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*Expresiones y acciones habituales que obstaculizan las  
investigaciones científicas*  
*Habitual expressions and actions obstructive for scientific  
research*

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**Resumen:** Este ensayo pretende utilizar el poder del razonamiento lógico, y prescindir de citas bibliográficas que, en ocasiones podrían estar equivocadas, para fundamentar aseveraciones críticas a un conjunto de frases y hechos relativos a la investigación científica, seudocientíficos en el mejor de los casos y anticientíficos en el peor de ellos, que confunden a estudiantes de pregrado, maestrías y doctorados, dañando su formación y provocando que los informes de resultados investigativos carezcan de la calidad deseada.

**Palabras clave:** Metodología de la investigación; Investigación científica; Tesis doctorales; Tesis de maestrías; Informes científicos

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**Abstract:** This essay aims to use the power of logical reasoning, and to dispense with bibliographic citations that may sometimes be mistaken, to substantiate critical assertions of a set of phrases and facts concerning scientific research, pseudo- scientific in the best cases and anti-scientific in the worst, which confuse undergraduate master and doctorate students, affecting their training and causing that the reports of research lack the desired quality.

**Keywords:** Research methodology; Scientific research; Ph.D. theses; M.Sc. theses, Scientific Reports

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Speaking and writing about the scientific research process is difficult given the diversity of opinions expressed by a significant number of writers, researchers, scientists and others who, although do not qualify in any of the first three denominations, have the imprudence of doing so.

With the above, I intend to show my right to utter a series of arguments and reflections- without rushing- mostly focused on enunciate value judgments about some expressions and actions put forward in academia that hinder the proper development of research work in science.

This is how I express my point of view regarding what could be a scientific fact or knowledge. The reason that drives me is that in academia we systematically hear a set of phrases relating to scientific research, pseudoscientific at best and unscientific at worst, that

confuse undergraduates, masters and doctorates, damaging their training and causing that the reports of research results lack the demanded quality.

Likewise, actions carried out are far from scientific ethics and therefore deserve to be exposed in order to at least reduce them until they can be suppressed.

Considering the above ideas, I intend to use the power of logical reasoning, and dispense with bibliographic citations that could sometimes be wrong to support each assertion I make, and thus ensure the understanding of this essay by different audiences.

I realize this conscious of the fact that there are more readers than thinkers, and that the former find it easier to help themselves in the paragraphs of a book than in the attributes of their brain, which causes many people to become a kind of "medical record". Dating, although the latter lack common sense, which leads them to underutilize their ability to reason.

A first aspect to be treated could be called shielding Alfred Nobel (Swedish researcher reputed essentially for the invention of dynamite and for creating the prizes that bear his name) which consists of overestimating the mistake by repeating very often that you learn more from the failures what of the successes. Thus, the researcher deceives himself by learning how he should not do things, and comes to think that his study advances when most of the time he is stuck because of the grossness of his mistakes.

The aforementioned agrees with a popular story in which a child cries for having lost in a game, and the father tells him that he must learn to lose, to which the child responds: "father, I already know how to lose, what I need to learn is to win." And when you get it right you learn.

Hence, the scientific researcher must focus on the success without any justified mistake to depress and weaken his desire to achieve. On the other hand, the requirement of many journals on writing in impersonal form has become more than a particular agreement in a general obligation, without recognizing in which cases is the first-person writing, either in the singular or plural, more effective.

In correspondence with it, essays and reviews written in impersonal form appear, even when they are the expression of the personal opinion of their authors. Fortunately, many prestigious journals do not require this condition. Two other statements that have been taken almost as a requirement by certain formal groups of researchers (courts and academic committees, among others) are the following: the scientific problem must be elaborated in the form of a question, and the objective must be formulated with a verb in infinitive. The worst thing that has led the first is that in many thesis the scientific problem does not make visible the epistemological gap, while the second causes the objective to appear as an action.

In fact neither of them are obligatory in science, and the second is out of line with the concept of objective. In many cases, it is indicated that after the object of the investigation has been stated, the field of action must be declared without having even stated the objective, which demonstrates the ignorance that it is the objective that helps to define the field of action.

With respect to the methods, it is necessary to refer at first to the so-called quantitative research and qualitative research methodologies that serve as titles to some books, as if quality and quantity could be separated in the reality being investigated. Even some scientific events ask the authors to specify if their research is qualitative or quantitative, when in reality what exist are quantitative methods of research and qualitative methods of research, and these last two expressions should replace the mentioned titles of books.

All serious research needs both types of methods, even when one of them predominates. In relation to the so-called methods of level X, where the variable denoted by the letter x assumes most of the time the following qualifiers: theoretical, empirical and mathematical, I wonder if the theoretical methods are above the mathematicians, but we all know that no method is above another according to this classification, then why do we talk about levels? when we can simply say: theoretical methods, empirical methods and mathematical methods. The word level not only exceeds, but is incorrect.

