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Article

What we talk about when we talk about logic as normative for reasoning?

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Abstract: In this paper it is examined how, if at all, logical laws can be normative for human reasoning, wherein the notion of normativity is analysed with respect to approaches to logic given in works of Aristotle, Descartes, Kant, Frege and Wittgenstein. During the ancient and medieval period, logic was being considered in terms of discourse and dialogical practice, but since Descartes and especially Kant it has been treated as a system of laws with which the process of individual human reasoning has been compared. Therefore, normativity can be investigated in private sphere (for thinking and reasoning) and in public sphere (for dialogic practices in a community). Wittgenstein discussed both aspects of normativity: in *Tractatus*, a focus is on laws of logic that are primarily normative for the state of affairs in the world, while in *Philosophical Investigations* an emphasis is on a social aspect of normativity (which is closer to Aristotle's view), which is derived from adopted rules that have been applied in a certain community. Taken that way, logic is certainly normative in the public sphere, but the more difficult issue is whether logic is normative for thinking, regarding to the difference between the logical laws and those of thought.

Keywords: logical laws; normativity of logic; reasoning; thinking

1. Introduction

In this paper the relation between logic, i.e. logical laws, and human reasoning will be investigated. Further, it will be examined how, if at all, logical laws can be normative for human reasoning. During the investigation the notion of normativity will be analysed with respect to approaches to logic given in works of Aristotle, Descartes, Kant, Frege and Wittgenstein.

As it is pointed by Debru [1], the notion of normativity is present in the twentieth century philosophy, while the idea concerning normativity has been developed in the nineteenth century in works of Edmund Husserl. In 'Vienna lecture' held in 1935 (published as *Philosophy and the Crisis of European Man*), Husserl considered normativity as a process of creating the world of ideas controlled by norm of unconditional and objective truth [2].

In twentieth century the idea of normativity also found its place in ethics, epistemology and philosophy of language. For instance, Gaus connected inferential justification with moral norms, wherein he started with the analysis of reasoning as a process specific for individuals, therefore a reasoner has her own system of reasons and beliefs [3]. Moreover, he claims that it is not possible to follow rules privately (in accordance to later Wittgenstein's works), as there is no certainty that the rule has been followed correctly because of the lack of reaction of a community. In other words, it is not possible to compare private rule following to anything, therefore individual reasoning must be inseparable from social reasoning and each reasoner develops her own system of reasons and beliefs

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from interaction with other members of the community. All members of the community do not need to have the same norms, but they must be able to understand the ones that other members accept as justified and they can agree or disagree with them. Disagreement does not entail misunderstanding and it does not necessary lead to consensus.

As far as normative role of logic is concerned, from Kant up to the present day logic has been dominantly treated as a system of laws with which the process of individual human reasoning has been compared. In this regard it is questionable whether the laws of logic are normative and what exactly are they normative for, as individual differences in reasoning have been detected. Furthermore, many psychological experiments showed that naïve reasoners make many errors while performing logical tasks with syllogisms and conditionals. Also, there are many different logics, so it is not clear why only the classical logic should be taken as a norm for reasoning.

2. Logic as a science of correct thinking

The system of natural deduction is often used as a starting point in forming reasoning norms. It contains rules of introduction and elimination of connectives and quantifiers as the only rules that are used in drawing conclusions. One of the main reasons why many authors, including Rips [4], chose this approach is that the natural deduction system is, according to the claims of its creator Gentzen, developed as a system which is very closely related to natural reasoning [5] (p. 68). However, various researches showed that some of them are very unintuitive (the most problematic are ones of disjunction and negation introduction) [4] (p. 62). In order to retain normativity to some extent, one possibility is to choose just one subset of those rules, but in that case it is hard to determine the criterion of the selection.

Another possible solution is to discuss the definition of logic as a science of correct thinking and reasoning, as it was firstly determined by Descartes. Namely, during the long history of logic and philosophy, logic was considered in terms of discourse and dialogical practice for a long time, which is emphasized in works of Catarina Dutilh Novaes [6]. In contemporary philosophy the later Wittgenstein could be considered a proponent of that approach.

