

Does the Analysis of Explanations Belong to the Domain of Logic?

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Abstract.

The relevance of this article stems from the fact that the question remains open among scholars as to whether the analysis of explanations falls within the domain of logic, traditionally defined as the science of correct arguments. In this context, it is especially important to determine whether explanations as such are capable of generating knowledge, or whether this capacity is connected with the presence of an argument. The purpose of the article is to substantiate the thesis that only those explanations which are connected with arguments and are capable of forming a justified true belief, that is, knowledge, belong to the domain of logic.

Among the results obtained in this study is, in particular, an argument for the thesis that successful arguments are characterized by the perlocutionary act of forming a justified true belief. It is also shown that explanations which neither contain an argument nor are accompanied by one do not provide justification and therefore cannot generate knowledge. The article argues against the position that explanations are self-sufficient as a source of knowledge. It is demonstrated that explanations can generate knowledge in three cases: (1) when they are accompanied by an inductive argument that appeals to the opinion of an epistemic authority; (2) when they take the form of an abductive argument; or (3) when they take the form of a deductive-nomological explanation. It is shown that explanations involving non-deductive arguments can provide only probabilistic truth, whereas deductive explanations yield necessary truth. It is also argued that the illocutionary act of explanation may coincide with the illocutionary act of argument, which calls into question the thesis of a principled distinction between explanations and arguments based on the criterion of the speaker's intention.

In conclusion, the article maintains that the analysis of explanations belongs to the domain of logic only insofar as explanations are carried out in the form of an argument or are accompanied by one. Logic does not study all aspects of explanation, but only those that directly concern its argumentative structure.

Keywords: explanation, argument, logic, philosophy of science, critical thinking, analytic philosophy, deductive-nomological explanation

Чи належить аналіз пояснень до предметного поля логіки?

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Анотація

Актуальність цієї статті полягає в тому, що серед дослідників залишається відкритим питання, чи належить аналіз пояснень до предметного поля логіки, якщо логіку традиційно визначають як науку про правильні умовиводи. У цьому контексті особливої ваги набуває з'ясування того, чи здатні пояснення самі по собі формувати знання, чи така здатність пов'язана з наявністю умовиводу. Метою статті є обґрунтування тези про те, що до предметного поля логіки належать лише ті пояснення, які пов'язані з умовиводами та здатні формувати обґрунтоване істинне переконання, тобто знання.

Серед отриманих в цій статті результатів, зокрема є аргументація тези, що вдалим умовиводам притаманний перлокутивний акт формування обґрунтованого істинного переконання. Також було показано, що пояснення, які не містять умовиводу і не супроводжуються ним, не забезпечують обґрунтованості та тому не можуть формувати знання. Обґрунтовано незгоду з позицією щодо самодостатності пояснення як джерела знання. Аргументовано, що пояснення можуть формувати знання як мінімум у трьох випадках: (1) коли вони супроводжуються індуктивним умовиводом з наведенням думки епістемічного авторитету, а також коли пояснення здійснюються (2) у формі абдуктивного умовиводу або (3) у формі дедуктивно-номологічного пояснення. Показано, що пояснення, які пов'язані з залученням недедуктивних умовиводів здатні забезпечити лише ймовірнісну істинність, тоді як дедуктивні – необхідну істинність. Також аргументовано, що ілокутивний акт пояснення може збігатися з ілокутивним актом умовиводу, що ставить під сумнів тезу про принципову відмінність пояснень та умовиводів за критерієм наміру тих осіб, які їх формують.

Як висновок, у статті показано, що аналіз пояснень належить до предметного поля логіки лише тією мірою, якою пояснення здійснюються у формі умовиводу або супроводжуються ним. Також зазначено, що логіка може досліджувати не всі аспекти пояснення, а лише ті, що безпосередньо стосуються умовиводів.

Ключові слова: пояснення, умовивід, логіка, філософія науки, критичне мислення, аналітична філософія, дедуктивно-номологічне пояснення

Introduction.

The question posed in the title of this article might be answered as follows: logic deals with the analysis of arguments, and explanations are not arguments; therefore, logic does not deal with explanations. Indeed, if we open a standard textbook on logic, we will not find a section devoted to the analysis of the structure or essence of explanations. However, as is well known, some explanations incorporate arguments into their structure (for example, the deductive-nomological explanation). Moreover, some logicians engage in the study of explanations, as there are scholarly works written by logicians that are devoted specifically to explanation.

