

DISTINGUISHING RESEARCH FROM NON-RESEARCH

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ABSTRACT

This article sustains that the notion of research is more widespread than the notion of scientific research. Scientific research means trying to capture new true propositions- no matter what robust or minimalist or eliminativist definition one wants to give to the notions of “true” and “false”. I show the characteristics of scientific explanation discussing Hempel and Lakatos conceptualizations among others. After I claim that philosophical research exists and that it can be defined in a way that is precise enough to allow us to subdivide philosophical practices and works into examples of philosophical research and examples of non-philosophical research. I conclude that pages written by philosophers are not philosophical research if they do not make distinctions between their own levels of discourse, and if they claim things which are not falsifiable or, more generally, things such that it is impossible to conceive in what way the best arguments in their favour may become weak or faulty or insufficient

Kew-words: scientific explanation, falsificacionism, ethical research, meta-research.

DISTINGUINDO A PESQUISA DA NÃO-PESQUISA

Este artigo sustenta que a noção de pesquisa é mais difundida do que a noção de pesquisa científica. A pesquisa científica significa tentar capturar novas proposições verdadeiras – não importa qual definição robusta, minimalista ou eliminativista se queira dar às noções de verdadeiro e falso. Mostro as características da explicação científica discutindo as conceituações de Hempel e Lakatos, entre outras. Depois afirmo que a pesquisa filosófica existe e que pode ser definida de maneira suficientemente precisa para nos permitir subdividir as práticas e trabalhos filosóficos em exemplos de pesquisa filosófica e exemplos de pesquisa não filosófica. Concluo que as páginas escritas por filósofos não são pesquisas filosóficas se não fazem distinções entre seus próprios níveis de discurso, e se reivindicam coisas que não são falsificáveis ou, mais geralmente, coisas tais que é impossível conceber de que maneira melhores argumentos a seu favor podem se tornar fracos, falhos ou insuficientes.

Palavras-chave: explicação científica, falsificacionismo, pesquisa ética, metapesquisa.

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1. SCIENTIFIC RESEARCH

We could think that “research” actually always means “scientific research”. This would make things simpler. Literary critics, philosophers and even artists often say they have begun or continued “their research”, but we could suspect in these cases, that they are using the notion of “research” in a metaphorical or analogical way – while not scorning the benefit of social legitimisation which comes with their activity (connotations of intelligence, objectivity, difficulty, lengthy training, social usefulness, a hidden meaning behind the apparent incomprehensibility, respectability and so on).

I sustain that the notion of “research” is more widespread than the notion of “scientific research”. “Scientific research” really means simply “research carried out within (a) science”. There are types of activity which are rightly called “research” although they are not at all “scientific research” (unless in a metaphorical sense). On the other hand, not every activity is research (in particular, not every intellectual or explorative activity is research); and there are normative criteria for distinguishing research from non-research.

Let us try to understand what “scientific research” means. Not everything that is done within a science is research. There is the systematisation of knowledge; the preparation of presentable and harmonious theories - of coherent and complete handbook synthesis - in which the results of a previous research are well arranged in order to be exhibited, to persuade, to be revealed, to last. This is all scientific activity: but it is not scientific research.

Symmetrically speaking, work which is not carried out *after* research, but *before* it, is not scientific research: the brutal collection of data without the selective guide of a theory to be proved or refuted. Maybe no scientist does this kind of work, but if it were done, it would not be scientific research. Searching for funding for scientific research is not scientific research (although the two notions of *searching* and *science* appear here): even though scientists spend a lot of their time doing this. Forming students, teaching and training are not scientific research. It is not scientific research (thinking of medicine) to successfully but routinely put the results of previous research into practise: the doctor who prescribes a medicine which contains the saving molecule discovered last year is not doing research, and neither is the doctor who goes to a training course and learns about the discovery and the recent commercialisation of that new ingredient.

There is scientific research if one is trying to discover something. We have obviously not said anything new yet. If there is a mysterious word (“research”), it is useless to try to define it with the correlated mysterious word (“discovery”). In the meantime, however, we have a few more interesting questions.

First of all: is making an attempt enough? Or is a result necessary? Let us say that making an attempt is sufficient, if it is rationally sustained by the claim of being able to find what one is looking for. The reward of a result is not necessary.

