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On the Concepts of Logical Fallacy and Logical Error

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Title: On the Concepts of Logical Fallacy and Logical Error
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Introduction

Does the concept of logical fallacy capture all cases of human 'illogical moves'? In order to sketch an answer to this question I distinguish the concept of logical fallacy from the concept of logical error. Let the thesis that this distinction is philosophically significant (Stark 2000) constitute the initial justification for setting the above question as an expression of the central problem of this paper. When making those conceptual analyses we should have in mind the obvious linguistic observation that either 'logical fallacy' or 'logical error' are ambiguous terms. Yet, I am interested in possibly the broadest understanding of these two terms. I initially understand 'logical fallacy' as any ('non-material') violation of the norms of argumentative discourse, and 'illogical moves' as such actions that violate norms of 'logic' governing certain human knowledge-seeking activities, such as reasoning, questioning or defining.

The central question is set at the meta-theoretical level: I analyze two theoretical concepts: (1) the concept of fallacy – one of the central concepts established within the argumentation theory (fallacy theory) and (2) the concept of logical error. I aim at establishing the relation between the denotations of the two terms. Representative examples of the use of the term 'logical fallacy' are taken from works of argumentation theorists.

The initial question points to another significant problem: what kind of general logical concepts are involved in describing illogical moves? This problem is connected to the issue indicated by Toulmin:

On the one hand, there are cases which involve *failures* of rationality; on the other hand, cases which reflect changes in the very *criteria* of 'rationality' (Toulmin 1972, 231).

Although both of the quoted 'cases' are mutually dependent, and moreover the first one is obviously fundamental for the issue of the genesis of illogical thinking, the second one turns out to be the expression of the problem of describing and explaining non-logical moves. There is an initial difficulty in defining logical error: this concept is related to a set of mutually dependent concepts, among which the concept of rationality seems to be the most general. Thus in fact this is the problem of giving the criteria of human rational behavior.

Those criteria have a normative character. So, the concept of logical error can be considered as a normative concept, for it provides the norms of logical correctness of thinking. The concept of fallacy is also a normative concept, for it gives the criteria of the correctness of argumentative discourse. It is illustrated by the fact that the crucial concepts in argumentation theory are often used in order to fulfill not only descriptive and explanatory, but also normative tasks (e.g. van Eemeren & Grootendorst 1992, 9; Slob 2002, 179):

Although argumentation is a phenomenon of language use, it is clear that argumentative discourse, unlike conversation analysts seem to think, cannot be adequately dealt with by linguistics alone, certainly not as long as linguistics perseveres in its current descriptive preoccupation (van Eemeren & Grootendorst 1992, 9).

In my paper I defend three mutually dependent theses:

T1: In many contexts the concept of logical error is used instead of the concept of logical fallacy (or simply fallacy) without any theoretical examination of the relation between these two concepts (e.g. Stark 2000).

T2: The broad understanding of fallacy is close to capturing the idea of logical error.

T3: The concept of logical error is much wider than that of logical fallacy and therefore it is able, and it indeed should, fulfill better the task of describing and explaining knowledge-seeking activities and 'illogical moves' within them.

The third thesis constitutes the answer to the initial question of my paper.

The concept of logical fallacy

My use of the term 'logical fallacy' is partly suggested by Whately's distinction between logical fallacies and non-logical fallacies (e.g. Hamblin 1970, 169-171, van Eemeren 2001, 144-145). By stressing the word 'logical' I want first to exclude from my considerations cases of 'material fallacies' and second – to show the link between the concept of argumentative fallacy and the concept of thought-error.

Hence, the term 'logical fallacy' can be understood at least in two ways:

(1) the deductive error in reasoning (formal fallacy), as illustrated by the following definition:

We commit a fallacy when we reason or draw conclusions incorrectly (Kahane 1969, 244).

(2) the error of all human activities, which appear within the argumentative discourse.

Thus, the most significant term in most of standard definitions of fallacy is 'reasoning' (Johnson 1987, 241). The definition of fallacy as an error in reasoning is treated as a broad understanding of fallacies (Ikuenobe 2002, 421). Errors in reasoning were sometimes understood as errors in logic, which is pointed out by Hansen (2002, 137). However, if 'bad' (illogical) reasoning accompanies any fallacious argument, the argumentation theory seems to be the one to give the most important and the most general answers to questions of correct reasoning. Many thinkers express this idea:

The term 'fallacy' is our most general term for criticizing any general procedure (or what have you) used for the fixation of beliefs that has an unacceptably high tendency to generate false or unfounded beliefs relative to that procedure for fixing beliefs (Fogelin & Duggan 1987, 257).

