

EUROPEAN CULTURAL VALUES: POETRY AND STATISTICS

MIHAITA NICULAE

PHD UNIVERSITY PROFESSOR

Academy of Economic Studies in Bucharest,

Faculty of Cybernetics, Statistics and Economic Informatics

Vice-President of Cybernetics Academy “Stefan Odobleja”

Phone: 0723301134, E-mail: nmihaita@opensys.ro

There are many years since Luceafarul (Lucifer) by Eminescu (Romanian poet, 1850-1889) has excited us from a different point of view than has done it with those who are passionate of literature, of culture history, with philosophers or with those who have graduated high school. We were surprised by the inside symmetry, the balance between individual and general, analytic and holistic, considering the Poem a model on which you can apply statistic instruments with the most subtle possible experiments.

1. Statistic hypothesis, errors and risks type I and II

We wonder about what to do with the socio-economic phenomenon, where are billions relations between variables, composed functions, and functions composing? The scientist trying to understand these phenomena has to try first to understand the poetic of *Eminescu's* world. Him, as Petru Cretia¹⁴⁰ said “having a personal, secret world of his own, for a solitaire experience. Full of shadows, amazing piercing and strange stagnations, full of insisting and rebornings who’s insides low lets itself rethought sometimes. A labyrinth of mirages, echoes and mirrors, of forgivings of massive constructions and ruins on which they left their prints and moments and the time of this world and the other world”.

In his foreword as interpreter in English language of *Eminescu's* Poems, Corneliu M. Popescu wrote: “...Eminescu is found to prefer simplicity, clarity and reliance upon his genuinely divine inborn sense of poetic expression to rigid adherence to any limiting metrical form., his poems possess that remarkable fluidity and easy grace which so often give them the power and simplicity of a spoken word.”¹⁴¹

The Poem appeared in the first poetry edition of *Eminescu* in December 1883, edition printed by Titu Maiorescu, after it was published in April, the same year, in Almanac of Academic Society “Romania Juna” from Vienna. During the years it suffered modifications, some because of the Poet, some because of Titu Maiorescu who is suspected by eliminating four stanzas of *Demiurg's* speech.

The poem’s subject can be assimilated as a repeating of the myth of the Saint Sun, a development of folklore theme of *Zburatorul*, who shows to the emperor’s daughter, made her to fall in love with him and then disappears, or like in genius drama, or like a love story

¹⁴⁰ Petru Cretia, Testamentul unui eminescolog, Editura HUMANITAS, 1998, page.36.

¹⁴¹ Mihai Eminescu Poems, English version by Corneliu M. Popescu, Editura Cartea Românească, 1989.

which shows the theme of incompatibility. The Poem is an inspiration syntheses: Romanian fairy-tail "The girl in golden garden", picked by the germane Richard Kunisch when it was traveling through Oltenia and published at Berlin in 1861, the motive of Zburatorul from Romanian folklore, the philosophy of Arthur Schopenhauer about Genius problem, mythological source.

"With regard to use of *Lucifer* in place of *Luceafarul*"¹⁴², argues the interpreter Corneliu M. Popescu, "it could be objected that Lucifer denotes the devil and not, like *Luceafarul*, a personification of the prince of light, symbolized by a star. This is incorrect. In English mythology, *Lucifer* holds a place almost identical to that which *Luceafarul* holds in the Romanian one; namely that of the prince of light, visibly symbolized by a star. To translate *Luceafarul* by the simple designation of *evening-star* would be to deprive it of all personality.

The way of Demiurg's ideas to *Lucifer* it is for Petru Cretia: "You're asking me to take your eternity so you can die, so you can return in "everlasting stillness/darkness - *vecinicul repaos*" that you want it so badly, embraced by love. But me: Can't make you a mortal because, us being consubstantial, will mean to deny my self, to hide the truth which includes us both in its eternity. Even if I would make you a mortal, I will put you in a world where the death you want so badly is an appearance, while the priority entities which is made of are some patterns, some everlasting Forms, which time never touches; you will lose only your identity without being able to die in rest, dying and getting born always in eternal unrest of birth and dying which are in forms eternity. Much more, to make more obvious this these, talks to him like he already became a dying human being".