(We can say we have been fishing even if we haven't caught anything, as long as we have cast a baited hook into the sea).

Do we have to already know what we are looking for and what we want to find, before we find it (if that is the case) and while we are looking for it? This is a delicate and deceiving question. We could be tricked into thinking that there are only two possibilities: already having a clear description of what we want to find, or not having any description at all. But, in fact this is not true. Besides, neither of these two possibilities ever truly occurs (not having any description would mean not recognising what you have to find, even in the case where you come across it by pure chance; already having a complete description would be the same as having already found what you are looking for).

Pure serendipity is not scientific research. But pure serendipity is rare. Often the scientific researcher has an extensionally non-univocal, and intentionally partial or distorted or inexact description of what she is looking for. If these non-univocal, partial, distorted and inexact factors are not excessive - i.e. they do not degenerate into confusion, they do not bind us to a random procedure - we are therefore dealing with proper scientific research. The eventual discovery will allow us to correct the out of focus, intentional description which nevertheless allowed us to make the discovery (a short-sighted person who manages to find his glasses after all). From the extensional point of view, one point (the correct target) takes the place of a vast area (very vast, too vast), but which effectively contains the discovery.

Scientific research therefore means trying to capture new true propositions - no matter what robust or minimalist or eliminativist definition one wants to give to the notions of "true" and "false". I do not wish to go into discussions about the nature of truth. Scientific research can well be defined as the attempt to attain new true propositions, even in the case where one follows a pragmatist philosophy of truth sense William James ("What would be better for us to believe! Here is something very close to the definition of truth!"; James, 1907), or a classic instrumentalism, or a conventionalism in the style of Edouard Le Roy (even more than in the style of Poincaré), or a Rortyan neo-pragmatism which is sensitive both to the calls of reductionism to correct assertability, and to Tarskian deflationism.

It is immediately evident, however, that it is not scientific research discovering the new true proposition: "At half past eight on the 3rd October, I put the coffee on", neither is discovering the just as new and just as true proposition: "At 33 minutes past eight on the 3rd October, I switched off the coffee". Particular truths are many, but the majority of them, although easy to verify, are idle. Does scientific research therefore mean attempting to discover new *general* truths? Even this specification does not resolve everything. It is not scientific research to ascertain that "Every Italian household contains less than a billion books", although this proposition is universal, and true. The discovered truths must be *interesting* as well as true and general. This places difficulty on our definition. I believe this means that the truths must be *explicative*: they must be able to throw new explicative light on other truths. When we talk about general truths, this is the same as asking them

(almost always, but not always) to be *laws of nature*. There is a privileged relationship between being a law of nature (between having a nomic character) and the capacity to give life to an explanation. Carl Hempel theorised about the cruciality of this bond when he proposed his nomological-deductive model of scientific explanation (Hempel and Oppenheim 1948): a scientific explanation of an empirical fact is inevitably a *valid deductive* argument which provides the description of that empirical fact as a conclusion departing from *true* premises and which, among these premises, hosts at least one law of nature—that is, a proposition which, apart from being essentially universal, is not only *true*, but even *necessarily true*. Explaining an empirical fact therefore consists, among other things, of demonstrating that it could have been expected with *certainty* on the basis of certain facts and certain *nomic* relationships.

Hempel did not just assert the bond between scientific explanations and laws of nature, but he maintained that laws of nature must be *necessary* truths, and that the expectability of the *explicandum* must be deductively certain. Later on, these close ties were criticised: philosophers such as Michael Scriven, Richard Jeffrey, Bas van Fraassen, Peter Railton and Wesley Salmon, among others, contested the requisite of the deductive form; and most philosophers of science began moving towards a point of view according to which we can correctly state that we have “explained” a fact, even when we do not possess an argument that attests to how that fact were reliable *with certainty* departing from other facts and from *nomic* relationships. Moreover, Nancy Cartwright, Thomas Kuhn and Larry Laudan violently objected to the requirement of the “literal truth of the *explanans*”, asking to substitute it with a condition that only imposes a high degree of confirmation, or the approximation to truth.

