SOME FREQUENT ERRORS AND STUPID APPROACHES IN THE RESEARCH ACTIVITIES OF YOUNG PHYSICISTS

Ion Iorga Simăn[1], Gheorghe Săvoiu[2]

[1,2]University of Piteşti, Romania, e-mail: ioniorgasiman@yahoo.com and gsavoiu@yahoo.com

Abstract. *A brief introduction is devoted to stupidity or foolishness and errors in scientific research, preparing a detailed breakdown in the central section of the paper, illustrating some errors occurring in the activities of knowing, evaluating and research of young teachers and researchers in the fields of physics, econophysics or sociophysics. The conclusion redefines stupidity as the absence of spirit and passion in monodisciplinary scientific fields, yet especially in trans-, inter-, cross- and multidisciplinary fields, where physics cannot be lacking, and practical is not more often than not lacking, even when it becomes econophysics or sociophysics.*

Keywords: *error, stupidity or foolishness, incompleteness, confusion, silly inventions, counterfeit assumptions.*

1. INTRODUCTION

"*The term* ***prost*** 'stupid', Andrei Pleşu wrote, *comes into Romanian from the Slav space, and defines rather a very low social or individual status, also meaning miserable, wretched, poor (literally), ordinary, common, plebeian, poor quality, inadequate, as well as confused, crazy. There are a lot of current expressions containing the word* ***prost*** 'stupid, foolish, dumb'*, adding additional shades: "you are looking at me like a fool", "laughing like a fool", "making a fool of oneself", "as dumb as a box of rocks", "foolishly good*". [1]

This article is dedicated to errors, and especially to stupidity, in its academic or even euphemistic meaning – silliness and futility, in the specific approaches in the field of scientific research, and aims to specially target warning young people passionate about physics, econophysics or sociophysics, who are always in a normal contact with error, and is also directed to young researchers, physicists econo-physicists, or socio-physicists, without however ignoring anyone in general terms, as almost all human beings are endowed with reason are exposed to stupidity, including obviously the authors of the present paper.

Errors and stupidity (or foolishness) itself are triggered by a change, maybe a banal one, which however has significant consequences. Although there is no logical reason why the most banal, trivial things should be liable to have significant, impressive consequences, it is important to separate scientific thinking from uni-causal and insulating approaches, as reductive, successive and paradoxical inferences of the type of the trivial incident, long considered the only possible cause of a large and complex event. Here's what a type of apparently scientific explanation looks like, when dilated maximally and theatrically, in Shakespeare's spirit, logically and reductively, yet concealing an important phenomenological critical mass:

For want of a nail the horseshoe was lost,
For want of the horseshoe, the horse was lost,
For want of the horse, the rider was lost,
For want of the rider, the battle was lost,
Because of the lost battle the kingdom was lost.
The fall of Richard III

The absence or lack of a horseshoe nail turns, from being a minor factor, even a banal one, without any potential consequences, into the central motivation or the essential endogenous variable of a complex system – in the previous enumeration, premeditatedly amplified by stages. The causal factor of *Richard III's fall* appeared to be simply the horseshoe of a poor horse, the last of the residual causes, or possibly the most childish explanation, or the one with no impact whatever in any approach considered relevant and complex, and at any time a hobnail lacking from of a horseshoe is, or will be, treated as a piece of monstrously impacting nonsense… In the theoretical and pragmatic universe of contemporary science, implicitly in that of physics, econophysics, sociophysics, etc. a mere analysis of a relatively large number of papers published or presented at various conferences, symposia and sessions, allows the identification of typical errors, the frequency of which does not unfortunately seem to have a downward trend.

2. SOME TYPES OF FREQUENT ERRORS IN THEORY APPROACHES AND INVESTIGATIVE PRACTICE

As it was expected, and very often recognized, the content of theoretical requirements relates in particular to the identification, enunciation – possibly including drawing or writing with mathematical expressions – of a number of laws and principles, specifying the physical significance of the values, magnitudes and quantities that occur in the physical, economic or social phenomenon being investigated, to defining some distinct characteristic of scale units in certain physical, economic or social phenomena, and especially to demonstrating some relations with subsequent modelling impact, or the description and interpretation of laboratory experiments and studies of real economic or social case.

