

“EVOLUTIONARY GENIUS” AND THE INTENSITY OF ARTISTIC LIFE:
ITALIAN, FRENCH, AUSTRIAN AND GERMAN MUSIC
IN THE XVI-XIXth CENTURIES (QUANTITATIVE APPROACH)

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One of the most interesting and enigmatic problems of creativity researches is genius. There are a lot of approaches and concepts which try to describe this phenomenon in qualitative or quantitative terms. All such models look incomplete and conflict with each other, but there are still some confirmations. Genius is known to have at least two certain features, which are a extremely high level of creativity and the ability to strongly affect the evolution of artistic life (Eysenck, 1995). The measuring of creativity level is a rather popular problem nowadays. Even a student can succeed in this field. But the second feature of genius cannot be studied as easily as the first one. How does a great artist affect the evolution of artistic life? And how can we calculate this influence?

The concept of the INTENSITY OF ARTISTIC LIFE provides answers to these questions. Earlier this intensity was studied based on the creativity of 307 Russian poets, 480 prose-writers of the XVIII–XX centuries (Petrov & Majoul, 2002) and 4511 European composers of the XVI–XX centuries (Kulichkin, 2004). In line with the existing tradition, (Martindale, 1990), the data was taken out from an encyclopedia: composers' years of birth and the length of an article devoted to each composer's creative activity (number of lines). All composers were grouped into 10-year intervals depending on their birthdates (for each national school): 1500-1509, 1510-1519, For each ten-year interval (t) the total NUMBER OF COMPOSERS (n) and the total NUMBER OF LINES devoted to them (N) were calculated. The last value (N) seems to be the indicator of the INTENSITY of musical life.

Upon the earlier analysis (Kulichkin, 2004) we concluded that:

1. If the number of authors (n) serves as a factor of «popularity» or «prestige» of a particular kind of art in the professional artistic environment, there should be an indicator of «quality of intensity» – the «average mastery». This parameter is SPECIFIC INTENSITY q: $q(t) = N(t)/n(t)$.
2. Changes in the intensity of artistic life have to be regarded as a dynamic process: each generation of authors keeps in mind the experience of the previous generation.
3. There are six versions of three changes in the intensity parameters (n, N and q):
 - a) n up, N up, q up – RISE. This way usually describes the creation of a national school. The given kind of art becomes popular in the professional artistic environment, the internal resources and mastery increase. So the potential of the national school is rather high.
 - b) n down, N down, q down – DECLINE. If this version of change in the intensity parameters continues for a long time, the potential of the national school is likely to be exhausted. Then, if any sources (internal or external) are not found, the national school disappears surely.
 - c) n down, N up, q up – ACCUMULATION. The national school resists «author-replication» and so makes its potential raise. Popularity decreases, but this raise of the potential provides for one more RISE. Usually, the first one has already been before this period.
 - d) n up, N down, q down – DISSIPATION. After major achievements of the national school, the popularity of the given kind of art grows rapidly (at the expense of the internal potential exhausting).
 - e) n up, N up, q down – EXTERNAL GROWTH. The internal potential of the national school decreases, but the intensity grows. This fact can be explained only by influence of another national schools, kinds of art or other external causes.
 - f) n down, N down, q up – EXTERNAL DESTRUCTION. The national school accumulates its internal resources, but popularity of the kind of art declines. So there are some

external causes (political, religious, social, cultural, etc.) that refuse the successful development of the national school.

In fact there are a lot of ten-year intervals where one or a few composers account for the major part (about 80 per cent and more) of the INTENSITY (N). In this case the version of evolution seems to be “made” almost exclusively by this small group of composers. We regard this phenomenon as an “EVOLUTIONARY GENIUS”. To measure the “evolutionary genius” we would suggest the following simple method based on the concepts of statistics and fuzzy sets (Zadeh, 1965). The major significance of given small groups of composers for evolution is determined by two conditions (for each ten-year interval t):

1. The number of lines devoted to a composer of EVOLUTIONARY GENIUS divided by the maximum of such numbers has to be more than 0.5.
2. The total number of lines devoted to composers of EVOLUTIONARY GENIUS divided by the number of the intensity of artistic life N has to be more than 1/2 per composer, 2/3 per two composers, 3/4 per three etc.

Thus we have four parameters characterizing EVOLUTIONARY GENIUS: ten-year interval t, the intensity of artistic life N, one of six versions of evolution indicated above, a group of composers strongly affecting the evolution of artistic life. This model does not deny any composer the status of the EVOLUTIONARY GENIUS if the level of intensity (N) is low. And the divide between great and mediocre composers is expected to disappear (Eysenck, 1995). But the frontier does exist! In fact we can see a significant difference between groups with a low level of intensity and groups with a high level of intensity.

The analysis of the results allows for the following conclusions. The most favorable version for EVOLUTIONARY GENIUS is RISE (18 of a total of 36). Only RISE provides for the most powerful growth of “artistic elite”. The composers of such EVOLUTIONARY GENIUS are almost always innovators often known as founders of a national tradition or school. Their works are usually democratic, they can even be very popular during their authors’ lifetime, but the true significance of such composers would be realized many years after their death (appropriate examples are J.S. Bach, W.A. Mozart, R. Wagner, G. Verdi, H. Berlioz).

ACCUMULATION is a less favorable version for EVOLUTIONARY GENIUS (7 of a total of 36). Lack of popularity (n down) creates an “ANTI-DISSIPATION BARRIER” (Kulichkin, 2004) that is very difficult to pass. So if there are any composers of such EVOLUTIONARY GENIUS, the national school is likely to be mature and stable. Such great composers provide for an advanced stage of evolution of the national school, summarizing earlier artistic discoveries and realizing them as a whole continuous tradition. ACCUMULATION great composers’ works are usually “high-brow”, and the authors may be evaluated by contemporaries as trendsetters or extremely strange persons as well (examples: L. Beethoven, F. Schubert, J. Brahms, J. Rameau).

The other versions of evolution are unfavorable for EVOLUTIONARY GENIUS (DECLINE – 4 of 36, DISSIPATION – 2, EXTERNAL DESTRUCTION – 3). They are all connected with a low level of intensity (DISSIPATION in particular). There is never any composer of EVOLUTIONARY GENIUS during EXTERNAL GROWTH: this version reduces the “quality of intensity” (q) and the national school appears to be controlled “from outside”.

We don’t intend this paper to describe the problem of genius in general. This problem looks inexhaustible. But we hope that our approach can clarify some influences between genius and the evolution of artistic life.

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