What are such general analyses for? The answers within the argumentation theory are given in order to provide the criteria for distinguishing 'logical thinking' from 'illogical thinking,' since:

Argumentation can be understood as a theory of *logos* in general, of which logic is built a part (Borel 1989, 1).

We should here observe that when the concept of fallacy is considered within the argumentation theory it is related to the concept of rules – not only and not necessarily to the rules of logic, but to the rules of rational or reasonable discussion. Some authors distinguish rational discussion and reasonable discussion (van Eemeren & Grootendorst 1988, 272), however in this approach fallacy can be understood as any violation of discussion rules (e.g. van Eemeren & Grootendorst 1987, 1992).

To sum up, any broad understanding what the logical fallacy is should allow us in the most general way to describe and to explain certain 'bad' reasoning processes and their results by indicating connections to certain rules (of logic, of discourse, of discussion).

If we accept such a list of factors constituting the concept of fallacy, we can be naturally directed to the 'epistemic approach' to fallacies. In other words, we can draw the analogy between this theoretical attempt to 'illogical moves' and the understanding fallacies as 'mistakes in knowledge-seeking' (Hintikka 1987, 232). Let this last expression constitute the starting point for the transition from the concept of logical fallacy to the concept of logical error.

The concept of logical error

The term 'logical error' within philosophical, logical and argumentation-theoretical literature has two main meanings:

- (1) in a narrow sense logical error is understood as the (formal) violation of the rules of deductive inferences;
- (2) logical error in a broad sense is understood as any 'illogical move' (error made in the domain of thinking).

This distinction could be illustrated by van Eemeren & Grootendorst (1992, 105), who distinguish the concept of fallacy as a broad concept from the narrow concept of the 'logical error concerning validity.'

The concept of logical error is probably as old as the concept of rationality and for obvious reason; when one talks about the rationality of any sort of human behavior, one should give the criteria of distinguishing actions which can be called 'rational' from those which cannot. Since logic is understood as the tool of cognition (*organon*) we are justified in naming rational knowledge-seeking activities 'logical.' Every violation of the rules governing knowledge-seeking activities constitutes the 'illogical' behavior. Thus, the 'negative' concept of logical error accompanies every kind of 'positive' analyses concerning human 'logical' ('rational') actions.

However, illogical cognitive actions seem to be not reducible to various 'argumentative mistakes' captured by the term 'fallacy':

When we engage in discursive thought and declarative speech we may attain various forms of success: intelligibility, precision, correctness, and so on. These felicities are

best explained by contrast with the corresponding mishaps that threaten our beliefs, assertions and especially our claims to know something (Thalberg 1967, 45-46).

These cases of inadequate thinking can be named in various ways. In order to describe them, one can talk for example about 'thought-stoppers,' 'logically-odd assertions,' 'self-refuting slogans,' cases of 'shoddy thinking,' 'logically-interesting bad thinking,' 'thought-impeding errors' or even 'logical viruses' (Stark 2000). These, and other expressions describe violations of thinking procedures or violations in knowledge-seeking:

Knowledge is invariably a mental experience directly or indirectly beneficial to us. If, however, the judgement does not stand up, we call it an error (Mach 1976, 84).

Now, the central question arises again: if we accept such a broad definition of logical fallacy, why should we at all introduce the term 'logical error' as a better term? Is the term 'logical fallacy' not good enough to fulfill the same set of tasks?

Defending the distinction

1. At first glance the answer to the central question seems to be obvious: we do not need the two concepts for the broad concept of fallacy captures all cases of human 'illogical moves.' There are two arguments in its favor.

The first argument is that argumentation is the 'natural environment' of human cognitive errors. Since conscious argumentative actions involve cognition by explaining cognitive errors we may also explain other errors. Among others, the traditional, Aristotelian and the post-Aristotelian approaches to fallacies show that different sorts of cognitive errors can be analyzed within the area of argumentation.

The crucial argument for this thesis is that traditional approach to fallacies deals with the problem of errors made in different domains of human knowledge-seeking activities. In other words, although errors made by human beings within the domain of thinking and cognizing cannot be grasped only within the narrow scope of the argumentative discourse, the argumentative situation is the one, within which all common sorts of human cognitive errors appear.