These initial requirements of deep theoretical character call for increased background knowledge previously prepared, an active memory, and, to a lesser extent, logical thinking and capabilities and transfer or own capitalization, rather than resolving practical issues that also require careful interpretation of solutions and results.

In presenting purely theoretical topics, which generate innovative models and methods, however, rigor, precision, accuracy and a treatment as close as possible to the idea of completeness (completeness, which is however combined with a necessary summary, to the extent that there are restrictions) are required.

In such approaches, the main causes of the errors occurring in addressing theoretical issues are considered to be:

a) haste and carelessness in experimental approaches or investigations;

b) excessive memorization as a support of learning and

perception of physical, economic and social realities, without understanding the content of the phenomena experimentally investigated or examined;
c) gaps in the knowledge of the language of physics, econophysics or sociophysics;
d) gaps in the type of thinking focused on logical premises, assumptions, lemmas, theorems, axioms, i.e. lack of a legic, structural, systemic, and simultaneously spatial-temporal approach;
e) insufficiently systemized and consolidated knowledge, resulting in ambiguity of meaning and superficial interpretation, or lack of an overall and detail depth of knowing the phenomena, which is so necessary in knowledge-getting, in education and research (knowledge that is unrelated, loose or isolated by the methods of perceiving the universe as being one-disciplinary, in a visibly inter-, trans-, cross-, and multidisciplinary context, more than obvious in modern education and contemporary research);
f) insufficient knowledge, where *little* becomes, in this context, similar to *wrong* or *stupid*;
g) lack of timely, relevant or recent knowledge, which will be conducive to obsolescence and outdatedness for the entire approach to knowledge, education or research.

The errors made during, or along the disciplinary itinerary, which arre presented below as purely theoretical mistakes, as they result from the wording of a large number of papers, articles, laboratory reports or experiments, and even from the way they were expressed in a number of dialogues with young students, MA students, and even young university assistants, etc. [2; 3; 4], can be grouped into the following types, or generic structuring patterns:

I. Errors caused by incompletely dealing with the process, phenomenon, or subject-matter / theme examined

The specificity of such errors is given by omitting some subsystems, associations, correlations, conditions that are imprecisely demarcated, or clarifications lacking substance, mere utterances without the necessary phenomenological substantiation, mathematical relationships that are partial or without the needed degree of generalization, parts of utterances or absence of words and key relationships, etc.

This can lead to simple errors, such as the statements in the following examples:
a) "*the photoelectric effect consists in the emission of electrons from dark substances or solids*";
b) "*induced emf is proportional to the magnetic flux rate*";
c) "*the second principle of mechanics is equivalent to the relationship: F = ma*";
d) "*magnetic induction is a stable relationship between force, intensity and length B = F/(I×l)*";
e) "*the principle of inertia shows that any isolated body retains its state of rest*";
f) "*monetary circulation is a diffusion process in communicating with implicit vaporization*";
g) "*demographic implosion is defined by the inverse functions of the demographic explosion in unstable environments*", etc.

There is also in this type of approach an extreme category of errors that completely compromise the investigation, examination, knowledge of, or research into the physical, economic or social phenomenon, most often leading to genuine *gems of unscientific thinking*, whose only quality is involuntary humor, i.e. generating fun, in contrast to the phenomenological essence that they degenerate.

II. Errors generated by confusion

The rate of expansion of this type of error is hard to imagine, as it is dependent on the ability to associate erroneously and inexplicably (which increases exponentially) on the part of the person who generates it, but finally one can distinguish three broad categories:

IIa. Language confusions arise mainly as a result of inappropriately using scientific concepts, notions and terms. To illustrate them, we can give some details concerning them, as samples of originality, or humorous samples, or even paradoxical examples:
a) "*the two universal physical forces are called isolated action and interaction*";
b) "*a kilomole of any substance has the same number of moles*";
c) "*the impulse is always the same as the ratio of the mass and speed*";
d) "*the velocity vector is always perpendicular to the given path*";
e) "*a permanent exchange of temperature takes place between solid bodies*";
f) "*spherical mirrors can be now conclave, and now concise*";
g) "*when two forces act on a body a cuboid-shaped diagram is formed*";
h) "*when the temperature is constant, the transformation is called isomorphic*";
i) "*an antiaquatic transformation is done without heat exchange*";
j) "*thermodynamics is based on some principles deriving from thresholds*";
k) "*thermodynamics does not study microscopic objects, such as microbes*";
l) "*the economy and the social are subject to experiments validating or invalidating the laws of physics*";
m) "*quantum economy proves increasingly useful as the monetary mass and speed increase*".