In the introduction to French edition of *Principles of Philosophy* Descartes introduces the distinction between so-called "logic of the Schools" (i.e. scholastic logic), which is "a dialectic which teaches the mode of expounding to others what we already know, or even of speaking much, without judgment, of what we do not know, by which means it corrupts rather than increases good sense" and the logic "which teaches the right conduct of the reason with the view of discovering the truths of which we are ignorant (…)" [7] (p. 6). In the *Conversation with Burman*, Descartes distinguished dialectics from logic in the following way: logic provides demonstrative proofs on all subjects, while dialectic teaches us how to talk about all subjects [8] (p. 23).

The conception of logic as a science of reasoning had furthermore been developed in logic of Port-Royal, and it is also present during the seventieth and eightieth century, while it culminates during the Kantian period. According to Kant, logic exhibits "absolutely necessary rules of thought without which there can be no employment whatsoever of the understanding" [9] (A52/B76) and it can be said that, when considered that way, logic is normative. Transition from public to private sphere is also remarkable in Kantian moral philosophy, and it is interesting to note that the notion of autonomy also shifts from collective and political to individual level. This notion is firstly noted in works of Cristian Wolff in a sense of independency and self-determination of a state, as stated in [1] (p. 3), while Kant uses it while talking about autonomy as a rule of the will that finds universal laws in itself.

In *Lectures on Logic* Kant also emphasizes the similarity between moral and logical laws: „Deviation from the rules of the pure will constitutes the morally evil, and this arises only when and because other effects of other powers mingle with the otherwise pure laws of the will. E.g.: The inclinations and affects. Just in this way, when foreign powers mingle with the correct laws of the understanding, a mixed effect arises, and error arises from the conflict of [this with] our judgments based on the laws of the understanding and of reason."[10] (p. 102).

Like Kant, Frege considered logic a normative science in which laws universally define the way of correct thinking with the emphasis on ambiguity of the word 'law' [11] (p. 15). On the one hand, those could be laws that people need to follow, but sometimes break, and this could be laws of ethics or legal norms. On the other hand, there are laws that determine real occurrences in the world, for example, natural laws. At first sight, logical laws could be seen as ambiguous, but they are laws of truth and, therefore, completely different from the laws of real human reasoning. They are valid without exception, and the fact that some individual, culture or mankind as a whole does not want or is not able to think with respect to those laws does not have any influence on them. However, when, regarding to tasks with conditionals and syllogisms, psychological experiments conducted in 1960s and 1970s by, inter alia, Rips, Johnson-Laird and Wason showed that reasoners do not follow the classical logic rules of reasoning, it was much unexpected. Despite that, classical logic was still being treated as a norm for creating tasks and evaluating obtained results.

The expression 'laws of thinking' should not lead to believe that those laws govern the thinking the same way that natural laws govern processes in the external world, because in that case they would be psychological laws, which is not acceptable to Frege's antipsychologistic standpoint. Psychologism in logic seeks to connect logic with psychology, while, in a more extreme form, the aim of psychologism is to reduce logic to psychology. If logic is meant as a science of correct reasoning, and correct reasoning is just one of psychological processes, it could be concluded that logic is just a separate part of psychology and it should be constructed as natural, empirical science.

Normativity of logic, according to Kant and Frege, undoubtedly differs from normativity in Aristotle's terms (despite of the fact that Aristotle does not explicitly refer to that topic). Namely, in works of Aristotle, as well as during the medieval philosophy, logic is conceived as normative theory of specific dialogical practices (wherein dialog includes two participants, but it can also be applied in scientific and thought experiments that include only one participant) [12] (p. 595). Therefore, logic is normative for dialog because an agreement about rules of reasoning between participants is necessary in order for dialog to be possible.

Aristotle's conception of logic as a debate has its origin in Plato's dialogues. First of all, there is a proponent and an opponent in each debate, but there can also be an audience. According to Lloyd [12], the social, political, as well as cultural context in Ancient Greek was a necessary condition for appearance of deductive method and it seems that it had been developed as just one of possible approaches to argumentation (for example, in contrary to sophistic one), wherein deduction is an argument presupposed by a participant in a debate in order to force interlocutors to accept the conclusion of the argument if they accept its premises. The determination of deduction as mentioned above lead to one possible interpretation of Carrol's paradox elaborated in his article *What the Tortoise Said to Achilles* [13], where one of the main sceptical objection concerning the normativity of logic has been proposed.