Thus, we are faced with a question that merits careful clarification. Our working assumption is that only those explanations which are connected with arguments and are capable of forming a justified true belief, that is, knowledge, belong to the domain of logic. The purpose of this article is to test the truth of this assumption. To do so, we shall focus on the nature of the connection between explanations and what has traditionally been regarded as the subject matter of logic – arguments.

Before proceeding, however, it is necessary to clarify the terms that will be used in this study. As we have shown in our previous publication, there are many different views concerning the nature of logic (Kulyk, 2025), and it is important to indicate which of them we adopt. In understanding the domain of logic, this article relies on the views of Jaakko Hintikka, Roy Cook, and Baruch Brody. Hintikka describes it as follows: “It is reasonable to identify logic as the study of inferences and inferential relations” (Hintikka, Sandu, 2007, p. 13). A similar position is expressed by R. Cook: “Logic is the study of arguments, and the various methods of logic are used to investigate the structure of arguments and to classify them, in terms of their structure, into those that ought to be persuasive and those that ought not to be persuasive” (Cook, 2009, p. 174). Brody characterizes the domain of logic as “the study of the validity of different kinds of inference” (Brody, 2006, p. 547).

As for the meaning of the term “explanation,” there is likewise no consensus among scholars. For example, Carl Hempel and Paul Oppenheim emphasized that explanations answer “why?” questions (Hempel, Oppenheim, 1988). Bas van Fraassen developed this position as follows: “An explanation is not the same as a proposition, or an argument, or list of propositions; it is an answer. (Analogously, a son is not the same as a man, even if all sons are men, and every man is a son). An explanation is an answer to a why-question. So, a theory of explanation must be a theory of why-questions” (Van Fraassen, 1988, p. 137). At the same time, Wesley Salmon acknowledged that there are explanations that answer “what?” or “how?” questions; however, scientific explanations, in his view, always answer “why?” questions: “In some of the cases, we are asking what something means, or what is wrong with the car. In other cases, we

are asking how a mathematical proof goes, or how to get to the party. A request for a scientific explanation, in contrast, can always be reasonably posed by means of a why-question” (Salmon, 1984, p. 10). Michael Scriven, by contrast, argued that scientific explanations are not limited to answering “why?” questions, showing that they may also respond to other kinds of questions: “How can a neutrino be detected, when it has zero mass and zero charge?” is a perfectly good request for a perfectly standard scientific explanation. ‘What is it about cepheid variables that makes them so useful for the determination of interstellar distances?’ Likewise, the same can be said of suitable Which, Whither, and When questions” (Scriven, 1988, p. 51).

In our view, all of the interpretations of the essence of explanation mentioned above are of limited usefulness for the aims of this study. For our analysis, it is important to know not only which question an explanation answer, but also what it is. Therefore, in this article we shall employ, as a working definition, our own account: an explanation is an action aimed at eliminating epistemic uncertainty, as well as the result of that action expressed in an appropriate speech act.

In order to achieve the purpose of our study, we shall proceed as follows. First, we will examine whether the formation of knowledge constitutes a perlocutionary act both of explanation and of argument. Next, we will consider aspects of inference to the best explanation and of deductive-nomological explanation that are especially relevant to the topic of this article. Finally, we will conclude by analyzing which illocutionary acts are characteristic of explanations and of arguments.

Is the Formation of Knowledge a Perlocutionary Act of Both Argument and Explanation?

Peter Achinstein writes that a successful explanation provides its recipient with knowledge: “Since explaining involves an intention to render *q* understandable – where *q* is an indirect question – I shall be concerned with cases of understanding where *q* is also an indirect question. Such understanding I take to be a form of knowledge. One understands *q* only if one knows a correct answer to *Q* which one knows to be correct” (Achinstein, 1983, p. 23). Let us consider this issue more closely.

What is knowledge? According to the widely accepted definition, knowledge is justified true belief. We shall not engage here with the numerous debates concerning the necessity of introducing an additional fourth condition, although cases such as Russell’s clock (Russell, 1923, p. 170) or Gettier’s coins (Gettier, 1963) demonstrate that even the presence of all three conditions is not sufficient for something to count as knowledge. Let us confine ourselves to these three features – justification, truth, and belief – since their presence is indeed necessary in order to call something knowledge. If a person knows, that person must have the relevant belief; the belief must be true and justified.