A specific category of language gaps are indeed tautologies, or derivatives of generalizations made "at any cost", which therefore cannot fail to be included in this paper, e.g.
a) "*physical movement is the movement of a body in relation to other bodies*";
b) "*amplitude is a longitude or altitude rather than a platitude*", etc.

IIb. Content confusions are the result of an inaccurate, imprecise initial definition, or a latent ambiguity in the minds of the young students:
a) "*Boyle-Mariotte's Law describes the isobaric transformation"*;
b) "*frequency is time needed to perform a full oscillation*";
c) "*Kirchhoff's laws are closely linked with the movement of the planets*";
d) "*a potentiometer can be considered the unit of electric potential*";
e) "*any isolated material point retains its state of rest or of uniform circular motion*";
f) "*a condenser turns stem into distilled water through condensation*";
g) "*an ideal gas is a vector quantity, and likewise the*

incomes in an economy";
h) "*Faraday's law, or the law of electromagnetic induction, expresses the amount of material deposited on the cathode through induction, and becomes similar to network immigration towards the maximum income or profit*".

IIc. Confusions relating to physical quantities are the result of a superficial knowledge, or total lack of knowledge of physical phenomena in general:
a) "*interaction force is directly proportional to various types of heat* q_1, q_2, ... , q_n, *and also inversely proportional to the radius*";
b) "*at a temperature t of 527°C the pendulum is delayed according to the law* $y = A \sin \bullet \omega \bullet 527$";
c) "*the equation of state is* $p \times V = v \times R \times T$, *where p is pressure, V velocity, v the frequency, R is Bolt's constant, and T is the period of analysis*";
d) "*the equation of econophysical macroeconomic equilibrium assumes that, in an economy, the product of unemployment rate, inflation and the budget deficit is always constant"*.

III. Errors caused by improvised answers, which are almost always at least amusing, even sometimes absurd, and based on some vague knowledge or lacking clarity and rationality, as illustrated below, ina strictly authentic manner:
a) "*the second principle of thermodynamics, in the formulation given by Celsius, emphasizes that all cold bodies turn into warm bodies, rather than vice versa*" ;
b) "*the inertia principle states that a body is fixed and motionless*";
c) "*the angular moment is when the ball reaches the maximum height*";
d) "*the crystal lattice is made up of many small and very small squares*";
e) "*a kilomole is one thousand times bigger than a molecule*";
f) "*semiconductors are half as large as conductors*";
g) "*a system is isolated if it cannot leave the vessel or the precinct*";
h) "*a stationary flow occurs only when the liquid stays in place*";
i) "*reversible transformations are either from right to left, or left to right*";
j) "*a hydropower station is a pipe submerged lying on the bottom of the lake, through which electricity passes*";
k) "*if we act on a body with a force F, then it will act with an opposite force, only slightly smaller*";
l) "*Pascal's law shows that if we hit a plastic bottle with a little hammer, the cork of the bootle will jump*";
m) "*any thermal machine works according to two transformations: a hot one, and a cold one*";
n) "*in any transformation the gas suffers from heat and mechanical work*";
o) "*the vector weight hangs from the body, and it causes things to always hang downwards*";
p) "*foreign direct investment is strictly correlated with country risk rating, with the same intensity as the universal law of attraction of bodies in space, and the distance is equal to the GDP*";
r) "*the European Union's regional network can be treated as a neural network, where neurons are common institutions and the laws become connections, and the identification of a network node, simultaneously authoritarian and formal, is a contradictory operation*".

