

The notion of validity as the key to understand the fallacy of false cause

~ Corina Yoris-Villasana

Introduction.- Books in logic deal with the subject of fallacies in different ways; however, where they seem to agree is on the characterization of fallacies as *persuasive reasonings, although not valid*. Now, the subject, although attractive for most of the students, stumbles on big difficulties for its complete understanding. Starting with the idea of validity to explain a determined kind of fallacy, it presents, among other obstacles, the confusion of ideas as it is the case of the fallacy known as False Cause. The definition according to Copi's handbook (Copi: 1972, 93-94) establishes that this fallacy *occurs when it is taken as the cause of an effect something that is not its real cause. And, also, when it is inferred that some event is the cause of another simply because the former occurred before the later*. Hamblin (1979-78-79) carefully analyzes this definition and contrasts it with the use given in Aristoteles' **Sophistical Refutations** to establish the differences and to highlight the ambiguous use given to the word cause, and, therefore, the problems resulting from this confusion. However, I think that, the obstacle that I have encountered for years with the students is much simpler. It is related not with the *ambiguous use of the concept of cause*, but with the notion of *validity*. This is one of the concepts that, in the teaching of logic to students on the first semesters of College, sets forth a bigger number of problems.

If the example used on the explanation is similar to the famous "*syllogismus funebris*": *All men are mortal. Socrates is a man. Therefore, Socrates is mortal*, the student, as a general rule, accepts it as valid if we have used for its definition the one that says: *a reasoning is valid if and only if it is not possible that the conclusion be false while the premises are true*. Nevertheless, it is enough to change the example, to confuse him to the point of not accepting as valid a reasoning whose premises are obviously false and the conclusion too. It would seem that it is understood as valid reasoning the one which can only admit to be true in both premises and conclusion.

This difficulty with which we have stumbled for years, has led us to consider several teaching strategies, not all successful and therefore also to examine the various definitions of validity that books and manuals in elementary logic offer. Among the studied definitions we find the ones proposed by Irving Copi and Jacques Maritain, chosen as samples of the handbooks preferred by many college teachers from our Venezuelan entourage. Let us see these definitions: Copi says: "*Although every reasoning implicitly carries the statement that its premises offer the evidence that the conclusion is true, only deductive reasonings expect from their premises to offer conclusive evidences. In the case of deductive reasonings, technical terms as valid or invalid are used instead of correct or incorrect. A deductive reasoning is valid when its premises offer a solid formulation for its conclusion, that is (i.e.) when premises and the conclusion are related in such a way that it is absolutely impossible that the premises are true without the conclusion being so* (Irving Copi: 1962, 22. In the 1972 edition, there are additional examples but the definitions are still the same, v.P.25-26).

Maritain, on the other hand states that: "*When there is inference, when the antecedent really infers the consequent, we say that the argumentation or the consequence is good (in that case, the antecedent cannot be true without the consequent being true)*" (Jacques Maritain: 1984, 210)

In both cases, the definitions show ambiguities that lead the student to confuse validity with truth. We will try to show some problems that arise from accepting these definitions without more explanation.

1. **Mixing of the concepts and lack of clarity on the definition.-** What can be understood as conclusive evidence? Sure foundation for the conclusion? The terms possible and impossible?

♦ Director of the Master in Philosophy, Universidad Católica Andrés Bello, Caracas, Venezuela

Evidence may have two meanings: one, in the classic Cartesian sense, referred to clear and distinct ideas; the other, referred to probatory elements. In other words, evidence requires a factitious element, even more if taken in plural: conclusive evidences. But when introducing the expression *sure foundation* it seems that the definition becomes more complicated, since it would seem that it refers to an element of sureness that is not clear in the subsequent explanations. If we refer to the concepts possible or impossible, other intangled factors arise.

Trying to answer those questions to myself, I found on Internet a paper presented by Matthew McKeon (Central Connecticut State University) at the Symposium on Teaching Logic, Rutgers University, EEUU, who, when researching on the foundation of the definition of validity in first order logic, found, different definitions of validity in first order logic. And said in short, seen in that way they suggest that it would be worthwhile to deepen on the formal relationships between premises and conclusion to make attractive for the student to get interested in things of this matter. McKeon shows, using very simple examples how, for any given example with truthful premises, if the values of truth are changed when changing their meaning and the world where such premises have taken the value of truth, the notion of validity becomes clear for those who access it for the first time. To understand validity, it is necessary to understand first how it is possible for any given proposition with a certain value of truth, to change its value if the meaning of the words or the world where they have a meaning are changed.