Let us turn to speech act theory. John Austin pointed

out that depending on the effect produced by a locutionary act, we can distinguish various perlocutionary acts – convincing, persuading, deterring, surprising, misleading, and so forth (Austin, 1962, p. 108). What, then, is the perlocutionary act of a successful explanation? I propose to clarify this by comparing the perlocutionary act of a successful explanation with that of a successful argument.

First, every argument involves justification, since there is no argument in which a conclusion is present without premises. Second, arguments express a certain belief. A necessary structural element of any argument is its conclusion, which expresses a belief in the form of a proposition. Third, all arguments claim that their conclusion satisfies the condition of truth, although they secure this correspondence to different degrees. Only deductive arguments guarantee the necessity of the truth of their conclusion, whereas non-deductive arguments offer merely some degree of probability.

Thus, the perlocutionary act characteristic of successful deductive arguments is a justified necessarily true belief, whereas the perlocutionary act characteristic of successful non-deductive arguments is a justified probably true belief. As we can see, the perlocutionary act of arguments possesses precisely the three features – truth, justification, and belief – that are regarded as necessary conditions of knowledge. Can we therefore say that arguments are characterized by the perlocutionary act of forming knowledge? We can – provided that knowledge is understood as justified true belief.

Let us now turn to the perlocutionary act characteristic of explanation. The result of a successful explanation should be the elimination of epistemic uncertainty. A person who previously did not understand a certain issue, after receiving a successful explanation, comes to understand it clearly. Epistemic uncertainty arises when we find ourselves in a problematic situation – that is, a situation in which we need to determine what is happening, how we should evaluate it, and what we ought to do. Having received a successful explanation, we understand what is happening, how to approach the matter that concerned us, and what decisions should be made. The elimination of epistemic uncertainty is important in many spheres of human life, as it enhances the effectiveness of both thought and action (Kulyk, 2024).

However, as is well known, in order for an explanation to help in a given problematic situation, it is often sufficient that it produces a surrogate of knowledge – that is, some belief that enables effective action in that particular situation but is not true. For example, although the Ptolemaic worldview is not true, sailors relied on it successfully for centuries in navigation.

Nevertheless, if we speak not of any explanation but of a genuinely successful explanation, we should require that it be effective not merely in a specific situation, but in all possible problematic situations related to the issue it aims to clarify. Such a requirement ensures the truth of

the explanation, for only an explanation that is true will remain effective both in situations where minimal accuracy is required and in those where the demands for accuracy are maximal. Explanations based on the false Ptolemaic worldview were effective only for navigational tasks that did not require high precision; where high precision was required, they proved ineffective. Therefore, we shall assume that the hallmark of a genuinely successful explanation is not just any belief, but a true belief.

As we see, explanations provide two necessary conditions for knowledge – belief and truth. The third condition, justification, is more problematic. Wesley Salmon illustrated the presence of justification in arguments and its absence in explanations by means of the following example. He notes that both explanation and argument may answer a “why?” question, but they answer different kinds of “why?” questions. Explanations answer the question “Why did x occur?”, whereas an argument answers the question “Why should one believe that x occurred?” Thus, according to Salmon, “The function of the explanation is not to establish (or support) the truth of its conclusion; that is already presupposed when we accept it as a correct explanation” (Salmon, 1990, p. 7).

What is presented in an explanation is treated as a fact. If an argument proves something, an explanation often does not. In order for an expression to count as an explanation, it is not necessary that the speaker justify something by means of it. Yet it seems strange to claim that a person who receives an explanation does not thereby form knowledge. The entire educational system is built on the conviction that explanations are directly connected with the formation of knowledge. Where, then, does explanation obtain its justification?

To answer this question, let us consider a type of argument known as an inductive argument from epistemic authority. Such arguments have the following form:

1. A is a reliable epistemic authority concerning B.
2. A asserts that B.
3. Therefore, probably B.

A person who receives a convincing explanation from another person forms knowledge precisely because, in receiving the explanation, he or she constructs an argument of the form presented above. This process of adding the argument may occur semi-consciously; nevertheless, it must occur, for otherwise the explanation could produce nothing more than belief in the truth of the proposition. In the argument above, however, we find belief, justification, and truth (to the extent attainable in inductive arguments). Therefore, explanations can have knowledge as their perlocutionary act when they are supplemented by an argument.