IV. The errors due to invented, makeshift answers or roundabout solutions represent the so-called *stupid or silly inventions*, which lend a profoundly negative connotation to the concept of *improvisation*, resulting from the desire of their authors to instantly discover what they failed to learn in many years, or bypass reality and compensatorily providing solutions to something different and referring to something totally different. Only rarely can they benefit from good-will, or may they be treated as a mere fantasy: they rather give the sense of stupidity and ignorance:
a) "*a thermostat is a thermos that stands in place*";
b) "*the principle of the proportionality of mechanical movement shows that a body in motion, which sweeps a certain angle cos α is directly proportional to acceleration*";
c) "*the impulse law states that if, for example, we stab someone in the leg with a needle when he / she sleeps, he / she will jump up, so we will give that person an impetus that is hard to stop afterwards";*
d) "*Coulomb's Law is the study of the intensity of mass, time, speed. Coulomb said that if a body is acting at a speed from an area to another, it is moving. If a body is pushed off a surface, it falls and, falling, it exerts a force on the platform. All of this is caused by Coulomb's Law*";
e) "*the electrochemical equivalent of a substance is a compound which, through its composition, is superior to the original substance or material and is used to get a better quality product that is easier to find and also cheaper*";
f) "*the inertia principle was invented by the great scholar Newton, who conducted much research in nature, including the research on the principle of inertia, not previously used in practice; a Newton measures a force, which can be elastic, of friction, of attraction and other, much bigger forces*".
g) "*all the measuring units come from the name of a number of scientists*".

Many of the examples above are culled from entrance examination papers, or test papers taken during higher education courses, but also from the unfinished drafts of articles and papers, originally prepared at sessions of students' scientific research conferences, or even graduation theses or dissertations in their yet unfinished form [4; 5].
Although most of them were actually produced in a profoundly emotional state, or under stress, future young teachers and researchers, who are now only graduate students or MA students should consider them in their preparation, as most such errors could have been easily avoided; moreover, it is anyway better to learn from others' mistakes than from our own ones, especially in exams or competitions.

3. ECONOMETRIC TESTS, THE NULL HYPOTHESIS AND THE FREQUENT ERROR OF MODERN MODELLING

The development of statistical hypothesis testing theory has generated the most interesting contemporary error, in very much the same way as statistical survey or econometric modelling remain the most efficient solutions of investigation, understanding and prediction. The first major impact contributions in the mathematical grounding of

statistical hypothesis testing belonged to J. Neyman and E. A. Pearson, through their studies, especially those published in the *Biometrica* journal. To explain the main features of the testing and modelling error it is necessary to answer an initial question: *What does a statistical hypothesis represent in testing and econometric modelling?*

Etymologically, the term *hypothesis* was derived from *thesis*, whose logic and mathematical sense has always been that of an allegation proved true. A *hypothesis* represents, in terms of the Greek origin of the word (Greek *hypo* means *less*), an understatement that is less certain, less real or true, or a still unproven assertion.

A statistical hypothesis is an *assumption*, because it refers to a situation that may be true, to one or several statistical distributions that characterize certain populations, or to one or several parameters of such distributions. A statistical hypothesis is a concrete description of one or several aspects related to one or more populations rather than a description of the sample. *Consequently, any statistical hypothesis may be an assumption concerning one parameter of a theoretical distribution or its type, and verifying the hypothesis requires establishing the truth or falsity of the hypothesis, based on statistical observations*. Prior to the verification of statistical hypotheses, the hypotheses called *admissible* will be formulated. Based on the one-dimensional distribution, whose density distribution $p(x_1,\theta)$ depends on parameter θ, hypothesis $H_0:\theta=\theta_0$, or $H_0:\theta-\theta_0=0$, is verified, in keeping with which the parameter θ has value θ_0, or between the two values there is no significant diference. Obviously, we can make the assumption that, besides value θ_0, the parameter can also assume the values $\theta_1,\theta_2,\ldots\theta_n$. All such resulting hypotheses, $H_0:\theta = \theta_0$, $H_1:\theta = \theta_1$, represent the *admissible* hypotheses described above [6].

To distinguish it from other assumptions, hypothesis H_0: $\theta = \theta_0$ is called *the null hypothesis*, while any other hypothesis is considered an *alternative hypothesis*. The null hypothesis always consists in admitting the random or haphazard character of differences, i.e. the assumption that there are no essential differences, whereas the alternative hypothesis contradicts the null hypothesis, and is accepted only when there is sufficient evidence to determine it as true. The two hypotheses are theories that are simultaneously exclusive (it is impossible for both hypotheses – the null and the alternative one – to be true, or both hypotheses to be false) and exhaustive (they cover all possibilities, i.e. either the null hypothesis or the alternative hypothesis should be true) concerning the nature or values of parameters the theoretical random variables associated with the characteristics studied or to verify the compliance with specific statistical distributions. Stating the null hypothesis is one of the most delicate issues of the decision focused on statistical hypothesis testing, and this is an issue that has brought, and is still bringing about major divisions within the theory of the econometric model, and has generated fears about the birth and rapid multiplication of the worst and most frequent error in modern modelling.