On the other hand, it is often incorrectly heard that the survey is not a method of research but a technique, which is repeated on the basis that in some books it is presented like this. We are clear that the methods are composed of procedures and techniques, and the survey is

not an exception because it requires a procedure to determine the variables to be measured, another to prepare the questionnaire, one more to calibrate that questionnaire, a technique for the collection of data through the application procedure of the questionnaire, other procedure for tabulation and calculations with the results obtained both quantitative and qualitative, and finally the procedures of analysis, interpretation and presentation of the results.

It is necessary to emphasize the simplicity with which the historical-logical method is spoken as if it were a single method, and not the merger of two of them, making the situation worse when in reality only one of them is used despite having them enunciated together.

This, unfortunately, is visible in a large number of written memoirs of graduate, master's and doctoral research. In those writings the ignorance of the mathematical methods for the scientific research is demonstrated, the investigators cling to the descriptions or analysis of the statistics.

In another order, it is common to call an experiment something that is not at all, and ignore that after the experiment the only thing that can be spoken is a probability, because its application in samples requires a hypothesis test that never ensures that what is proposed is fulfilled for the entire universe or population. And for more misfortunes, many times the calculated correlations are taken as causal expressions, which is inadmissible.

It should be noted that many formal groups that I referred to consider that applying something in practice in a given place is validating, without taking into account that what is applied in one context may not be useful for another. From which it follows that what is proposed may not have the rigor that the written memory deserves to defend or disseminate.

It is common practice that when a course on research methodology is taught, the participants are asked to design a research, without taking into account that it depends a lot on the theoretical domain that the person has about the research object, which must be studied, and the authors dedicate considerable study time to be able to be clear of possible epistemological gaps.

This requirement, therefore, undermines the quality of the research design. It is worth adding the well-deserved comment of three phrases that confuse researchers, and that have become a cliché for many. They are:

1. There are things that can not be measured.
2. Never speak of non-existence or lack, it is better to say insufficiency.
3. A diagnosis and a strategy are not enough to design a thesis.

The first statement obviously needs a demonstration of rigor to be able to use it, because the fact that there are real elements that we do not know how to measure, is not enough to ensure that it can not be done, because many elements that were not measurable in the past today are. Therefore, the scientist who respects the infinity of knowledge, must say that there are aspects of life that we still do not know how to measure.

The second statement is no more than an euphemism that generates a semantic contradiction, given that insufficiency refers to an entity that exists but is not sufficient for what is desired, while lack or non-existence means that the entity referred to does not exist. Therefore, the fact of calling each thing by its name must be respected, and what there is not, as there is not, period, without this being an extreme absolutism in any way. I have seen many students of masters and doctorates pass difficult moments before the expression of reference.

The third statement is unscientific and absolute without taking into account the elements that make the difference, since everything depends on the contributions made in the diagnosis or strategy in question. With respect to the bibliography used in a research it is worth highlighting the analysis made of this by some scientists to determine their current level. It insists on comparing how much of it belongs to the last five years, the last ten and so on to the past, to conclude, for example, that there are very few titles of the last five years and therefore the bibliography is outdated.

With this type of analysis almost the use of classical and anthological literature is denied, which could be considered outdated by having more than 50 years, just to use a temporary

example. It is not taken into account that the important thing to define the current level of a book or an article is that the knowledge it reports has not yet been denied, hence its validity.

To this end, it is regrettable that in many scientific disciplines and areas of knowledge new books and articles only repeat everything that was already said in previous years and are inexplicably published by editorials and journals, an aspect that is not of our interest to address here.

Finally, I want to refer to habitual actions that are far from scientific ethics. One of the most notable is the co-authorship of tutors and heads in the articles written by their applicants, becoming the so-called authors by hierarchy or gratitude, which is internationally considered a bad practice because help, guide, review, translate or edit not gives right to authorship.

Another nefarious practice is that in the workshops of theses, pre-defenses and defenses that participate as a jury or board, in a significant number of cases, on the one hand try to bring everything to the area of knowledge that they dominate, the clichés that bring pre-established, transgressing the characteristics of the field of action where the research is carried out, sometimes contradicting each other and confusing the applicant; and on the other hand they force the candidate to master or doctor to remain silent under the justification that he must listen to criticism and at some other time fix his thesis or final master's thesis.

The critical analyzes that have been presented are only a synthesis of the expressions and actions that hinder the research process in science, all with an important degree of habituality, and of dissimilar causes, among which are the lack of knowledge, the bad practices converted in habits, respect for titles rather than knowledge, and the fact that in Spanish language there are many authors of research methodology books that do not have a worthy record of contributions to science.

The observations made can be taken as a starting point or foundation for the development of a self-critical spirit that contributes to improving the process of scientific research.