967:379). Another was the notion that all languages have an underlying, essential, universal character which is a reflection of the rational nature of human beings. Later publications of New Method grammars of Greek, Spanish and Italian exploited this fact. Other ideas that appear in the Port Royal works are that this universal property of languages is logical in nature and that ellipsis is to be explained as (essentially) deletion under identity. This sounds very modern, and indeed Chomsky (1966), in addition to claiming that the Port Royal *Grammaire générale* derives from the philosophy of Descartes, has suggested that it is the real precursor to transformational grammar.

Regardless of the controversy surrounding the Cartesian nature of these works (Aarsleff 1970; Lakoff 1969; Salmon 1969), one of Chomsky's points is valid. The Port Royal grammarians considered language in a way very similar to modern generative grammarians, with abstract, underlying forms and transformational-type rules for deriving surface structures. These scholars can be seen as making a transition from the essentially practical endeavour of pedagogy to the beginnings of the scientific approach to syntax and semantics. Their idea that there is an underlying, rational, universal level common to all languages was adopted by a generation of language planners who attempted to put this theoretical tenet to practical use in the development of an artificial, universal language to replace Latin as the international language for travellers and scholars alike.

3.2 UNIVERSAL LANGUAGE SCHEMES AND SEMANTICS

Despite the attempts of scholars and educators like those at Port Royal, Latin was losing its position as a practical universal language for several reasons. For one thing, not everyone who needed a lingua franca was a scholar; the new merchant class needed to be able to communicate with speakers of other languages, but had neither time nor inclination to spend hours in the classroom learning Latin. For another thing, Latin had been closely associated with the Catholic Church which, due to the reforms of the period, no longer maintained the widespread prestige (or even approval) that it had earlier. And finally, even among those who had learned Latin as children, there were at this time so many different pronunciations (influenced, naturally enough, by the speakers' native languages) that it was no longer entirely mutually intelligible across speakers.

This need for a new international language, along with the growing attention to a scientific approach to matters and the increasing number of literate people, led to the development of artificial languages or systems of 'real characters'. These invented, 'auxiliary' languages were to be independent of any known natural language, were based on rational organisation, and consisted of taxonomies with associated writing systems that were intended as accurate representations of all the ideas and things in the known world. The culmination of these language plans, Wilkins's *Essay towards a real character* (1668), has been aptly referred to as 'a grammar of things' (Cohen 1977:30).

Other prominent language planners were Dalgarno and Leibniz and it has been noted that some of their work was motivated by more than one kind of pragmatic factor: "It is clear that Leibniz intended the *caractéristique universelle* to supply not only a clear, regular, unequivocal means of communicating between scholars, but also an instrument of reasoning that, if composed with the greatest care, would, he believed, lead inevitably to a certainty of conclusion comparable with that found in mathematical demonstrations" (Knowlson 1975:109).

The essentials of the universal languages were that their words were organised into a rational system, that they were built up from a set of basic elements or characters ('semantic primes' in modern parlance), and that the written forms of the words reflected their meanings. It is often noted that this idea was a direct consequence of the discovery of Chinese and its logographic writing system. (For more details on these language schemes, see Breckle 1975; Cohen 1977; Knowlson 1975; Large 1985; Salmon 1972, 1979, 1986; Slaughter 1982.)

As is well documented in Slaughter, the universal language schemes were closely allied to the development of taxonomical science; one of the major concerns of the time was nomenclature: how to systematically refer to all of the new things being discovered by travellers and explorers. This taxonomising of knowledge helped form the foundation for modern semantics.

Modern synchronic semantics can be conveniently divided into lexical and logical varieties. Except for the foreshadowing by the Port Royalists mentioned above, logical semantics is essentially a product of the twentieth century. Lexical semantics, on the other hand, is based on the notions of taxonomy and relations very like those that the language planners of the seventeenth century devised. Wilkins's *Essay* (1668) was a source of inspiration to one of the nineteenth century's great lexicological efforts, *Roget's Thesaurus* (1852), which in turn exerted an influence on subsequent linguists, including Bally (Firth 1937:74; Salmon 1979:202-203).

In more contemporary terms, Dolezal (1987:271) shows how Wilkins, in constructing his 'philosophical tables' uses the concept of semantic primitives and hierarchy which "can be seen as a development of a structural semantics". More specifically, Dolezal (p.280) argues that the method

that Wilkins used was essentially the same as modern componential analysis in that he made use of techniques that are very similar to Nida's criterial processes of "naming, paraphrasing, defining and classifying". In addition, Wilkins's hierarchical classification uses the basic sense relations (in modern terminology) of synonymy, antonymy and hyponymy which are central to modern lexical semantics.