What does consensus mean – of theoreticians and practitioners with respect to the decision focused on statistical hypothesis testing hypotheses focused on the existence of a null hypothesis within the framework of contemporary general econometric model – and how consistent can it be? Of course the rather short history of econometrics, and especially that of econometric modelling, both cause a lot of common accepted points to coexist, and equally some ambiguities and misunderstandings, nay even fundamental disagreements. As a simple illustration, one can present two different views on testing as a specific type of statistical procedure. Hypothesis testing through rigorous statistical and mathematical methods, as described by J. Neyman and E. A. Pearson, also provided decision rules regarding the acceptance or rejection of a particular statistical hypothesis called *the null hypothesis* (which provoked a great deal of contradictory discussion, generating among other modelling sciences an aversion to "accepting" it. [7]

One of the main challengers, J. W. Tukey, stated that modern researches focused on formulating, testing and validation / invalidation of statistical hypotheses are given the wrong questions, which in turn provide deceptive answers, even through null hypotheses. Tukey's sharp, perceptive thinking and his ability of reasoning should be followed carefully, especially when he argues that, through the famous null hypothesis, where some parameters A and B, endogenous variables A and B, or effects A and B are considered equal, the difference between them being insignificant or null, the statisticians-researchers are asked basically whether *"the effects of A and B are different"*, and they very much wish to answer "No". All we know about the larger world (especially the economic world) shows that the effects of A and B, when measured, are always different – at least to a certain decimal figure – and that is valid for any A and B. Hence the question *"Are the effects different?"* becomes a practical *nonsense*. What should be done first would be to identify the answer to another question, i.e. "*Can we possibly identify the direction in which the effects of A are different from the effects of B?*" To put ir differently, can one trust the direction from A to B? Is it "upwards", "downwards" or "uncertain"? A third alternative response means that "*we are not sure about the direction*", and this does not mean, and it never should mean that "*the null hypothesis is accepted*". In other words, J. W. Tukey points out that A and B will always differ slightly, yet what should be done by testing is choosing the direction of the difference and determining the trust in the decision taken. Moreover, the above assertion implicitly brings about the idea that the magnitude of the difference is not coherently and significantly addressed through hypothesis testing. Another objector of the null hypothesis is Cohen, who argues via what can be defined as the despair of knowledge processes through validation, and so maintains that *statistical hypothesis testing does not clarify what we want to know, and as we want very much to know, in desperation, we think it is so*! [8; 9] By contrast, the test of significance, as described by R. A. Fisher in 1973, suggests that there may be a *p* value used to quantify *the faith* of those testing to the effect that the statistical data are significant [9; 10; 11].

In practice, the decision focused on testing the statistical hypotheses is a verification process far more complicated than described in the testing methodologies. This process is based on the criterion of falsifiability (Karl Popper) that states *that while it is possible to determine when a hypothesis is false, it is much more difficult, if not impossible, to prove that a hypothesis is true.* If the reality of

the available data are contrary to the hypothesis, then the hypothesis is false (i.e. the hypothesis can be rejected). If the evidence coincides with the hypothesis, it does not necessarily follow that the hypothesis is true. In this case, the only reasonable thing that one can say is that the reality of the available data did not show the falsity or fallacy of the hypothesis (the hypothesis cannot be rejected) [11, 12]. Meanwhile, the two classic opinions of the null hypothesis, which are in full opposition, have emerged as major disagreements and have gained followers, managing to turn into two standpoints increasingly harder to reconcile, and a warning about the error of formulating the hypothesis in statistical testing and decision-making, as well as in econometric modelling.

4. A MERE ERROR AND ITS GRAVE CONSEQUENCES, AS CONFESSED BY BASARAB NICOLESCU

Errors are never simple, even when they seem to be mere coincidence of names, as in this example where Basarab Nicolescu shows a great and grave confusion, maintained or maybe premeditated [13; 14].