We can reformulate our definition: scientific research means trying to capture new true propositions, or (even if not certainly true) at least explicative of other (presumed) truths. According to Wesley Salmon, this basically means trying to establish causal relationships between events: **A** causes **B**, **B** causes **C**, and so on. Sometimes we need general laws, because what we have to explain is an unusual fact. Sometimes we need to discover an unusual fact, because what we have to explain is another unusual fact which could be the effect of hundreds of causes which are connected to it by as many already known general laws (abduction). In this way, even the attempt to ascertain one single truth is scientific research.

Scientific research is therefore the attempt to discover propositions which describe causal relationships that we did not already know about. It must be remembered that causal relationships between events are hardly ever linear: an event has many causes, a cause has many effects, there is over-determination, there is circularity. Scientific research is a systemic enterprise.

In addition, there are explicative (general) propositions which do not describe causal relationships between events, but a different type of relationships; for example, relationships of identity, reduction, emergence (problems of

ontological levels). Even the discovery of the descriptions (true or nearly true) of these relationships is authentic scientific research.

Some extension: it is also scientific research to try to capture relationships between events which are not real but conceptual, as long as this contributes to a better understanding of their reality and their real (causal or ontological) relationships. For example: the devising of analogies between mechanisms which are active in two different fields.

It is also scientific research to carry out the semiotic work of locating and refining the right conceptual classes with which to make up the ontology of a scientific discipline, and so to cut the world up into the most appropriate “natural kinds” to appear in the explicative laws of nature. This saussurian exercise is bound to the problem of the projectability of natural laws, as Nelson Goodman demonstrated (different natural kinds, different projectabilities, different laws): it is fair that this is included under scientific research.

Every serious scientific research must carry out procedures which reduce the risk of considering scientific explanations to be good when they are in fact logically incorrect, senseless, trivial, non-pertinent or simply false (due to the falsity of one of the propositions in the *explanans*). It seems to me that, for this purpose, a falsificationist type of test is crucial. We know all the limits of *dogmatic* falsificationism, as Imre Lakatos (1970) called it; Lakatos proposed to go on to a methodological falsificationism that was brave enough to introduce conscious decisions into his *modus operandi*, and which therefore ceased to execrate conventions and resistance to the haste and the irrevocability of the *modus tollens*. In addition, the methodological falsificationism proposed by Lakatos should have been laid to rest in historical time, in the flow of the history of science: Lakatos baptised this further step “sophisticated methodological falsificationism”.

No matter what degree of sophistication we want to apply to our own falsificationism, I think we should never go without it. There cannot be scientific research without test obsession, counterexample mania, and fixation about potential refutation.

When the falsification turns out to be both possible and successful, the falsificationist way of thinking is, first of all, able to extract the false from the (possible and presumed) truth. Let us consider the classic example of P.C. Wason (1960): in this experiment, you (who represent the scientist) must manage to find out the hidden rule which governs the distinction between correct numerical sequences (of three numbers), and incorrect numerical sequences. I (who represent nature) can only answer “yes” or “no” to your “experiments”, which in this case are subjections of possible sequences to my judgement of correctness. You ask me if 2-4-6 follows the rule and I say “yes”. You ask me if 3-6-9 follows the rule and I say “yes”. You ask me if 10-20-30 follows the rule and I say “yes”. Now you are certain: the hidden rule is “ $n-2n-3n$ ”. But you are wrong. The hidden rule was less specific: It was “an ascending sequence”. You have been the victim of “confirmation bias”. Without falsificationism, you can not notice this.

Or else, take the case where you are convinced that A causes B – an example by Jon Elster (1989). You carry out your scrupulous trials. You examine thousands of cases in which A is present: B is also always present. You examine thousands of cases where B is present: A is also always present. You believe your theory to be well confirmed. Actually, the truth could well be that B causes A; or else that F causes both A and B. This truth is invisible to you until you adopt a falsificationist way of thinking.

Falsificationism allows you to increase the precision of the explicative truths you have available to you, like when, from “F causes both A and B”, you go on to “F causes both A1 (but not A2) and B1 (but not B2)”- this is both epistemological and semiotic work, because one concept gives birth to two distinct concepts.