3. What the Tortoise Said to Achilles

In *What the Tortoise Said to Achilles* Achilles and the Tortoise were discussing the following three propositions:

(A) Things that are equal to the same are equal to each other.

(B) The two sides of this Triangle are things that are equal to the same.

(Z) The two sides of this Triangle are equal to each other.

The Tortoise accepts (A) and (B), but does not accept (Z), while she[1] accepts the following proposition offered by Achilles as well:

(C) If (A) and (B) are true,(Z) must be true.

The Tortoise is also willing to accept proposition (D) "If (A), (B) and (C) are true, then (Z) must be true as well", but she still refuses to accept Z, so the story is continued indefinitely.

[1]As a noun 'tortoise' refers to both masculine and feminine gender in English language, but it refers to feminine in many languages (for example, French, German, Russian, Croatian) thus I decided to refer to the character of the story as 'she'.

Pascal Engel [14] emphasises two important features of the story. Firstly, the Tortoise accepts (C) because she agrees that (C) expresses logical truth. Secondly, she accepts that conditional (C) can be the antecedent of the premise given next. The issue here is how is it possible for her, with respect to everything mentioned above, not to accept (Z).

At first sight it seems that the Tortoise accepts (C) as a logical truth, but at the same time, not as a rule of reasoning: more precisely, definitely not as a normative rule of reasoning. This Tortoise's "behaviour" could also be analysed in accordance with Wittgensteinian scepticism regarding rules, as interpreted by Kripke [15], according to which the Tortoise's refusal of conclusion suggests that there is no reason the sequence (A)-(Z) should be considered as an instantiation of modus ponens rule instead of an instantiation of a deviant schmodus ponens rule ("from 'P' and 'P and Q' we conclude 'Q' unless 'P' and 'Q' are propositions about geometry, when we do not accept 'Q'").

The Tortoise neither brings into question validity of the proposition C nor validity of the argument containing (A) and (B) as premises and (Z) as a conclusion, but her refusal of conclusion (Z) can be considered an expression of scepticism about normativity of logical laws in general. It could be presupposed that she is completely aware that (C) is logical truth and valid rule of reasoning, but she does not accept it as a mandatory rule in order for conclusion to be reached, i.e. as a rule that commits her to reason in a specific way.

Steinberger [16] differentiates between constitutive and regulative rules, where constitutive rules need to be followed necessarily in order to perform an action (for example, if one does not follow chess rules during a chess game, then she does not play the chess game), while regulative rules determine certain standards, but in the case of their breaking, it is still the same activity (for instance, if one does not follow traffic rules, she is still a participant in traffic). If modus ponens rule is constitutive for reasoning, i.e. if our community accepts it as a rule of reasoning, then, if the Tortoise does not accept it, she is not cooperative and is not able to participate in a discussion with other members of the community.

On the other hand, Harman [17] claims that modes ponens rule, as a proposition of classical logic, does not tell us anything about reasoner's beliefs, but it just asserts that 'P' and 'if P, then Q' implies 'Q', and not that if one believes 'P' and 'if P, then Q', one must also believe Q. Taken that way, this rule is not constitutive for reasoning of an individual reasoner. However, it can be advocated that it is constitutive as a rule of reasoning that is used in our community.

Here arises a question about epistemic status of logical rules. Do they have the same status as propositions which have truth values, as Harman proposes, or do they determine frameworks for formulating meaningful sentences without having its own truth value? Is it possible for rules defined that way to be a result of convention or are they necessary and unchangeable? One possible answer could be found in Wittgenstein's account to rules.