"A few years ago" Basarab Nicolescu wrote in 2000, see la http://convorbiri-literare.dntis.ro/nicolescumar__12.htm "I discovered by chance, at a book fair in Cluj, a booklet titled *Iluştri francmasoni români* (*Famous Romanian Freemasons*), where I was amazed to discover the name of Stéphane Lupasco. The author, Emilian M. Dobrescu, literally wrote 'Lupascu, Stefan A. (1909-1988). Philosopher and scientist. Based in Paris. Earned his doctorate at the Sorbonne, with the paper *Du devenir logique et de l'affectivité* (*On logical becoming and affectivity*). Pursued concerns in the field of philosophy, natural science, logic and epistemology, and investigated the relationship between science and contemporary art. Recognized as one of the great minds of European humanistic culture; the main feature of his work is inter-disciplinarity; a selection of his books and papers (…) was also published in the Romanian language, by the title *Logica dinamică a contradictoriului* (*The Dynamic Logic of Contradictory*) in 1982. In 1991 he was elected honorary member of the Romanian Academy posthumously. The history of Freemasonry retained numerous data related to his participation in various events of the Masonic Order (apud Horia Nestorescu-Bălceşti): delegate of the Grand National Lodge of Romania (MLNR), (…), representative of United Romanian Freemasonry (FMRU), and head of the General Secretariat of the Supreme Federal Council of FMRU'."

"I read the text three times", Basarab Nicolescu resumes, "to convince myself I was not dreaming, and really I was not. The text quoted is worthy of being part of the writing of Urmuz. It was clear that, through a very embarrassing confusion, a Romanian Freemason, Ştefan Lupaşcu, was identified as one and the same person as Stéphane Lupasco, the philosopher of the included middle. Two different people rolled into one person due to the similarity of name and surname".

Here is how an error can be removed, how the clear blue horizon of knowledge can be restored, and especially how something cannot be something else, someone be someone else, and how a person cannot be in two places at the same time – as demonstrated below by the same Basarab Nicolescu.

"The errors were obvious to me from the outset. Stéphane Lupasco was not born in 1909, but in 1900. He could not be simultaneously in France and in Romania. In 1937, Stéphane Lupasco married Yvonne Bosc in Paris, two years after he defended his doctoral thesis at the Sorbonne. He obtained French nationality in 1947".

Still, as the researcher can and must give an answer to why the error occurred, Basarab Nicolescu's argument should be pursued to the end…

"However, I had the chance of discovering the key to the mystery in 2005, reading the article "Sadoveanu şi sufletul românesc" (*Sadoveanu and Romanian soul*) by Alexandru Paleologu in *Dacia Literară*. […]

Unfortunately, the data put forward by Alexandru Paleologu are ignored, and the confusion between Stéphane Lupasco and his uncle Ştefan Lupaşcu had adverse consequences. Some people belonging to high Orthodox Christian circles thus reached the conviction that the theory of the included middle, introduced by Stéphane Lupasco, as well transdisciplinary (which recognizes in Stéphane Lupasco one of its illustrious precursors) are an instrument of universal Freemasonry devised to establish a new world order. Quite literally… The documentary basis [of such an error – seemingly of minor dimensions, but having major consequences – n.o.] comes directly from the Romanian Freemasonry sources quoted, the Romanian Freemason Ştefan Lupaşcu being confused for Stéphane Lupasco, the philosopher of the included middle. A story worthy of Urmuz and Ionesco…"

The conclusion to the case is quite memorable, as was the whole adventure of the way the fatal error was revealed.

"Of course, there is nothing shameful in being a Freemason. Stéphane Lupasco could even be honoured to have an uncle who initiated Sadoveanu into the mysteries of Freemasonry. But one has to observe and respect the accurate texts, data and references. The authors of the – doubtless involuntary – confusion between Romanian Freemason Ştefan Lupaşcu and Romanian-born French philosopher Stéphane Lupasco are bound to publicly correct the errors they made by virtue of elementary intellectual deontology…"

Virtually nothing can be added after such a thorough description of an error generated by a serious or malicious confusion, which is likely to discredit an author, be they younger or older, and seriously cast doubt on the seriousness of their research…

5. COUNTERFEIT ASSUMPTIONS AND DEMONSTRATION FOR DEMONSTRATION'S SAKE, OR DEMONSTRATION AT ALL COST

Sometimes we tend to forget how serious the approach to, and the procedures of, scientific research are, and even end up asking ourselves questions about what would have happened if [….], and the objection is meant to be an obvious one for such hypothetical questions or counterfeit assumptions or hypotheses. This is where the error of the counterfeit hypothesis occurs, or the error of demonstration at all cost, pursued, unfortunately… to the absurd.