When there is no falsification because falsification is not in any way possible, there is the chance to get rid of pseudo-explanations:

- An explanation can hide a tautology (“Why are some people shy? Because they cannot relate easily to others”);
- Or it could be pretextuous and *ad hoc* (“Almost all of us have suffered sexual abuse as children, and this explains our psychological problems as adults. The fact that we do not remember being abused is distinct proof that there has been a removal”);
- Or it could be too vague to be acceptable (“The main remote cause of criminal behaviour is a difficult childhood and adolescence”);
- Or it could be completely senseless (“the unconscious is structured like a language”).

Not every search for true explicative propositions, passed through the filter of falsificationism, is scientific research – unless we want to sustain that a UFO enthusiast who has unsuccessfully been trying to prove the existence of extra-terrestrials for the last fifty years has been doing scientific research. The hardened UFO enthusiast is, from a logical and epistemological point of view, comparable to someone looking for God, or the philosopher’s stone, or the Loch Ness monster. If we are prepared to exclude these imaginary detectives from the number of those who do scientific research, we must admit that it is not enough to look for explicative truths with the right methods: we must also have some kind of (isolated but not unconvincing) inductive base (i.e.: positive, not faulty traces), or a meta-theory that explains why nowadays objects that we are looking for could be found, while in the past there has never been a trace of them, (i.e. a certification of immunity from Larry Laudan’s “pessimistic induction”). It is not just a question of falsifying but also (in part) of verifying.

2. PHILOSOPHICAL RESEARCH AND ETHICAL RESEARCH

I have said that the concept of “research” is more general than that of “scientific research”, which represents the conceptual intersection between “science” and “research”. I will now claim that “philosophical research” exists and that it can be defined in a way that is precise enough to allow us to subdivide philosophical practices and works into examples of “philosophical research” and examples of non “philosophical research”.

First of all, philosophical research is the attempt to discover new, true and explicative propositions from among descriptive propositions which do not describe the world, but which describe (true, false, senseless) descriptions of the world, or descriptions of descriptions of the world and so on. This type of philosophical research is therefore (not scientific) research *upon* scientific research or any other kind of research. It is thus, by definition, *meta-research*.

Here we have, precisely, the many philosophies of sciences or nearly-sciences: philosophy of mathematics, philosophy of physics, of chemistry, of biology, of psychology, of sociology, of linguistics (of language), of semiotics, of economics, of anthropology, of history, of medicine, of cognitive sciences and even of psychoanalysis.

Here, philosophical research is the discovery, *not* of true (and explicatively salient) causal relationships between events – as in scientific research – but the discovery of true (and explicatively salient) logical and argumentative relationships between possible propositions – true or false, sensible or senseless. The purpose of philosophical research is not to explain or understand the world, but to explain or understand our way of knowing, understanding and explaining the world. Here we have all of the methodological, epistemological, meta-linguistic side to cognitive enterprise. We are interested in the relationships between the propositions that interest us (and between the notions or ideas that are manipulated by these propositions; logical relationships (implication, contradiction, compatibility), and above all, argumentative relationships.

It is a case of examining descriptions of the world (or descriptions of descriptions) to find out what they really mean; what their consequences are; how they can be shown to be true or rationally acceptable; the truth or the falseness of which other propositions can correctly count as an argument in favour of their truth.

Here too, we can trace a preparatory semiotic work: as well as recalibrating the notions utilised at the descriptive levels of the target language (of science), philosophical research must also deal with the recalibration of the notions that make up its own investigative tools. Sometimes, progress (for example, the proposal for a different way of interpreting a biological theory) can come from a re-conceptualisation of some notions utilised by the biological theory in question, or else from the introduction of new meta-biological notions (new philosophical concepts).

Philosophical research is also the attempt to discover new true, explicative descriptions of the relationships between the notions of one science and the notions of another science, or between propositions of one science and propositions of another science. Philosophical research is contaminating, it is disrespectful of disciplinary borders. Its purpose is often to trace new possible valid descriptions of the world or of discussions about the world.

Another kind of philosophical research is not the meta-level (or the meta-meta-level, and so on) of any descriptive level. It is instead the meta-level (or the meta-meta-level, and so on) of a prescriptive or normative level. Here we have the philosophical research of moral philosophy and of bioethics, the philosophical research of aesthetics, and the philosophical research of political philosophy.

