

The Logical Structure of Manipulation

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Manipulation is a well-known phenomenon. We face it every day. The term is defined negatively as the action of influencing or controlling someone, especially to one's advantage without the person who is subjected to the manipulation being aware of it.

This paper offers some arguments to support the view that, although fallacious from a logical point of view, the logical structure of manipulation is not necessarily problematic from a moral perspective.

The first part of this paper focuses on several terminological remarks regarding the logical structure of manipulation. It was argued² that some invalid formal arguments, or erroneous informal ones, can be useful as informational shortcuts and that logic should be “greener” and should not reject invalid or erroneous arguments as quickly as it does. In the second and third section I present this perspective and argue that logic is as green as possible and that it does not throw away contingent arguments. The last section supports the idea that logical fallacies and manipulation can be distinct. In other words, logical fallacies are free from any moral import or evaluation. Moral aspects come into discussion only when context is taken into consideration.

I. Logical Fallacies and Manipulation

Logic analyses arguments, which can be deductive or inductive. A deductive argument has a conclusion that is not more general than the premises.³ However, an inductive argument has a conclusion that is more

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² Luciano Floridi, “Logical fallacies as informational shortcuts,” *Synthese* 167:2 (2009): 317-325.

³ This is why it is often said that deductive reasoning does not provide new knowledge. The conclusion does not consist in new information, since it does not exceed the degree

general than the premises. If a deductive argument is valid⁴ and the premises are true,⁵ the conclusion is necessarily true. An inductive argument is not characterized in terms of validity and soundness, but in terms of strength. When it comes to inductive arguments, the truth of the conclusion is not guaranteed by the truth of the premises and the logical form of the argument.⁶

Furthermore, invalid deductive arguments and weak inductive arguments are linked to manipulation.

Logical fallacies can be classified⁷ in two categories: formal and informal. A formal fallacy arises from an improper use of logic. Informal fallacies are errors of reasoning, but they do not necessarily have an improper logical form. Albeit erroneous, informal fallacies can still be formally correct.

of generality from the premise(s). Even though, it can be argued that one can be aware of the truth of the premises, but not of the truth of the conclusion. If this is the case, then it seems that the conclusion may offer some new knowledge.

⁴ An argument is considered valid if and only if when the premises are true, the conclusion is also true, in other words if and only if the conclusion follows logically from the premises.

⁵ When an argument is valid and also has only true premises, it is considered sound.

⁶ There can be argued that complete induction is an exception, because it can guarantee the truth of the conclusion. A complete induction has the following form:

X_1 is F

X_2 is F

.

X_n is F

$X_1 \dots X_n$ are all and only (from the class of) X (and n is a countable number)

All X are F.

The complete induction, as well as the mathematical induction, has the form of an inductive argument. In fact, they both are deductive arguments. In the case of complete induction, is quite obvious that, taking into consideration the last premise, the conclusion does not exceed the degree of generality of the premises. In this situation, if the premises are true, so is the conclusion. Thus, they do not represent an exception; they are just disguised deductive arguments.

⁷ This is far from being the only possible classification of fallacies. Another one is given by Munson and Black. They divide fallacies in errors in making a case for a claim and errors in criticizing arguments, or in responding to criticism. For more, see: Ronald Munson and Andrew Black, *The Elements of Reasoning* 6th edition (Boston: Cengage Learning, 2012) chapter 8, 124-145.

II. Formal fallacies as informational shortcuts

Formal fallacies are illicit forms of deductive arguments that occur when logical rules or laws are not followed. It can be said that each invalid argument is a formal fallacy. For example, affirming the consequent is one of the most common formal fallacies. It is an improper use of Modus Ponens. Modus Ponens (MP) has the following form:

$$p \rightarrow q, p \vdash q$$

An illicit form of Modus Ponens (affirming the consequent - AC) is:

$$p \rightarrow q, q \vdash p$$

A similar argument is obtained if negation is introduced. Modus Tollens (MT):

$$p \rightarrow q, \sim q \vdash \sim p$$

The fallacious form of MT (denying the antecedent - DA) is:

$$p \rightarrow q, \sim p \vdash \sim q$$

Although not valid, AC and DA may lead to true conclusions. This may be one of the reasons used frequently. However, the truth of the conclusion is not guaranteed by the logical form of the argument and its premises. It is rather a matter of contingency.