The first cause seems to be that we forget that a database remains a database, that a historical variable is not identical

to a statistical one, that destiny and time are irreversible.
What is the use of asking such questions which generate errors that distort even the most serious scientific approaches? Why bother with what has not happened or does not happen? In everyday life such counterfeit questions do arise, but they are hardly suitable in rigorous and validated scientific research; apparently, one can imagine alternative scenarios.

Does this type of error help to avoid the mistakes of the past, or do they reiterate other similar, mimeographed errors? Counterfactual events are only part (a vital part, according to some, yet not a significant one, according to the majority) of how learning is expressed, because decisions about the future are generally based on the quantification of the potential consequences of sets of alternative and particularly tree-like developments. However, their great role remains an ironic and humorous one.

The more fun such type of errors are, the less plausible. In a specific note, Bertrand Russell suggested an alternative theory in the motivation of the Industrial Revolution: if industrialism was due to modern science, and modern science was due to Galileo, and the latter to Copernicus, and both spring out of the Renaissance, and the Renaissance had not been possible beyond the Fall of Constantinople, and the Fall of Constantinople was due to the migration of the Turks, the Turkish migration was due to the water depletion in Central Asia, it all leads to the conclusion that the fundamental research in searching for the great historical causes is *hydrography*…

6. CONCLUSIONS

Winding up, we have to come back to the key concept – stupidity or foolishness… Every single historical period or age has its own fools, every social class is represented by its nincompoops and dimwits; and it is such foolishness, aggregated in point of effects, that the very history of humanity deals with… Scientific progress in modern society has generated several types of fools or foolish authors of errors, both intellectual and non-intellectual, ranging from the scholarly fool and the stupid diploma-holder, to the original fool, or the empathic fool. If the scholarly fool is a continual, and obviously false, identification of memory with intelligence, of preposterous automatic mimicking with authentic creation, our common-garden fool is content with the others' replies and conversation. Since, at a very young age, fools become too narrow-minded in reasoning and too limited in their pursuits, holding a degree or a diploma becomes for them a means of stimulation, an added incentive as well as a would-be aristocratic title, and their form of manifestation is officially recognized snobbisness. An act of foolishness (and the authors of this papaer admit it unreservedly) can also be the work of a clever individual, likely to be generated by an emotionally weak intelligence, or even lack of interest. A wise person is more rarely victim of the sin of foolishness or stupidity; more often than not, he / she will ironically admit that everything they accumulate increases the degree of expansion of things unknown, whereas a fool has the advantage of continuing to be convinced of the eternity of their knowledge, and thus remaining firm, unshakeable in their intial stand. Stupidity has long become a social phenomenon which does not forgive anyone, and is therefore implicitly present in educational, cultural activities, in industries, trade and research…

If the old researcher's opinion is transmitted to the younger one with the ultimate truth value, without any doubt, that opinion will make its own effect of making a fool out of that young colleague. The complexity of the research always remains unsuspected, and stupidity may arise from wisdom as easily as fear of stupidity can generate a type of acquisition of intelligence.

Two young researchers open a very heated dialogue about the best definition of scientific inquiry without however reaching a consensus needed for their final report on a joint project, where a third fellow, who overheard them, concludes with an ironic joke:

"*When I listen to your contradictory dialogue I invariably think of home, where my wife kisses me every time I come back. That is what you can call affection!*", which leads the first fellows to a joint standpoint, a useful conclusion to their previous approach:

"*Come off it! This is what you can really call investigation, that is what we have been struggling to define or exemplify as accurately as possible!*"

A symmetrical conclusion must make recourse to the same source. "*A man who lacks real understanding* [i.e. lacking scientific discrimination – n.o.] *is a man who can be manipulated. A fool makes fools of others. Not being stupid means to have presence of mind. The fool has an inborn absence of spirit and, because of that, he/she is a risk to the community in which he/she lives. It is a very serious matter when you stupidity gets to be induced, or filtered into the masses*". [15] What we should add is that, in the field of research, the severity level of the impact of stupidity increases exponentially.

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