Petru Cretia underlines the juxtaposition of two theses from the first part of Demiurges speech: a) as these of difference and incompatibility between the order of everlasting and that of ephemeral and b): as these of the everlasting of forms or the patterns of ephemeral. Being handy this type of comments, the fascination of argumentation induct in every reader wishes to contribute with *that* something that made us want new approaching.

That's why, the *Experimentator* proposes that the approaching by quantitative methods to be by statistic probabilities, algebra or mathematic analyzes. But how can we see that the relation is caused or not by chance (error)? Most of the time the method that the scientists use in a better-organized version of common sense.

What for example, is *Lucifer* relationship with his Demiurge? But with His love? His Catalina? His job? His parents? His life style? And his position? Each relationship existing on a continuum from mundane to crucial, and varying according to circumstances over time, „tells or recounts“ an aspect of his nature. What, to use an analogous situation is the Eminescu Genius's relationships with its drama Poem? Its characters? Its community? Its experiences? Its education? Its fantasies? And its communication abilities?

The question could be asked, „Does each relationship „tell or recount“ a potentially significant and in many ways unique aspect of his (its) nature? “The argument is extremely persuasive that it must. As in management terms, the study of relationships, is preparation

¹⁴² Foreword mentioned above, page 17.

for understanding the implications of those threats or opportunities that affect individual or organizational success (survival).

Let's remind *Luceafarul* created by the genius *Mihai Eminescu*.

*“And as intent she drank his light, / Desire was quickly there;
While he who saw her every night/Soon fell in love with her”*

(Repeatability justify relationship' saliance)

The cause generates the effects, results and reactions:

*“You wound me with your crude behest; / I dread what you extol;
Your heavy eyes, as though possessed, /Gleam down into my soul”.*

The consequence is the demand :

*“Yet if you wish to prove your worth, /That I betroth myself to you
Well, then come down to me on earth/And be a mortal too.”*

The difficult situation in which Hyperion finds himself is that of an experimenter. Both wish to know if what had already took place (the repetitive callings, the whispers) are clue to “something” important. In both cases they must worry if the reactions obtained (the data) are produced by the uncontrolled fluctuations of some uninteresting factors. They should ask themselves:” did I receive an important message, or it is caused by the noise from the environment? (The variation of the environment)”

Hyperion does not know if all those callings were false alarms, meaning what the experience will name as errors of type I, his error being in this case the giving up of his immortality. When in fact there is no love. In other words he believes in the experience of the independent variable (love), when in fact it does not exist. But there is another type of error. What will happen if He does not give up his immortality and love exist? The experimenter knows that this is the type II error.

In this case, the hypothesis H_0 and H_1 for *Lucifer* and *Catalina* are:

Lucifer H_0 : there aren't big differences in noises I hear, could be the wind or sea and all whispers re alike, even her behavior at different meetings; she doesn't love me, the decision: I'll stay an immortal.

H_1 : there are differences from one meeting to another, she calls me because she loves me, and I give up immortality.

Catalina H_0 : all the men are alike and there aren't differences in his behavior (he is constantly getting away) the decision will be that I'll accept his or anyone flirtation.

H_1 : there are differences, he wants to be a mortal like me, he loves me and he accepts the supreme sacrifice.

By the imposing of the Demiurg's intervention and the Catalina's behavior, Eminescu convinces us that Hyperion loves and we know that he commits the first type of error.

*“You ask my endless life above/ To barter for a kiss.
Aye, I will show how my love, / How deep my longing is.*

Catalina makes a type II error being convinced that Hyperion would not give up his immortality:

*“While he looms with adoring ray/ My grief to overthrow
Yet ever climbs to heights away/ Where mortals cannot go.*

As we saw, *Lucifer* error is first type, rejects H_0 hypotheses although in reality it is true while *Catalina* makes an error type two, accepts H_0 when the hypotheses is not true.

The probability of first type error called “risk of type one”, represents a threshold of signification, α , and the probability of second type error is called “risk of type two”, β .

A right decision is made on the base of data selection (or observations or information) when: 1) we accept H_0 when it is true avoiding error type one with probability $1 - \alpha$ and 2) We reject H_0 when is not true and this way we don't commit an error type 2, with probability $1 - \beta$.

If we still judge from outside, statistically, both reactions, we get to a fundamental point, experimentally, and that is trying to detect a signal in a noisy environment. The whispers of nature, sea, forest, winds have to be differentiating from the lovers' whispers.