This argument can be supported by another one: although there are many sorts of cognitive activities such as reasoning, defining, questioning etc., where the same kinds of cognitive and linguistic errors are committed, the field of argumentative discourse is the one where we can perform all those activities.

The second argument for the positive answer to our main question is that the concept of fallacy is within the argumentation theory (fallacy theory) well theoretically and formally developed and therefore it is easily applicable to other research domains. It is hard to find such sophisticated and general analyses of the concept of 'illogical move' within other sorts of theories concerning knowledge-seeking activities (e.g. definition theory). Therefore the argumentation theory gives the best possible answers to the question concerning incorrect thinking. The variety of theoretical approaches to fallacies show that there are significant discussions that lead to elaborate the concept of fallacy as a good theoretical concept fulfilling a variety of tasks not only within different argumentation-theoretical approaches, but also as a good *general* theoretical concept which would describe, explain and even give the criteria of human unreasonableness.

If we accept those arguments we should agree that introducing the concept of logical error is simply useless.

2. The most significant counter-argument against the first claim is that Aristotle tailored his concept of fallacy for a particular domain of argumentation; so many problems concerning errors were insufficiently considered; thus, his concept does not cover the whole 'environment of error.' In other words, the problem of criteria for good thinking is tailored within the argumentation theory to the narrow scope of issues concerning the argumentative discourse. This situation seems to be specific, since there are many factors constituting the common situation of the language use such as the genesis of error, which cannot be grasped by argumentation theory.

The second counter-argument is that the development of logic (e.g. Descartes, Bacon, *Port Royal*, Locke) shows that the understanding of fallacies depends at least on the understanding of:

(1) the goal of (scientific) cognition - since the fulfillment of the goal is the measure of the correctness of cognition:

Knowledge and error flow from the same mental sources, only success can tell one from another' (Mach 1976, 84).

which is strictly connected to the understanding of

(2) the (scientific) method:

When there is an error it is likely that the relation between our method of handling something, and what we are attempting to handle is faulty' (Srzednicki 1998, 11).

and as well as on understanding of many other interrelated concepts: (3) (scientific) language, (4) logic, (5) rationality, (6) reasonableness and (7) rules (of logic, of rationality or of the discourse).

At first glance one can see that these concepts are mutually dependent. The way of understanding one of them entails the way of understanding other concepts. In that respect these concepts seem to constitute a kind of 'family' in the Wittgensteinian sense (Wittgenstein 1953, § 67). For example, the understanding of the goal (1), method (2), language (3), logic (4), and finally rules (7) depends on the understanding of rationality (5) and reasonableness (6), because the method, language, etc. should be rational or reasonable.

As an example, let me very briefly examine the concept of logic in the context of the concept of logical error. I am taking the link between these two concepts as an example because (a) the word 'logic' is present in both and (b) because this link seems to be one of the most representative for the link of the concept of logical error to the other concepts. This link seems also important because (c) 'logic is traditionally seen as a protection against errors in thinking' (Woleński 1998, 27) and therefore (d) as we understand logical error as the violation of some norms, we intuitively point out the rules of logic as the set of these norms (I understand 'logic' broadly as some system of rules of rationality).

This link raises the problematic issue of defining logical error. Giving an adequate definition of logical error seems to be just impossible because of the number of concepts of logic itself. For example, this view is quoted by Żarnecka-Biały:

'How can we trust in logic as a tool against error-making' – one can continue asking – 'if we do not know what we are speaking about? We have infinitely many systems in

logic, based on different tricks of syntax or semantics and in fact no one knows what relation these systems have to our natural logical skills' (Żarnecka-Biały 1998, 30).

This sort of problem is also significant for the relation of the concept of logical error to all the other concepts which I have mentioned above.

Thus, the counter-argument against the second claim is that analyses of the idea of illogical incorrectness (the concept of 'illogical move') demand something more than the analysis of the criteria of the correctness (reasonableness) of an argument; it demands no less than establishing Toulmin's 'criteria of rationality.'

As I mentioned above, fallacy can be also defined as the violation of the rules of human rational behavior – as the violation of discussion rules (e.g. van Eemeren & Grootendorst 1992, 102-106). Thus, it seems that the concept of logical error understood this way is wider than the concept of fallacy as explained above – simply because of the wider domain of application. The concept of fallacy seems to be applicable exclusively to the situation of the argumentative discourse.

