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—MICHAEL RUSE

TRUBETZKOY, NIKOLAJ SERGEEVIČ

(1890–1938), Russian linguist who played an important role in the development of structural linguistics and structuralism. Born in Moscow in one of the foremost aristocratic families of Russia, one that included several eminent scholars—his father was professor of philosophy and the first elected rector of Moscow University—Trubetzkoy (also spelled Trubeckoj) was educated privately at home. After studying at Moscow University from 1908 to 1913, Trubetzkoy graduated after writing a work on the expression of the future in Indo-European and was appointed a special research associate, thus becoming a candidate for a professorship. Having spent the academic year 1913–1914 in Leipzig, a leading Neogrammarian center where he attended courses together with Leonard Bloomfield and Lucien Tesnière, he passed his doctoral exams in 1915. Appointed *privatdozent* at Moscow University, Trubetzkoy began to teach Sanskrit. For reasons of health, he left Moscow for the Caucasus in 1917. The civil war prevented him from returning to Moscow. In 1918, he fled to Tbilisi, then to Baku and Rostov, where he taught at the university. In 1919, Trubetzkoy fled again, this time to the Crimea and from there to Constantinople. In 1920, he was appointed a *docent* at Sofia University, where he stayed for two years. In 1922, Trubetzkoy moved to Vienna, where he held the Slavic chair at the university until his death in 1938.

Although Trubetzkoy was not one of the six founders of the Prague Linguistic Circle, he soon became one of its most active members. He was informed about the Circle's activities as early as the end of 1926; in February 1927, he delivered his first speech there ("The Alphabet and the Sound System"). Together with Roman Jakobson and Sergej Karcevskij, he signed the theses presented at the First International Congress of Linguists at The Hague. As a result of his activities, he was appointed president of the Association phonologique internationale, created at the International Phonological

Conference held in Prague and organized by the Circle in 1930.

Although probably best known as a linguist, Trubetzkoy's interests were not restricted to this field: many of his studies are devoted to the history of culture, folklore, ethnology, and literature. Yet even as early as his university studies, he considered linguistics as the only discipline in the humanities with a scientific method, while the other disciplines were still at the stage of "alchemy." And although Trubetzkoy's name is most closely associated with the development of structural phonology, his linguistic interests covered a variety of themes, such as the history of literary language, the typology of language structures, comparative grammar, and the theory of language contact.

In 1915, Trubetzkoy shifted his interest from general Indo-European to Slavic philology after he became acquainted with a recent book by the leading Russian linguist A. A. Sachmtov, the *Outline of the Oldest Period of the Russian Language*, which contains a treatment of sound development in pre-Slavic and its relevance for modern Russian. After his public discussion of the methodological drawbacks of this book, Trubetzkoy endeavored to write a systematic "Prehistory of the Slavic Languages," assuming that they evolved from a pre-Slavic language that in turn derived from Indo-Germanic. During his migratory years between 1917 and 1919, he began this work, which was never published. He left the manuscripts at Rostov University, where they perished during World War II; his later reconstructions and partial elaborations at Vienna have also been lost.

His first book, *Europe and Mankind (Evropa i človečestvo, 1920)* was published during his stay in Bulgaria; in it, he proclaims the equality and incommensurability of all peoples and cultures, argues against Romano-Germanic-dominated Eurocentrism, and calls upon other European ethnic intellectuals to remember their specific cultural values. In 1921, he coedited *Exodus to the East (Iskhod k vostoku)* and was a cofounder of the Eurasian movement, which held a scientific, ideological, and political position according to which Russia and Asia are seen as an integral ethnogeographical and cultural unity. For Trubetzkoy, linguistic and cultural diversity was a necessary element of mankind; his writings on this topic are a blend of moderate version of nationalism and a rejection of cultural ethnocentrism. In Vienna, Trubetzkoy continued this line of thinking in studies

such as *The Legacy of Genghis Khan* (*Nasledie Cingiskhana*, 1925), and *On the Problem of Russian Self-Awareness* (*K probleme russkogo samopoznaniia*, 1927). In one of these studies, "The Tower of Babel and the Confusion of Tongues" (1923), he formulated the outlines of his theory of language contact and developed the concept of language unions and cultural zones according to which not only genetically related languages but also languages from different language families or branches in permanent contact with each other may develop and display parallel structures (e.g., in Europe, the Balkan languages: Bulgarian, Romanian, Albanian, and Modern Greek). At Vienna University, Trubetzkoy taught Slavic literatures and also published several monographs in this field of research, such as his *Vorlesungen über die altrussische Literatur* (1973), *Die russischen Dichter des 18. und 19. Jahrhunderts* (1956), and *Dostoevskij als Künstler* (1964).

Despite Trubetzkoy's broad spectrum of publications, his *Grundzüge der Phonologie* (1939) remained his magnum opus and was the source of his international fame. In a way, it can be regarded as a counterpart to his unpublished "Prehistory," which was in its original plan diachronically oriented. At that time, synchronous phonological analyses were outside of Trubetzkoy's sphere of interest; only in 1926, when he was confronted with the problem of bridging the gap between a synchronic analysis of the phonological system and historical phonetics did he reach the conclusion that any phonological change can be explained only by recourse to the whole phonological system in question. This confirmed his assumption that comparative-historical grammar can be studied best on the basis of a system derived from living languages.

Based on Ferdinand de Saussure's distinction between *parole* and *langue*, Trubetzkoy introduced the terminological and conceptual opposition of phonetics and phonology (or phonemics): whereas phonetics is the study of the material sounds and their articulation in speech, phonology is concerned with language sounds as functional elements in a system. The theoretically infinite number of phonetic realizations are thus reduced to those differences that play functional roles in the system—namely, phonological oppositions. As opposed to phonetics, phonology is thus related directly to semantics, since phonological functionality is determined by a semantic effect.

Trubetzkoy's concept of phonology has been extremely influential: it was elaborated further by Roman Jakobson in terms of a system of distinctive features; this approach has been successfully transferred to other semiotic systems (e.g., that of Claude Lévi-Strauss). Also, Trubetzkoy's general distinction between phonology and phonetics has been extended methodologically by distinguishing generally between *etic* and *emic* approaches in semiotics: an *etic* approach is nonstructural and studies surface phenomena, whereas an *emic* approach is structural and considers elements of sign systems with regard to their function in the system.

[See also Language Change; Langue and Parole; Opposition; Prague School; Saussure; Semiotic Terminology; and Structuralism.]

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—PETER GRZYBEK

TURING, ALAN (1912-1954), British mathematician whose works on computation had a crucial influence on the development of computer science, artificial intelligence, and cognitive science. His abstract machine, known now as the Turing machine, provides a mechanism for using algorithmic structures to perform automated computations. In other words, he provides the mathematical and theoretical framework and foundation for the physical realization of today's computers, most of which are based implicitly on these theoretical considerations.

During World War II, Turing worked in a research

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