McKeon's example is immersed in the US world, and for that reason we will try to build another that will allow to establish the conexions made explicit by him and with a more actual sense in our hispanic world. The proposition *Juan Carlos is married to Sofía* could be false, and *Juan Carlos is married to Margarita* could be true, if we understand by *Juan Carlos, Sofía, Margarita* and *married* what they mean within the context of the Spanish monarchic society. But, imagine, for instance, that Juan Carlos would have known the daughter of Elizabeth, Queen of England and in love with her, would have married her. In this way, the first of the propositions would result false, while the second would be true. Let's change the situation, and let's suppose now that, the real world is as it is and, *Juan Carlos, Sofía and Margarita* are who they are, but let's suppose that *married* means something different: let's say it means less than a friendship or a mere acquaintance. What would happen? Well, neither the first nor the second proposition would be true.

The development of a similar example led McKeon to consider two different scenarios: the possibility or not of finding a false conclusion from true premises if there is no possible world where these premises are true and the conclusion false, and if the words are used with the meaning they normally do. That is, it would suffice to show how there is no possible world for this to happen. In a second instance, we can find that if we keep the same world, but the meanings of the words are changed, it would not be possible for the premise to be true and the conclusion false. Said in a different way, if we change the meaning, the world would be different in order to achieve the truth of both the premise and the conclusion.

It is clear that both scenarios have a strong epistemological burden. In the case of the possible world, we get into the metaphysic worlds. In the second case, the one of the possible uses, it is easier to access such uses rather than to talk about possible worlds.

Without exhausting McKeon's position and trying to connect with our critic to the definition of validity in some logic handbooks, we see in Copi's that, after giving the definition already cited on previous lines, it uses an example where the factitious evidences are used. It says: If I had all the gold of Fort Knox I would be very rich. I don't have all the gold of Fort Knox; therefore, I am not very rich. Both premises are declared to be true as well as the conclusion, but the reasoning is not.

To explain this, he manifests "*that premises can be true and the conclusion be false, though not with immediate evidence, can clearly be seen considering that if I won a million dollars, premises would still be true, but the conclusion be false*" (I. Copi:1962,23). He continues with another example which is of the same form, but with different contents, without previously making clear

what he calls form or giving an illustrative example (let us not forget that the cited work pretends “to offer a useful instrument for the teaching of logic” as he says in the preface). The example is as follows: *if Rockefeller would possess all the gold in Fort Knox, Rockefeller would be very rich. Rockefeller does not possess all the gold in Fort Knox. Hence, Rockefeller is not very rich. “The premises of this reasoning are true but the conclusion is false. Such a reasoning cannot be valid, since it is impossible that the premises in a valid reasoning are true but its conclusion false”*. (Ibid. p. 24).

The cited example shows several problems, that McKeon tries to solve with his explanation about the *possible use* and the *possible world*. Let us see some of these problems that, in our point of view, darken instead of clarify the notion of validity:

1. The use of a conditional proposition to explain the notion of validity carries another difficulty: the determination of the value of truth of a proposition of such nature.
2. The expression *very rich* is ambiguous. What is meant by it? When does someone *start being rich* or *just merely rich*?
3. It sets forth the necessity of an *immediate evidence* to verify the falseness of the conclusion in a given circumstance without specifying either the change of interaction or the keeping of the form (we have indicated that he has not explained the concept of *form of a reasoning*). I.E. in terms of McKeon’s proposal to vary the world keeping the common use of the word.
4. In varying the example, keeping the form, it comes up again the problem of quantifying riches. We add that to say that it is not valid appeals to the definition in a way that almost falls in the argumentative circle, since, precisely what is being tried to illustrate is the validity. So, How come its definition is used to illustrate it?
5. To change the situation, i.e. the *present world*, without previously explaining that it is being pretended create a situation logically possible, poses problems related to the explanation about validity. Are the possibilities of interpretation running out? I think this problem goes beyond the first year course aspirations.
6. In the 1972 edition, it appears an attempt of explaining logic relations beyond values of truth. At this point, it is worth to point out that a point spurts up which serves us to make clear what we have undertaken since the beginning of the essay: How a student who tries to identify fallacies confuses the casual problem with the one of validity. Copi’s exact words are that “*a reasoning is any group of propositions such that from one of them, it is stated that the others are derived. And these are considered as elements of judgement in favor to the truthfulness of the first*” (Copi 1972,7). But in the explanation it gives about validity, he explains that in our daily life we find *different courses of action* and *these courses of action* are real *alternatives*. Thus, to choose one by one, lead us to different consequences. They are exclusive. From there, if I choose the first alternative, *it will have one thing*; if I choose the second *another will be produced*. “*In general, we tend to choose among different courses of action, keeping in mind the set of consequences we rather see accomplished*” (Ibid., 36). It is clear that for a student who does not know the idea of validity, this “explanation, (por lo demás confusa ella misma, since it mixes the cause of an event with the reason why it is said this or that), it will lead him to establish a false bridge among *truth, validity and cause*. “*This produces that, so, that is the cause of this*”. In the case of Maritain’s definition, even though his is an older handbook, deep rooted among some logic teachers, it keeps being used in numerous university courses, where only the so called *formal logic* is taught, meaning by this the syllogistic and some concepts developed by Maritain in **The order of concepts**.