Luciano Floridi⁸ refers to these fallacies as informational shortcuts. According to Floridi, these erroneous forms of reasoning can be considered helpful, and offer an easier way of reaching specific information. Because of this, the author claims that logic is far from being “green”. Floridi blames logic for throwing away invalid arguments too quickly. Even though fallacious, these invalid arguments can have a specific scope in the informational process. Quoting Floridi:

(...) they can be rather useful, if quick and dirty, and probably riskier, ways to gain and manage one’s information. Some logical fallacies are not mere mistakes of no value but informational shortcuts that can be epistemically fruitful if carefully managed.⁹

Starting with Plato, it has been argued logic is something that we are born with. Thus, our rationality would observe these kinds of errors, even

⁸ Floridi, “Logical fallacies as informational shortcuts.”

⁹ Ibidem, 318.

though it will not be able to name them. Marcus and Rips¹⁰ ran some studies to prove this point of view. However, the results of their studies were not the expected ones. The participants took MT to be invalid and considered AC and DA as valid forms of reasoning.

A possible explanation for this is that participants mistake “only if” with “if and only if”. The former introduces a necessary condition, whilst the latter introduces a necessary and sufficient condition. In this situation, they will make the following two instantiations equivalent:

- a. If it is blue, then it has a color.
- b. If he is a bachelor, he is unmarried.

It is a common mistake to consider material implication (or the relation of consequence) convertible, despite the fact that it is not, and that we have plenty examples of this kind. For example, from a. it does not follow that if something has a color, it has to be blue. Another explanation may be the one that:

(...) based on a weaker informational reading, holds that participants mistake necessity for probability.¹¹

Logical necessity is stronger than the common use of the concept. The common use of necessity is rather equivalent with the logical notion of possibility.

In order to understand this phenomenon, following Floridi, we can use Bayes’ theorem¹²:

$$P(A/B) = \frac{P(B/A)XP(A)}{P(B/A)XP(A) + P(B/A^C)XP(A^C)}$$

¹⁰ Ibidem, 319.

¹¹ Ibidem, 320.

¹² For the coherence of this article, I used Floridi’s formulation of the theorem. See Floridi, “Logical fallacies as informational shortcuts,” 320. Bayes’ formulation and explanation may be found in T. Bayes, “An Essay Toward Solving a Problem in the Doctrine of Chances,” *Philosophical Transactions of the Royal Society of London* 53 (1764): 370-418, available online <https://web.archive.org/web/20190126111142/http://www.stat.ucla.edu/history/essay.pdf> (accessed December 15, 2019).

Let us suppose that there are two people¹³ – X and Y – who receive emails. 2% of their emails are infected and they both use antivirus software that is successful 95% of the time. The software moves the possibly problematic emails to the spam folder. However, while X decides to check her spam folder, Y deletes it. Y's way of reasoning was based on the idea that an email gets in the spam folder if and only if it is infected. If this were the case, then her antivirus would be 100% successful. It follows that Y cannot distinguish between the necessary condition and the sufficient and necessary one. In other words, she used AC to reach her conclusion.

Y's way of reasoning would not be fallacious if she would be using a perfect antivirus software.¹⁴ In this instance, the software would make no mistakes and her first premise would be a double implication ($p \leftrightarrow q$). Thus, her way of reasoning would be valid.¹⁵ In the previous example, AC was used to reach a specific conclusion quickly, as an informational shortcut.

