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Hinweis: Herdan hat allein oder mit anderen zusammen eine ganze Reihe weiterer Untersuchungen veröffentlicht, vor allem zu medizinischen Themen.

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### XXXI. B.I. Jarcho as a pioneer of the exact study of literature

The Russian philologist Boris Isaakovič Jarcho (Engl. transliteration also: Yarkho) (1889-1942) holds a prominent position in the history of quantitative approaches. He was born in Moscow, on March 14th (26th), where he studied at the historical-philological faculty, graduating in 1912. After his graduation he spent some time in Heidelberg and Berlin to broaden his knowledge in the field of classical philology. Returning to Moscow in 1916, he worked as an assistant professor at Lomonosov Moscow State University and became a member of the well-known Moscow Linguistic Circle MLK (Moskovskij lingvističeskij kružok) in 1921.

In 1921 he was accepted as a full member of the Russian Academy of the Science of Arts (“Rossijskaja Akademija Chudožestvennych Nauk” – RACHN, later, in 1925, renamed in “Gosudarstvennaja Akademija Chudožestvennych Nauk” – GACHN). In the academy, he headed “The Cabinet for Theoretical Poetics” and “The Commission for Literary Translation”. After the liquidation of the GACHN in 1930, Jarcho was mainly engaged with the translations of literary texts. In the context of the affair of the „nemcy-slovarniki“ he was arrested in 1935 and sentenced to three years of prison, which was later changed to a banishment to Omsk.



B.I. Jarcho (1889-1942)

I He died in 1942 – completely isolated from the academic life – in the town of Sarapul (cf. 1969, Šapir 1990, Akimova/ Šapir 2006).

In addition to his main scientific foci in medieval literature, stylistics, metrics, poetics and theory of the drama, his theoretical and methodological contribution to the exact analysis of literary text should be emphasized. His concept of an exact analysis of literary texts can be integrated into the Russian history of quantitative approaches in the study of literature and linguistics (cf. Grzybek/Kelih 2005, Kelih 2007). Furthermore, Jarcho's contribution is to be understood as a scientific link between the linguistic-orientated Moscow Linguistic Circle (a main institution of the Russian Formalism) and the phenomenologically orientated formal-philosophical school (located at the above-mention-

ed GACHN), headed by Gustav G. Špet, an important Russian follower of Edmund Husserl.

Along with A. Belyj, B.V. Tomaševskij and G.A. Šengeli, B.I. Jarcho made one of the most comprehensive and important contributions to the application of quantitative methods in the analysis of literary texts. It should also be noted that his contribution has been adequately appreciated only in the last years, after the publication of his main monograph “Methodology of a Precise Science of Literature [Metodologija točnogo literaturovedenija]” in 2006 by Russian philologists M.V. Akimova and M.L. Šapir (cf. Jarcho 2006). It is impossible to discuss all his ideas and considerations in the field of qualitative and quantitative text analysis (cf. Margolin 1979, Šapir 2005, Kelih 2007a: 122f) in this article; therefore, we will focus our attention on his main contributions in statistical and empirical text analysis, based on his works (Jarcho 1925, 1927, 1935, 1969, 1984, 2006).

Jarcho defined the study of literature as a nomothetic science with linguistics and statistics as their main auxiliary disciplines. For him, the main precondition for an empirical and statistic-based analysis of literary texts is the definition of the used literary terms. Following Jarcho (1984: 198) “there is no statistical analysis without a ‘morphological’ [in the sense of linguistic] analysis.” The second auxiliary discipline, statistics, has the function to support the exact and „objective“ analysis of the underlying morphological categories. In this respect – according to Jarcho – it is possible and reasonable to build up the study of literature in analogy to natural sciences as an exact science. His concept should not be understood as a visionary project, but rather as a partly realized project by Jarcho and his colleagues (N.V. Lapšina, I.K. Romanovič).

The frequency of formal text characteristics is considered to be the central component of his exact text analysis. This approach has been justified by his understanding of the “literaricity” [literaturnost'] of a text. He defined the “literaricity” as the totality of text elements, which have the potential capacity to “inspire” the readers' aesthetic perception. An aesthetic perception – according to Jarcho – is mainly supported by the frequency of text elements, if a certain frequency occurs in a specific proportion. He assumes that the aesthetic effect of unusualness is triggered by a specific occurrence of elements, which a reader perceives as unusual.

In addition to this quantitatively based „reception aesthetics“ Jarcho developed an analysis of literary text on manifold structural levels. This analysis contains a statistical “phonic” analysis of metrical forms (“slovesnaja instrumentovka”, cesura, pause, strophe and rhythm), stylistics (occurrence of figures of speech, alliterations, metaphors, metonymies), a quantitative text typology, including a quantitative style-comparison of literary texts as well as poetics (frequency of motifs and sujets, quantification of the “nearness” of the content of

literary works). Moreover, his aim was to point out interrelations between the above-mentioned formal text characteristics.

Jarcho's exceedingly comprehensive statistical analysis of the formal text structure has been designed to be applied not only to a synchronic, but also to a diachronic level. The diachronic approach includes a quantitative analysis of the historical changes within literature (cf. Jarcho 1984a: 22). The primary function of the analysis of text characteristics aims at an exact description of changes in literary text types and schools.