The definition of validity appears under the form of *material truth* and *formal truth* which makes the situation of comprehension harder for the students who are seeing the topic for the first time, without mentioning that the language used is very different from the common usage in our universities. It tries to clarify the notion of form and defines it as “*the disposition of the objects of concept gathered on the propositions by which its grouping means inference, or in a more precise*

way, the disposition that coordinates the propositions and the concepts according to quantity and quality and according the other logic properties, in a way of manifesting an inference” (Maritain; 1982, 211). It happens that this definition presents a bigger difficulty: the language that they feel distant from their linguistic world, not to mention the poor abstraction capacity that they have when they encounter the course of logic. The examples that it uses to clarify its definition of consequence *good or bad* are the following: *Every men is rational. Pedro is a man. Therefore, Pedro can laugh.* Maritain says: “*Here there is inference, it is by chance or by accident, because it happens that everything that is rational can laugh.. If we would have said with the same logic disposition (that is, with a different predicate in the conclusion and in the mior premise): Every man is rational. Pedro is a man. Therefore, Pedro is a musician. The conclusion would be wrong*”.

1. In the case of the first example, the premise is used to justify the inference. *Everything rational can laugh*, poses metaphysical problems that lead the logic into some terrains different to the ones we pretend to get in these introductory instances. Moreover, it would be necessary the explanation , that Maritain does not explain, about the *implicit elements* or the *implicit saying*..
2. The second example, establish that the inference is wrong even when it is true that Pedro is a musician without making usage of a change of situation to show the impossibility of the truth in the conclusion and the truth in the premises if we would change the rules of usage or of the world where we are for that example.

2. Conclusion

To get into the explanation of the concept of validity had led me to consider that the expeditious way for the students to access the concept with relative comprehensive speed is:

- After clearly defining what it is understood by reasoning and after exercising the identification of its constitutive elements, it is necessary to clarify the notion of form of reasoning.
- Once this apparently simple notion is clarify, I have got good results from defining the validity in relation with the form, differentiate between the truth of a proposition and the validity of reasonings to later start to establish instances that will allow us to distinguish a valid reasoning from one that is not, using the change of situations and the presentations of conterexamples.
- However, the experience had showed me that after a full scholar year, there are students that at the end of the course still believe that a reasoning is valid if and only if the premises and the conclusions are true. And for those, the non valid reasoning is the one where the premises are true and the conclusion is false. The notion of validity linked to the form does not guaranteed the comprehension of the concept.
- When starting to explain fallacies, it is necessary to come back to validity. Otherwise, for the student all fallacies will be of false cause or all of irrelevant conclusion, in the best case.

Bibliographical Notes

COPI, Irving: **Introducción a la lógica**, (1962, 1972). Buenos Aires, EUDEBA Manuales.

HAMBLIN,C.L., (1979). **Fallacies**. London, Methuen& CO, LTD.

MCKEON, Matthew, (1996). **A Pedagogical Approach to a Foundation for the Definition of Validity in First-order Logic**. <http://cs.cornell.edu>

MARITAIN, Jacques, (1982). **El Orden de los Conceptos**. Buenos Aires, Círculo de lectores.