It is a case of tracing true and interesting logical and argumentative relationships between propositions – and so far, this is no different from philosophical research which concentrates on descriptions of the world. However, here, the propositions whose relationships are investigated are not descriptive propositions but prescriptive or normative, or more generally *valuative*: “This is good”, “this is beautiful”, “this is right”, “this is important”.

Saying what is or is not right is not in itself philosophical research (in the field of moral or political philosophy). This type of activity is not research in itself, it is the expression of moral sentiments (externation of moral opinions). It is philosophical research to place oneself at a meta-level, and to examine the logical and argumentative relationships (the true and interesting relationships) between one moral assertion and the others: which moral assertions (and which factual assertions) constitute arguments in favour of the assertion in question, which constitute arguments against it, which arguments are stronger (more powerful, more pressing) and which are less, why, and so on.

Philosophical research can obviously be militant, when it chooses a moral assertion that it wants to propose as being preferable to the others and tries to show that it has better arguments in its favour, and worse arguments against it, compared to its competitors. This militant character is not bad for philosophical-moral research, as long as it stays objective and impartial in the work carried out on the meta-level. One can take sides at the basic level (“I think that this moral thesis is better than the other”) as long as one does not take sides (staying objective, impartial) at the descriptive meta-level of the logical and argumentative relationships between moral assertions. Philosophical-moral activity that is not impartial in objectively weighing up all the possible relevant argumentative relationships is not philosophical research.

The falsificationist way of thinking is important even in philosophical research. To trace faults in the scientific disciplines (or at least in the levels below the highest meta-level) that one is contemplating, we must be prepared to consider not only the arguments in favour of the descriptive propositions that convince us, and not only the arguments against the descriptive propositions that do not convince

us; but also the arguments *against* the descriptive propositions that convince us, and the arguments *in favour* of the descriptive propositions that do not convince us.

Without the practice of attempting falsification, it would never be possible to discover a sub-class of possible new true and interesting relationships from among the descriptive propositions that are not relationships of confirmation or support but relationships of non-confirmation or disturbance. And it would not be possible to unveil errors of evaluation about the nature of these relationships (a presumed relationship of compatibility which turns out to be a relationship of implication; a presumed argument against which turns out to be an argument in favour).

The falsificationist attitude is also important for the philosophical research of moral philosophy and bioethics (and of political philosophy and aesthetics). I would not be impartial, and I would not conduct good research if (even unconsciously) I failed to examine the strength and the weight of the rational arguments against the moral thesis I support, and the rational arguments in favour of the opposing moral thesis. The falsificationist way of thinking forces the moral philosopher who has just claimed a certain moral thesis to ask himself: "What could be good arguments against my thesis?". It is only in this way that an exhibition of moral judgements can become philosophical research too.

The falsificationist attitude is also fundamental for its action at the meta-level of the proper philosophical discourse. Many pages, or entire books, by famous philosophers are not refutable, in the sense that one cannot imagine any event (any truth of any proposition) that manages to make its assertions false or to weaken them (to provide negative evidence or arguments against them). This is not philosophical research (perhaps it is not even philosophy; perhaps it does not even make any sense). Every philosophical research as such should contain propositions that - even if true, well supported, and interesting - must allow us to imagine which part of the world, or of the discourse, it would be sufficient to modify to make them false, or argumentatively unsustainable, or else not interesting any more. What has to happen to bring about the rejection of this assertion? Philosophies which do not foresee or constantly consider this question are not cases of philosophical research.

I believe that all philosophical activity which is not philosophical research is bad philosophy or else it is not philosophy at all. Kantian philology, for example, is extremely respectable: but it is not philosophy as such, and rather is history of philosophy (the same difference that we find between surgery - operating - and history of surgery- reconstructing how the Sumerians or the Florentines in 1200 operated).

Pages written by philosophers are not philosophical research if they do not make distinctions between their own levels of discourse, and if they claim things which are not falsifiable or, more generally, things such that it is impossible to conceive in what way the best arguments in their favour may become weak or faulty or insufficient.

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