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4. Wittgenstein's approach to normativity of logic

In *Philosophical investigations,* Wittgenstein emphasises that there is no previous meaning of any conception outside of its use that could force us to accept that meaning. He claims that, in philosophy, we recently compare the use of words with games and calculi which have strict rules, but we cannot say that one who uses language *must* be playing such a game[2] [19] (81). Further, in [19] (131) he highlights that "we can avoid ineptness or emptiness in our assertions only if we present the model as an object of comparison, i.e. as a measuring-rod, and not as a preconceived idea to which reality *must* correspond."

In addition, if one does not follow a rule of a game played in her community, (for instance, she does not use some words in the same meaning as the other members of her community), then she does not play their game. It is not possible to force her to play it, but if she does not follow the rules, then logic is normative in the extent to which it can determine (comparing with the rules followed by other member of the community) that she does not play the same game as other members of the community.

The idea of social naturalism can be found in Wittgenstein's later philosophy. In the focus of that kind of naturalism is a concept of human's second nature introduced by Railton [18], according to which normative aspects of our behaviour are primitive. With respect to that account, we acquire second nature through the process of socialization in certain language games that are arranged by norms. Thus socialization becomes a part of our nature and guides our behaviour regarding to shared standards and norms:

> (…) A child has hurt himself and he cries; and then adults talk to him and teach him exclamations and, later, sentences. They teach the child new pain-behaviour. [19] (244)

Described in such a way, the process of language acquisition is actually the process of acquisition of autonomy in normative practices. It could be concluded that norms and standards are consequently being applied to inner processes of thinking and reasoning. Wittgenstein highlights that "inner process stands in need of outward criteria" [19] (580) because without them it would not be possible to understand the grammar of those inner processes and states.

Moreover, he claims that rules cannot be followed privately, and the absence of natural language is only (according to Kripke's interpretation [20]) a direct consequence of that impossibility, i.e. one in isolation cannot denominate anything. Languages are common in their essence and one is able to understand language only if other members of a community are able to understand it, too. In other words, to assert one to use a word in a specific meaning, we first have to presuppose that it has the

[2] Although Wittgenstein's term 'language game' has several meanings, in this paper it will refer to the whole language practice of a community.

same meaning for her as it has for other members of a community, because, in any other condition, understanding would not be possible. It is possible to conclude that language acquired during the process of socialization becomes the language of our thoughts. However, there is still an open issue on the status of thoughts before language acquisition and, more interestingly for this topic, is thinking and/or reasoning that is not language-dependent possible in any way? In Wittgensteinian terms, it seems that in that case it would not be possible to talk about the same concept of reasoning that we use here:

> Ask yourself: Would it be imaginable for someone to learn to do sums in his head without ever doing written or oral ones? — "Learning it" will mean: being made able to do it. Only the question arises, what will count as a criterion for being able to do it? (...) And the question will then arise whether we are still willing to use the concept of 'calculating in the head' here—or whether in such circumstances it has lost its purpose, because the phenomena gravitate towards another paradigm. [19] (385)

> (…) Only if you have learnt to calculate—on paper or out loud—can you be made to grasp, by means of this concept, what calculating in the head is. [19] (p. 216)

However, the question that arises is to which extent thinking and reasoning can be private, at least as inner processes. It seems that Wittgenstein does not exclude that possibility, but this question is not relevant for him because if one said that reasoning is for her an inner process, we would act the same as if she said that the playing chess is an inner process for her: if we want to know whether one is able to play chess, we are not interested in anything that goes on inside her, but just in her behaviour during the chess game [19] (p. 181).

It could be presupposed that the situation in *Tractatus* is somehow different and that the early Wittgenstein's stands regarding normativity of logic for reasoning are even more radical than Kant's or Frege's ones, because in several places in *Tractatus* it is asserted that it is not possible to imagine anything that would be in contradiction with logical laws:

> Thought can never be of anything illogical, since, if it were, we should have to think illogically. [21] (3.03)

With respect to the previous quote it can be questioned if it is possible to talk about logic as normative for reasoning at all, because, according to the early Wittgenstein, no thinking other than logical is possible. Moreover, if none deviation from logical thinking is possible, then there is nothing to apply norm to, because every attempt of thinking has already been in agreement with the norms. In [21] (3.03) Wittgenstein, unlike Frege, does not talk about difference between laws of logic and laws of thinking, but it seems that he refers to the same laws of logic that are valid in the world, so any other world is not conceivable at all, and in that sense it is not possible to think anything that would be in a contradiction with laws of logic which are in the foundation of the world we are

familiar to. However, that does not exclude the possibility that our thinking and reasoning are error-prone and that deviations from the norms are possible:

> It used to be said that God could create anything except what would be contrary to the laws of logic. The truth is that we could not say what an 'illogical' world would look like. [21] (3.031)

> It is as impossible to represent in language anything that 'contradicts logic' as it is in geometry to represent by its coordinates a figure that contradicts the laws of space, or to give the co-ordinates of a point that does not exist. [21] (3.032)

In *Remarks on the Foundations of Mathematics* (which belongs to Wittgenstein's later philosophy), a certain connection between two aspects of normativity can be found. He argues that mathematical sentences in general, not only the axioms, are used normatively, as rules of language [22]. This normativity consists in the fact that the axioms, when used as implicit definitions, provide a standard of what counts as using the concepts in terms of which they are formulated. Also, mathematical language has a normative role in the application of mathematics to systems of non-mathematical objects; for instance, the language of arithmetic, can be seen as providing norms for the counting of objects. Therefore, mathematics is normative in two ways. Firstly, it is normative for the state of affairs in the world, because, for instance, if two objects are added to another two objects, there are always four objects. Secondly, all members of the community have to follow the same mathematical rules (for example, the language of arithmetic) in order to play the same language game (imagine, for example, a situation where a seller does not follow the same arithmetic rules as a buyer).

To sum up, Wittgenstein in *Tractatus* and *Philosophical investigations* actually considers different aspects of normativity. In *Tractatus* the focus is on laws of logic that are primarily normative for the state of affairs in the world (for example, it is not possible that A and not-A are the case at the same time), and, therefore, thinking cannot be in a contradiction with the state of affairs in the world. On the other hand, in *Philosophical investigations* an emphasis is on a social aspect of normativity, which is derived from adopted rules that have been applied in a certain community. Although it is not possible to force individual reasoners to follow them, their practice is compared with those rules and, if they do not follow them, they do not play the same language game that is played in the community.

5. Conclusion

In this paper we have discussed the issue of sense in which logic as normative for thinking and reasoning could be spoken about. During the analysis we have shown that another very important issue to solve is a conceptual confusion regarding the change of the conception of logic – from Aristotle's logic as dialogical practice to logic as a science of correct thinking and reasoning in works

of Kant and Frege. Wittgenstein's conception of normativity in *Philosophical investigations* is more closely connected to Aristotle's one. Another reason for the conceptual confusion is that the laws of logic sometimes are not distinguished clearly from the laws of thought.

When concepts are clearly defined, it is possible to say that logic is certainly normative in the public sphere, as it is necessary for all the members of a community to follow the same rules of reasoning in order to make their interaction possible. The more difficult issue is whether logic is normative for thinking, regarding to the already mentioned difference between the laws of logic and those of thought, but logic can also be treated as normative in that sphere in terms of defining a standard that the real processes of thinking could be compared with, so it could be said that they do or do not correspond to the standard. Taken that way, logic could be understood as a tool for regulating laws of thought. As far as reasoning is concerned, adopted rules of reasoning have a normative role, and those rules can, but do not have to correspond to the laws of logic. Finally, the question is, do we consider exclusively classical logic, and if the answer is affirmative, then we should ask ourselves why not take into account some other logics as well. For instance, dialogical Logic was suggested in the 1950s by Lorenzen and Lorenz, inspired by Wittgenstein's idea of meaning as use: the meaning of the logical constants is given by the norms or rules for their use. As in Aristotle's conception, in a dialogue two parties, Opponent and Proponent, argue about a thesis respecting certain fixed rules. [23]

We can go a step further and say that normativity is not necessary, because the real reasoning, although, compared with the logical laws, is full of errors, undoubtedly gives results and has its own methods that we are often not completely aware of. However, the role of logic needs not to be minimized, because it gives us a very useful method to form and direct our thoughts precisely and make valid inferences, which is especially important in any kind of scientific work.

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