The third counter-argument can be formulated as follows: there are some violations within the argumentative discourse which are not fallacies (Stark 2000). This is the counter-argument against both the first and the second argument.

Concluding remarks

Although the concept of logical error depends on the understanding of many ambiguous general logical and epistemological terms it is a useful concept. Moreover, paradoxically, this difficulty turns out to be the fundamental strength of the concept of logical error for it is a philosophical concept at least because of its (1) generality and (2) dependence on other concepts traditionally seen as philosophical. Intuitions concerning such a general notion can be found in writings of Polish philosophers such as e.g. Ajdukiewicz, Kotarbiński, Kamiński, Żarnecka-Biały and Woleński. According to Perelman (1977, 43-51) the crucial role in the genesis and history of rhetoric (understood as the art of persuasion) was played by its link to philosophy. This is the argument for the usefulness of general-philosophical concepts for the study of argumentation. The concept of logical error is one of such concepts. Thus, I claim that the concept of logical error fulfills (and after all is able to fulfill) the task of a kind of the general-philosophical concept which the concept of fallacy does not (in all the cases). And this is the pragmatic need of distinguishing the concept of logical error from that of fallacy – what I defended in my paper – and theoretically elaborating it – what can be a good research project. As a matter of fact, the philosophical character of the concept of logical error constitutes additional argument for maintaining the distinction between this concept and that of logical fallacy.

I do not of course aim at eliminating the concept of (logical) fallacy and establishing a 'new' concept of logical error instead. There is a need of introducing another theoretical concept – that of logical error. If one accepts my thesis that within any informal-logical study one should elaborate or at least consider the general issue of logical incorrectness of human thought, one should also agree that one should elaborate at least some initial concept of logical error. If one does not agree, then the concept of fallacy is sufficient.

This approach raises an important issue: how can we use the traditional and contemporary notions of logical fallacy in analyses of logical error – not only in the domain of language and argumentation, but also in that of cognition and thinking? According to some contemporary theoretical approaches, argumentation theory has various dimensions: e.g. social, psychological, linguistic, etc. The same dimensions should be ascribed to the concept

of the unreasonableness of an argument, since 'the notion of reasonableness is related to the context of resolving a difference of opinion' (van Eemeren, Meuffels & Verburg 2000, 419). This unreasonableness can be well described and explained by the idea (concept) of logical error.

Furthermore, the acceptance of the broadest understanding of logical error could lead us to quite unexpected conclusions. The logical error in a wide sense can be for example understood as a cognitive error – error in the domain of cognizing. Then, for example Mach's approach (1976) could count as psychological analyses of *logical* errors. If we understand fallacies epistemologically as mistakes in processes of gaining knowledge, it seems we need to consider the psychological background (genesis) of those mistakes, which are for example considered by Wiland (2003). The link between the study of linguistic errors and the psychological research is pointed out very clearly:

In fact, the study of errors is a royal road to understanding how concepts are unconsciously organized and activated. Psychologists have known for a long time that slips of the tongue can provide enlightening glimpses into the mechanisms of cognition. By studying such errors, one can learn much about the mind without doing any formal psychological experiments (Hofstadter & Moser 1989, 185).

The logical error understood as a case or a result of 'illogical thinking' can be also considered as irrational thinking, and in particular as 'irrational belief,' or even irrational actions (e.g. Pears 1988).

Moreover, within those 'irrational (illogical) actions,' even immoral actions can be counted as logical errors (e.g. Nichols 2002).

Among the above complicated issues let me mention the one which seems to be simple, but also generates serious problems. Can inductive inferences in experimental science be called 'logical errors'? By pointing it out I do not mean the obvious cases of 'inductive fallacies' such as the fallacy of hasty generalization or of weak analogy. The problem concerns the fact that inductive reasoning is not certain. Can the statistical inferences in science (e.g. Mayo 1996) be treated as logical errors just for the obvious reason that human reasoning based on sensually experienced data is 'naturally' non-conclusive?

My last remark is that if the concept of logical error can be well applied to so many domains it is much more general than the concept of fallacy (what I hope I have shown). If generality is one of the factors determining the philosophical character of a concept, then the concept of logical error certainly belongs to philosophy. Although this conclusion sounds trivial – one may truly claim that the concept of logical error already is the philosophical concept – this concept is necessary to be examined to become the sound philosophical concept fulfilling some important philosophical tasks. I just hope I have drawn the initial map of such tasks.

Notes

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