For the probability of the truth of the conclusion in such an argument to be high, it is essential that the first premise appeal to an epistemic authority rather than to persons whose authority is based not on knowledge but on (1) power (deontic authority), (2) attractive personal

traits (attractive authority), (3) the number of people expressing the opinion (majority authority), or (4) mere respect (*ipse dixit*) (Zenker, Yu, 2020). The term “epistemic authority” is commonly used to designate individuals who are reliable sources of information in a particular domain (Zagzebski, 2012, p. 5).

In our view, there are only three types of situations in which appealing to an epistemic authority is genuinely appropriate. First, when a competent professional provides an explanation within his or her sphere of competence (for example, a gastroenterologist regarding diseases of the stomach). Second, when a scientist offers an explanation within the field of his or her research (for example, an astronomer concerning astronomical phenomena). Third, when an eyewitness provides an explanation of a situation he or she directly observed (for example, a witness to a robbery concerning the circumstances of that robbery). In all these cases, the speaker’s status as an epistemic authority is confirmed by the very act of being consulted for an explanation – if a person considers the speaker capable of providing an authoritative explanation, then for that person the speaker functions as an epistemic authority on that issue.

Of course, to achieve the highest possible degree of probability, it is preferable to appeal not to a single epistemic authority but to seek the consensus view of as many epistemic authorities as possible on the matter. For example, the probability of a true judgment concerning a patient’s illness is higher in a medical council than in a single physician. Nevertheless, even an appeal to the consensus of epistemic authorities does not guarantee truth, since an inductive argument from epistemic authority is not a deductive argument. Only a deductive argument claims the necessary derivation of a true conclusion from true premises.

Thus, knowledge can indeed be the perlocutionary act of explanation, but this occurs when justification is incorporated into the explanation. This is possible, for example, when the explanation is accompanied by an inductive argument from epistemic authority. There is also another possibility – when the explanation itself is carried out in the form of an argument. Let us therefore examine how explanation may take the form of an abductive argument and of a deductive argument.

Inference to the Best Explanation.

Inference to the best explanation, or abduction, is another type of argument that closely connects explanation and argumentation. Finnur Dellsén writes that this form of argument is characterized by a movement of thought from data to theory (Dellsén, 2024, p. 1). Gilbert Harman describes it as follows: “In making this inference one infers, from the fact that a certain hypothesis would explain the evidence, to the truth of that hypothesis. In general, there will be several hypotheses which might explain the evidence, so one must be able to reject all such alternative hypotheses before one is warranted in making the inference. Thus, one infers, from the premise that a

given hypothesis would provide a ‘better’ explanation for the evidence than would any other hypothesis, to the conclusion that the given hypothesis is true” (Harman, 1965, p. 89). Charles Sanders Peirce proposed the following schema for this form of argument:

1. The surprising fact, C, is observed;
 2. But if A were true, C would be a matter of course;
 3. Hence, there is reason to suspect that A is true
- (Peirce, 1960, p. 117).

Such arguments are possible on the assumption that the world is ordered, that causality operates within it, and that phenomena which appear surprising are not so by their nature, but only because of our lack of knowledge. It follows that (1) in order to understand the world, we must seek explanations that convince us that what appeared surprising is in fact lawful, and that (2) only such explanations are true.

In Peirce’s schema above, the first statement contains the explanandum, while the second and third statements concern the explanans and argue for its truth on the grounds that, if we accept the proposed explanans, the phenomenon to be explained moves from the class of the surprising to the class of the regular.

Let us consider inference to the best explanation using our own example:

1. Desdemona’s handkerchief is among Cassio’s belongings.
2. But if Iago had placed the handkerchief among Cassio’s belongings, then Desdemona’s handkerchief would be among Cassio’s belongings.
3. Therefore, probably, Iago placed the handkerchief among Cassio’s belongings.

As we can see, this type of argument does not allow us to guarantee the necessary truth of the conclusion. In this argument, as in any other non-deductive argument, the truth of the conclusion can have only a probabilistic character. Therefore, the process of selecting explanations – rejecting less adequate ones in favor of the best – acquires great importance (Millson & Straßer, 2019).