At first glance, the framework for an exact text analysis presented above could be understood as an atomistic and positivistic collection of facts. However, it should be stressed that an analysis of frequencies and occurrences of text characteristics is only the first step. The second, and more important step, is the discovery of statistical laws and regularities, e.g. the interactions and interrelations between formal elements in literary works. But these interrelations and interactions are only of interest, if they occur frequently.

At this point, the nomothetic character of Jarcho's exact text analysis is obvious. In other words, it includes the inductive discovery of textual interrelations and laws, which are not interpreted in a deterministic way, but rather in a statistical and empirical way: The postulated laws and regularities must be validated by further research, and for Jarcho, the validity of a law depends on the number of observed empirical exceptions.

The above-mentioned ideas and concepts are the basis for an exact text analysis. It must be emphasized that Jarcho and his colleagues from GACHN made quite a number of empirical-statistical analyses on several aspects of the structure of literary texts. Their studies include analyses of the frequency of metrical forms in poems (cf. Timofeev 1928a, 1928b, Lapšina/Romanovič/Jarcho 1934, Lapšina/Romanovič/Jarcho 1966), the rhythm in verses and prose (cf. Jarcho 1928a, 1928b), as well as the quantitative analysis of the historical changes of literature, in which Jarcho (1997) tried to distinguish classicism from romanticism, based on the frequency of entries in French tragedies. Moreover, his attempt to measure the "distance of ideas" between French comedies and tragedies (cf. Jarcho 1999/2000) should be mentioned.

In addition to these numerous empirical studies, Jarcho's exact analysis of literary texts have a high statistical and methodological standard. It is more or less reliable that Jarcho is the first, who – relating to the history of quantitative approaches in Russian linguistics and study of literature – discussed and used the analysis of correlation (cf. Jarcho 1935: 59ff.; Jarcho 2006: 225ff.). In the context of correlation analysis his principle of compensation must be particularly highlighted. For Jarcho, the principle of compensation is a balancing mechanism, which is based on the frequency of formal features in poetical and folkloristic texts: The increase of the frequency of a certain text characteristic (1) implies the decrease of the frequency of another text feature (2).

In Jarcho (1935), he demonstrated the principle of compensation on German, Russian and Spanish *častuška*: The high frequency of rhetorical devices (anaphora, epanaphora, epiphora, etc.) results in a lower occurrence of rhythmical structures. A similar interrelation has been observed between the frequency of rhyme and the „strength“ of the syntactical conjunction<sup>1</sup> of the analyzed *častuškas*. Seen from this perspective, Jarcho pointed out an important interrelation in the structure of text, related to the frequency of textual characteristics. This basic principle (compensation) is of utmost relevance still today (for more details see Kelih 2007b).

A further important contribution to the field of statistical text analysis is his extended discussion on the relevance of frequency distributions for linguistics and literary studies (cf.

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<sup>1</sup> Jarcho (1935: 54) does not define his concept of the syntactic "strengths". He only illustrates it by some examples. So it can be concluded that the discussed "strengths" is a more or less subjective classification of the syntactic structure of the *častuška*.

Jarcho 2006: 158ff). Jarcho realized the importance of calculating descriptive parameters like the mean and the standard deviation, which, for Jarcho, give a more detailed insight into the frequency distribution of textual data. Moreover, he discusses the normal distribution (referred to by Jarcho as „krivaja-Kettle/Quetelet-curve") and some other distributions of Pearson's type. Jarcho considered the normal distribution to be irrelevant for the study of literary texts (e.g. the frequency of accents in verse texts), and he assumed that rather asymmetrical distributions come into play. However, Jarcho neither postulated appropriate distributions, nor discussed the statistical methods, which yield information about the significance or non-significance of the normal distribution. Nevertheless, according to Jarcho, it should be taken into account that normally distributed data potentially do not reflect data from literary texts but rather from „ordinary“ language. Whether this claim can be confirmed from today's point of view – linguistic and literary text data are mainly not normally distributed (cf. Köhler 2005) – Jarcho's assumption can be understood as a first qualitative interpretation of the specific shape of language and speech distributions.

Coming to an end with our survey of Jarcho's contributions, the question of modeling the history of literature should be mentioned. It can be claimed that Jarcho may be recognized as a pioneer in this field. He assumed the history of literature to be a process which can be mathematically described. In his study of the frequency of acts in French tragedies (cf. Jarcho 1999/2000) he showed that the changes in the frequency of speaking characters in relation to the actors on the scene are not only a specific characteristic of a literary era, but also obey a mathematically describable development. The mentioned relation between speaking characters and actors on the scene has the form of an S-shaped development, which Jarcho termed „zakon regressii/regression law“.

Even if Jarcho did not investigate this question with specific statistical methods, e.g. nonlinear regression models, his “regression law” is a first empirical attempt to find some statistical laws in the development of the history of literature. According to Jarcho (1997: 257) the S-shaped curve can also be obtained in physical, chemical and economical processes. It would be of interest for further research to integrate Jarcho's “regression law” into the well known “Piotrovskij Law”.

Taking into account B.I. Jarcho's numerous theoretical, methodological and empirical contributions to the application of statistical methods in text analysis, it is justified to regard him not only as a pioneer of Russian quantitative text analysis, but also as a central proponent of quantitative linguistics and study of literature.

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