Floridi concludes that:

So DA and AC are Bayesian “quick and dirty” informational shortcuts. When we use them, we bet that $A \rightarrow B$, $B \vdash A$ or that $A \rightarrow B$, $\sim A \vdash \sim B$. The bet might be risky (we might be wrong), but it often pays back handsomely in terms of lower amount of informational resources needed to reach a conclusion (...).^{16, 17}

This conclusion is not meant to suggest that such erroneous informational shortcuts are desirable, because counterarguments can be found easily. Admittedly useful sometimes, they remain fallacious.

¹³ I am following Floridi's example that can be found in Floridi, “Logical fallacies as informational shortcuts,” 320.

¹⁴ Using DA or AC assumes that there are no false positives. In this case, the first premise becomes a biconditional. The second option is that the false positives are improbable and they would be ignored.

¹⁵ Y's argument would have this from: $p \leftrightarrow q$, $q \vdash p$.

¹⁶ Floridi, “Logical fallacies as informational shortcuts,” 322-323.

¹⁷ Floridi's answer goes hand in hand with the answers provided by the participants to the already mentioned test. It seems that they are in a continuous search for information. Participants tend to avoid answers as “none of the above” or “nothing follows from the premises”.

I support the idea that those invalid arguments can be usable sometimes. However, I do not see a way in which logic would be able to be greener without giving up the actual notion of validity. We often use erroneous arguments in our day to day interactions. This does not make those arguments valid. Validity and utility are two different notions that characterize different aspects of arguments. Validity requires a specific structure. Soundness guarantees the truth of the conclusion. On the other hand, utility offers a quick access to the conclusion or the information needed. However, without soundness, it lacks certainty. Discarding the actual notion of validity, logic seems to give up its meaning and aim as well. By calling these arguments invalid, logic does not interdict them. It just raises a red flag as to why they are not completely safe; they do not provide certain true conclusions.¹⁸ In fact, if we take into consideration the truth table for these formulae, logic does not interdict them because they are contingent and not main contradictions. This means that they do not always provide certainty. The conclusion does not necessarily follow from the premises. Despite the fact that logic classifies deductive arguments into valid and invalid, it does also make a distinction between contingent arguments and contradictory ones. What logic really rejects are contradictions. This is the same for natural language, or day to day interactions. I do not see how logic could become any “greener” than this.

III. Informal fallacies and context

There are far more formal fallacies other than the two already mentioned. However, they all follow a similar pattern. When it comes to informal ones, they are more versatile. I am not going in depth with the classification of informal fallacies.¹⁹ Informal fallacies are not necessarily

¹⁸ A similar conclusion was reached by Graham Priest. Priest starts the discussion from paradoxes. His conclusion is that there can be some contradictions that are both true and false and that logic should be changed in order to accept such contradiction. He presents a paraconsistent logic that accepts some instances of “ $p \& \sim p$ ” as being both true and false. Even though, the discussion is quite different, I think that both authors would agree that they want some changes in the classical logic, in order to accept some arguments that are rejected based on the actual rules of logic. For more, see Graham Priest, *Beyond the Limits of Thought* (Cambridge: Cambridge University Press, 1995).

¹⁹ For more, see Ronald Munson and Andrew Black, *The Elements of Reasoning* 6th edition (Boston: Cengage Learning, 2012) chapter 8, 124-145, or J.Y.F. Lau, *An Introduction to Critical Thinking and Creativity: Think more, think better* (New Jersey: John Wiley & Sons, 2011).

invalid inferences. There are situations in which they can be properly used.

Let us consider the example of the circular fallacy. It consists of using the conclusion as an argument, thus, starting with what it is argued for. This fallacy is often valid, because if the premises are true, the conclusion (which does not consist in new information) is also true.

Let us start from the following three examples:

c. The heavier a diabetic is, the higher their blood insulin. As the amount of insulin in the blood increases, the person in question tends to eat more; therefore, they gain weight.

d. There is a high level of youth crime, because a lot of young people break the law, and the reason why they break the law is because they are criminals.