Let us consider which criteria are typically used to distinguish good explanations from bad ones: (1) completeness – whether the explanation is neither too broad nor too narrow; (2) consistency with already established truths; (3) internal coherence – an explanation must not contradict itself; (4) clarity – the explanation should not contain vague or ambiguous terms; (5) avoidance of circularity; and (6) explanatory power.

With regard to the first five criteria, they are, in our view, fully accessible to the tools of logic. Logic has developed methods for establishing (1) the completeness of definitions, (2) the consistency of definitions with established truths, (3) the internal coherence of definitions, (4) their clarity and unambiguity, and (5) the avoidance of circular definition. These methodological resources are equally applicable not only to the definiendum and definiens, but also to the explanandum and explanans.

As for the sixth criterion in the above list, its

implementation more naturally belongs to the tools of philosophy of science rather than to those of logic. Logic can hardly directly demonstrate whether a given explanation has substantially reduced the sense of surprise concerning the phenomenon to be explained, or measure whether the explanation has increased the probability of that phenomenon. Likewise, it would be unusual for logic to attempt to assess how many different phenomena an explanation accounts for by means of a proposed principle. Therefore, not all the criteria used to evaluate whether a given explanation is the best one belong to the domain of logic.

Deductive-Nomological Explanation.

According to Carl Hempel's conception, deductive-nomological explanation involves the "subsumption of a phenomenon under general laws" (Hempel, Oppenheim, 1988, p. 18), which, of course, requires a deductive argument.

As an example of deductive-nomological explanation, Hempel offered the following account of the fact that the part of an oar submerged in water appears bent to an observer:

1. Part of the straight wooden oar is submerged in water, and another part is in the air.
2. The law of refraction states that light changes direction when it passes from one medium to another of different optical density.
3. Water is an optically denser medium than air.
4. Therefore, when light passes from water (an optically denser medium) to air (a less dense medium), it refracts or bends.

The first three statements constitute the explanans, that is, "the class of those sentences which are adduced to account for the phenomenon" (Hempel, Oppenheim, 1988, p. 10). The first statement reports the empirical content, while the second and third state general laws. The fourth statement shows how the explanandum – "the sentence describing the phenomenon to be explained" (Hempel, Oppenheim, 1988, p. 10) – is derived from the explanans.

To assess the adequacy of such explanations, Hempel proposes four conditions: (1) the explanandum must be a logical consequence of the explanans; (2) the explanans must contain general laws, and these laws must genuinely be necessary for deriving the explanandum; (3) the explanans must have empirical content, that is, it must be, at least in principle, testable by experiment or observation; and (4) the sentences constituting the explanans must be true (Hempel, Oppenheim, 1988, p. 11).

With respect to the first two conditions, logic clearly possesses the appropriate tools. However, doubts arise regarding the third and fourth conditions. The issue is that logic addresses truth not in the context of its empirical verification. That task belongs to scientific methodology. Logic deals with the form of thought, focusing on how propositions relate to one another, rather than on how propositions correspond to empirical reality. Thus, logic

is concerned with the truth of arguments not in the aspect that pertains to empirical testing. The kind of truth that interests logic is whether a given form of argument allows or necessitates the derivation of a true conclusion from premises that are already true.

Let us, however, reconsider Hempel's deductive-nomological explanations. The term "nomological" in the name of this type of explanation indicates that the explanans must contain a law of nature. In other words, what serves as the basis of the derivation is not a fact requiring verification, but a scientifically established law taken as true. The phenomenon whose nature we seek to determine in deductive-nomological explanation is subsumed under the operation of this law. Once again, empirical verification is not required at this stage, because what is the case is precisely what we aim to establish in the argument by means of deduction, which bypasses direct empirical testing.

What, then, does Hempel mean when he formulates the fourth condition, stating that the sentences constituting the explanans must be true? Does he mean that they must be directly empirically verified, or simply that they must be true? It seems that he intends the latter. It is evident that in a well-grounded explanation the statements forming the explanans must satisfy a condition of factual correctness. In this respect, the requirement does not differ in principle from the demands logic makes of the components of arguments. Logic likewise requires that arguments employ true propositions. However, this does not imply that logicians themselves verify these propositions by means of measurements, experiments, or observations. Logicians say, for example, that given the truth of the premises, the truth of the conclusion of a deductive argument is necessary – but they accept the truth of the premises as a condition, not as something to be empirically established within logic itself.