The decision maker wishes to find out if the results obtained with an experimental treatment are so much different of what is going on in its absence to decide if the experimental variable is efficient. Usually we trust the data if the independent variables produce expected reactions. We will decide this fact by comparing the level of *noise* variation, by analyzing the data in and without the presence of the treatment. We have to make a difference between the background noise and the one made when the *signal* is present. We must make a distinction between the combination of noise + signal and the noise itself asking ourselves about the probability of the event to take place if it is only noise. Hyperion heard a sure level of noise coming from Earth. Some noises or whispers could have been a call. The whispers as *noise* were above the background noise and could have been calls. We can imagine what could have happened when Cătălina would have said *you are my love*. Then with great chances, the event *love* would have taken place, but the presumed error of type II: once a mortal, the relationship accepted by the easy Cătălina, to be temporary.

Technically, we are interested by an algebraic report between the heard whispers and the natural whispers. If the whispers are mistaken or they are at the same level with the usual noise, then the algebraic report is 1. If the noise is different than the usual, the report is bigger, in which case, if it goes above some level of knowledge the reaction takes place – the appearance of the beautiful Lucifer.

For the expert the report is between observation / the estimated error. So we have as a conclusion a look at the treatment and the control condition opposite to differences that are notable without treatment. If the report (signal + noise)/ noise are big enough besides the noise/noise then there is that something called signal. In our case whispers/noise. How can

the experts practically decide if the results are trustworthy? First of all true observation. Sometime is so obvious the *distortion* of the data that the intervention of variables becomes clear only thru experimental analyze of its behavior.

The scientific alternative is about the statistical analyzed because the eye and the mind are relatively insensitive in making an identification of the trust limit. Don't forget we barely resolve 2 equations with 2 unknown factors without a pencil or a calculator. So, is harder if we use in the experiment many more independent variables.

It is useful the reduction of the level of noise thru gradually increasing the control of the experiment. That's why the modern statistics analysis is preferred. The fundamental idea in the modern statistics applications – enhancing the ability of discriminating the effects of the experimental treatments.

2. The risk of rejecting the null hypothesis.

The contingency table analysis is one of the many techniques of finding the association between two variables. The percentages must be calculated under the independent variables categories. Do not build or calculate tables with missing data, you can calculate only if the circumstances are accepted by the specialists. The per cents contingency table for ordinal or ratio variables suggest the positive/negative or the linear/nonlinear direction of the relation. There are some opinions which shows that the per cents can not be calculated for a number (N) smaller than 30 cases; after others authors 50 cases or even 100. A statistical association between two variables doesn't mean that they are tide causal so the association does not involve causality. If we take in matter the probability of 0.05 (one try in twenty) this is a small probability of finding a relation into a group if it doesn't exist in the population from where we made the extraction, so we can reject the null hypothesis which says that the relation does not exist. The fact that the statistical signification is based on a probability takes us to believe that we can never be sure if we are right when we reject the hypothesis or we are wrong not rejecting the null hypothesis. Errors happen. When we reject the null hypothesis and it's true we generate- in the opinion of the specialists- **Type I of error**. The level of signification is the probability of making an error of Type I if we reject the null hypothesis. At the level of 5% will we accept to make a mistake in twenty!

If we don't reject a null hypothesis when is false, we generate **Type II of error**.

What happens when we want to find out if the independent variable has some kind of influence? For example, Hyperion can think like this: independent of him there are a lot of noises on Earth. One of them, independent variable is the whisper of Catalina: *Come down...* The statistics is trying to resolve this question, the decision to respond to the call, thru measuring the probability of the event as part of the background noise.

For Lucifer, the type I error is corrected , that “something “ important does not exists, and it seems like the reactions obtained are the result of the uncontrolled fluctuations of some uninteresting factors (the mortals Catalin and Catalina). Subsequently, he....:

*And Lucifer, alone in space, / Her tender summons heard
A planet o'er the ocean's face/ That trembled at her word,
But did not plunge as'n former day, / And in his heart did cry:
“O, what care you, fair face of clay, / If it be he or I?*

*Still earth shall only earth remain, / Let luck its course unfold,
And I in my own kingdom reign/ Immutable and cold.”*

The concept and content of this article was awarded by the Romanian Statistics Society in 2004 as “the most exciting book” of the year 2003 and with “P.S.Aurelian” award by the Romanian Academy in 2005.

Bibliography

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