- e. $A \leftrightarrow B \vdash_{\text{NK}} B \leftrightarrow A$
1 (1) $A \leftrightarrow B$ Premise
1 (2) $(A \rightarrow B) \ \& \ (B \rightarrow A)$ 1Definition of \leftrightarrow
1 (3) $A \rightarrow B$ 2Elimination of $\&$
1 (4) $B \rightarrow A$ 2Elimination of $\&$
1 (5) $(B \rightarrow A) \ \& \ (A \rightarrow B)$ 3, 4 Introduction of $\&$
1 (6) $B \leftrightarrow A$ 5Definition of \leftrightarrow

They are all circular arguments. The last one is a demonstration based on natural deduction in propositional logic; thus, it is valid. Such demonstrations are well known in mathematical logic. The first one is, as well, accepted. It explains the relation between two facts that are both necessary and sufficient conditions for each other. The problem occurs when we have to face the second one. There is a difference between c. and d. They have similar logical structures. However, a logical structure does not tell us anything about the sentences we are using.²⁰ This does not imply that logic is fallacious or that it should be changed. I believe that it shows us that we need something more than logic to analyze these

²⁰ Let us take for example a form of MP. We already know that, MP is valid. However, despite the fact that it is valid, it, sometimes, may not be useful at all. Take into consideration the following instance of MP:

If Trump is elected, then I am writing this article. Trump was elected. In conclusion, I am writing this essay.

The argument is not only valid, it is also sound. This does not mean that the premises present a proper argument for the conclusion. The fact that Trump was elected has nothing to do with the fact that I am writing this article.

kinds of examples. It appears that logic is not sufficient when a proper analysis of the language is performed with respect to the purpose of a specific argument.

To sum up, circular arguments are not always fallacious. We often use such arguments to define certain terms or situations. Because they do not offer any new and relevant information in an informal situation, they are considered problematic. Nobody would counter-argue “I lost because I did not win”, even though it will not be considered a proper argument.

The majority of informal fallacies have correct instances. For example, an ad hominem argument is acceptable if the critique against the opponent is relevant for the argument. Let us assume that X and Y are discussing an event. Y has strong reasons to believe that X is not trustworthy (for example, because X had lied before). In this situation, Y can reject what X is saying because she does not trust X, which is a form of ad hominem reasoning.²¹

When it comes to ad ignorantiam arguments, we have a tendency to accept some of them. For example:

1. There are no unicorns, in absence of proof to the contrary.
2. There are unicorns, in the absence of proof to the contrary.

We tend to accept 1 and reject 2, even if we do not have proofs for any of them. It seems that we do this because we are in a search of epistemic closure. Philosophers define knowledge as justified true belief. In this situation, if we really want to talk about knowledge, we have to give up both justification and truth. In this situation, we will consider 1 as knowledge, despite the fact that we have no proof for it and that it is most probably true, but not certainly true.²² This situation is quite similar to the following one:

²¹ I am trying to suggest neither that an ad hominem argument is desirable, nor that it is valid (in the example I provided). The example mentioned above has a form of an induction; it is not a deductive argument. The conclusion (that X is lying) has a degree of probability, it is not certainly true.

²² According to some philosophers that argue for a form of the correspondence theory of truth, “Unicorns do not exist” is true and the truthmaker for it is the world as a whole. On the other hand, Kripke argues that necessarily unicorns do not exist. These discussions are not relevant for the aim of this article. For more, see Saul Kripke, *Naming and Necessity* (Cambridge: Harvard University Press, 1980) and D. M. Armstrong, *Truth and Truthmakers* (New York: Cambridge University Press, 2004).

- 1'. One test proves x , therefore x .
- 2'. Two tests prove x , therefore x .

We consider 2' to be stronger than 1'. The need for epistemic closure makes us take into consideration invalid or fallacious arguments.