Universal writing systems, which evolved from an earlier concern with cryptography and stenography, were an important component of most of the seventeenth century artificial languages (Cohen 1977:13-17; Knowlson 1975:18-20). In the late sixteenth century interest developed in creating secret writing systems in which symbols represented whole words (as in Chinese) or, in some cases, whole sentences. This efficient way of coding language was soon adopted by Bright (1588, 1628) as a means of recording public linguistic events, such as religious sermons and court proceedings. Bright's symbols were isomorphic to words and formed the inspiration behind the notion that an ideal universal language should have an associated universal writing in which each symbol represented one concept.

Other aspects of writing were also of importance to the scholars of this period; Dalgarno, Holder and Wallis, for example, were concerned with teaching writing to deaf mutes, and the beginning of phonetics in Britain was closely allied with attempts to rationalise and standardise English spelling.

4. PHONETICS IN ENGLAND

The two most crucial factors in the early development of scientific phonetics in the West were writing systems for universal language and the reformation of spelling. Among those language planners whose interest in writing led them to a concern with phonetics were Lodwick and Wilkins. Lodwick (1647) is generally credited with devising an alphabetic system which displays natural phonetic classes not unlike today's generative phonologists (Abercrombie 1948; Fromkin and Ladefoged 1981; Salmon 1972). Wilkins, in order to devise a writing system as closely related to pronunciation as possible, carefully investigated how each sound was made, and organised all the observed sounds into charts based essentially on place and manner of articulation. He also used binary features, discussed suprasegmentals, and used minimal pairs in his analyses (Subbiondo 1987). In Wilkins's *Essay* we find drawings of articulations for vowels and consonants that are surprisingly modern.

The other major impetus behind the development of phonetics was the standardisation of spelling, and this was not (as it is sometimes assumed) the work of Caxton and subsequent printers. Brengelman (1980) convincingly argues that the regularisation of spelling was a concerted effort of the seventeenth century linguistic scholars, including not only Lodwick and Wilkins but also Wallis and Holder.

John Wallis could justifiably be called the father of articulatory phonetics. He was the first to systematise phonetic descriptions in terms of place and manner of articulation and to propose a universal theory of phonetics based upon it (Constantinescu 1974; Fromkin and Ladefoged 1981). The sophisticated system of phonetics found in Wilkins's work is based upon Wallis's descriptions. Kemp (1972:40-66) points out that Wallis introduced innovations in the descriptions not only of segmental features but also of pitch, sentence intonation and syllables. Wallis is also the first to consistently succeed in distinguishing letters from sounds.

Holder's later work (1669) builds upon Lodwick's features and includes distinctions of voicing and obstruency; he also presents "phonetic properties which serve to specify all possible sounds and classes of sounds" (Fromkin and Ladefoged 1981:4). The combined efforts of these four orthoepists and lexicographers provided the foundations of the science of phonetics.

5. THE BEGINNINGS OF COMPARATIVE LINGUISTICS

We saw above that Leibniz was one of the foremost of the universal language planners; he also played a role in another advance of the period. Although his main ideas about language families turned out to be wrong, based as they were on 'some sort of inspired intuition' rather than rigorous analysis of data, he did help to establish the systematic collection and documentation of the world's languages (Pedersen 1931:9). He, along with kindred souls, including Catherine II of Russia, encouraged traders, explorers and missionaries to catalogue the languages they encountered in their travels. This effort culminated in Adelung's classic *Mithridates* (1806 – 1817), which helped prepare the foundations for modern historical-comparative linguistics.

6. CONCLUSION

The importance of the seventeenth century Port Royal *Grammaire générale* to grammatical theory has long been recognised. And it is almost tautological to say that the science of comparative linguistics could not have developed without the discoveries made about the languages of Europe, Asia, Africa and America in the seventeenth and eighteenth centuries. What is less obvious is that during the seventeenth century these discoveries, in conjunction with the spread of literacy, formed the foundations for modern phonetics and lexical semantics.

A cross-linguistic need for communication arose in this period because of the encounters that travellers and traders had with speakers of new languages. An important consequence of this was the development of universal language plans, which included the fundamental sort of taxonomies that modern lexical semantics rests upon, and which encouraged an interest in the relationship between writing and speech. The growth of the printing industry and the resulting widespread literacy led to attempts to regularise spelling and orthography which, in conjunction with universal writing, resulted in the beginnings of scientific phonetics.

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