This means that we have instances of ad ignorantiam arguments that may be deemed valid. Such arguments are valid in a specific domain of knowledge D , where K is the set of true propositions from D . Let p be a proposition from D , that is not in K . Taking into consideration the principle of bivalence (that every proposition has to have a truth value, it is either true, or false), despite the fact that we know nothing about p (we do not have a proof for $\sim p$) we incline to consider p false.²³

Minot²⁴ argues – similarly to Floridi – that logic makes a mistake regarding all these arguments erroneous. Minot takes into consideration two perspectives: a logical one and a rhetorical one. Logic does not bring context into discussion. On the other hand, rhetoric introduces context. Thus, the already presented arguments are not true or false; but rather, their instances offer knowledge – not certainty.

IV. Fallacies, context and morality

It is quite obvious that not every instance of a fallacy has to be a form of manipulation. I have already argued that there can be some situations in which erroneous arguments will lead to true conclusions. Logic is not able to differentiate between those useful instances and the ones that are proper fallacies.

However, it can determine which arguments will lead to certainty, the ones that are contingent and contradiction. It is up to the individual to evaluate them based on a specific context. After all, even a valid argument can be unsound or even irrelevant in a specific context. Thus, the strength of an argument varies based on context.²⁵ This is why arguments

²³ Douglas N. Walton, "Arguments necessarily vicious?," *American Philosophical Quarterly* 22:4 (1985): 263-274.

²⁴ Walter S. Minot, "A rhetorical view of fallacies: ad hominem and ad populum," *Rhetoric Society Quarterly* 11:4 (1981): 222-235.

²⁵ The context does not mean only a specific time or situation. The context can also consist in the prior knowledge one has.

are not rejected based only on logic. It is rather a matter of degrees of acceptability or refutation of an argument in a specific context.²⁶

If an argument cannot be rejected outside of a context, how can it be evaluated from a moral point of view? It is often believed that the use of fallacious arguments represents an undesirable action and that manipulation is morally bad (not only, but also) because it uses erroneous arguments. If a logical fallacy can be considered correct in a specific context, then it cannot have a predetermined moral status outside that specific context.

If one uses a fallacious argument to manipulate consciously or unconsciously, one is to blame. It is not the argument that is at fault, but the one that uses it in a specific manner.

Logical fallacies are free from any moral label. Formal fallacies are just invalid structures, empty of any empirical content. Informal fallacies are just general forms of argumentation, that may be valid or not; still, they do not contain any empirical substance. When one is introducing the empirical part in an argument, it becomes relativized to a specific context. Only after that, can it be labeled from a moral perspective. Thus, logic has nothing to do with morality. They are two different aspects of argumentation.

In conclusion, in this article, I argued that despite the fact that manipulation is strongly linked to logical fallacies, they are distinct. A logical fallacy can be used as informational shortcut in order to reach a conclusion quickly and gain knowledge. There are different types of logical fallacies. At first glance, logic puts all fallacies aside. However, I argued that by using logic, one is able to even further distinguish between contradictions and contingent arguments. In this situation, logic does not need to be “greener”. The role of logic is to offer paths to certainty. Thus, the logical aspect of an argument should be distinguished from the moral one. One can assess an argument from a moral point of view only if she has the context in which it is used. A valid argument can be used in an immoral way. When it comes to manipulation, fallacies seem to go hand in hand with it. However, if manipulation is considered morally undesirable, logical fallacies cannot be generally characterized in this way. AC is not morally wrong, but there may be some instances in which it can be used in an immoral manner. Therefore, logic’s way of analyzing

²⁶ Ulrike Hahn and Mike Oaksford, “A Bayesian approach to informal argument fallacies,” *Synthese* 152:2 (2006): 232.

arguments is quite different from the rhetorical manner, or the moral perspective. We cannot consider all fallacious arguments problematic and undesirable.

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Acknowledgements

This paper was supported by the research project PATCULT#RO, PN III-P1-1.2-PCCDA-2017-0686, 52PCCDI/2018, founded by UEFISCDI.