Therefore, deductive-nomological explanation is carried out in the form of a deductive argument, and logic has the capacity to analyze in such explanations precisely those aspects that fall within the scope of its intellectual tools.

Illocutionary Acts Characteristic of Explanations and Arguments.

As we have shown above, explanations can generate knowledge only in those cases where they are accompanied by an argument or are carried out in the form of an argument. Otherwise, the condition of justification required for knowledge will not be satisfied. An explanation without justification is characterized by such a perlocutionary act as the formation of belief in something, rather than the formation of knowledge of something. As we have demonstrated, there are at least three types of arguments involved in explanations: an inductive argument appealing to the opinion of an epistemic authority, inference to the best explanation, and a deductive argument.

However, there is another question that must be

clarified: under what precise condition is an explanation accompanied by an argument? In our view, this occurs when the illocutionary acts of the given explanation and the argument coincide.

Irving Copi wrote that the difference between an argument and an explanation lies in the difference between the intentions of those who formulate them (Copi, 1986, p. 76). We do not agree with this view. In our opinion, the presentation of arguments and explanations may be an expression of one and the same intention. Of course, we do not claim that every argument is expressed with the same intention as an explanation. Let us clarify this issue with the help of speech act theory.

According to J. L. Austin, if a locutionary act is the uttering or writing of a meaningful linguistic expression, then an illocutionary act is the action we perform in uttering that expression (Austin, 1962, p. 108). For example, when we order someone to do something by means of a particular utterance, this constitutes a different illocutionary act from that performed when we use an utterance to make a request. Depending on the speaker's intention, we produce different illocutionary acts.

What action does a person intend to perform when offering an explanation? Such a person intends to explain something, that is, to make what is unclear clear and what is incomprehensible comprehensible. In analyzing explanation, Peter Achinstein introduces the following notation: "S" denotes some person, "q" expresses an indirect question (Q is the direct form of the question whose indirect form is q), and "u" is a sentence. According to Achinstein, S explains q by uttering u only if "S utters u with the intention that his utterance of u render q understandable by producing the knowledge, of the proposition expressed by u, that it is a correct answer to Q" (Achinstein, 1988, p. 201).

Does a person who constructs an argument have the same intention? Let us consider a situation of debate. Suppose the first disputant attempts to persuade the opponent by constructing an argument in such a way as to make the truth of his thesis evident to the opponent. Let the second disputant aim not so much at persuasion as at defeating the opponent in the debate, and therefore construct arguments in such a way that the opponent becomes confused and does not know how to respond. If we analyze this scenario, we can confidently say that the second disputant has an intention quite different from the one described above by Achinstein. But what intention does the first disputant have? It seems that his intention is the same as that of the person who offers an explanation – this disputant seeks to help the opponent understand something.

Thus, we disagree with Copi's claim that explanations and arguments are necessarily characterized by different speaker intentions. In some situations (though, of course, not in all), explanation and argument may be characterized by one and the same illocutionary act.

The presence of an intention to clarify something

is neither a necessary nor a sufficient condition for constructing an argument. Nevertheless, a person who constructs an argument may indeed have the intention of clarifying something. This appears to be the case when a person formulates a deductive argument that expresses a deductive-nomological explanation. It is also the case with inference to the best explanation. In these two kinds of argument, explanation and argument are characterized by the same illocutionary act – the person who formulates them seeks to clarify something.

Is the situation the same in the case of an inductive argument appealing to the opinion of an epistemic authority? In this case, the argument is not made by the one who formulates the explanation (as in the two previous cases), but by the recipient of the explanation. Yet even here, in constructing the argument, the same intention is present: to eliminate epistemic uncertainty, that is, to clarify something.

Therefore, in all the cases of argument and explanation we have analyzed, the same illocutionary act appears to be involved: when the explanation takes the form of a deductive argument (in deductive-nomological explanation), when it takes the form of inference to the best explanation, and when an inductive argument appealing to the opinion of an epistemic authority accompanies the explanation.

We are now in a position to answer the question posed in the title of our article. We maintain that those explanations which generate knowledge belong to the domain of logic. Since they either take the form of arguments or are accompanied by an argument, and the analysis of arguments belongs to the domain of logic. At the same time, we emphasize that logic need not analyze all aspects of such explanations, but only those aspects that directly concern the component connected with arguments.

Conclusions.

Thus, as we have shown, successful arguments are characterized by such a perlocutionary act as the formation of a justified true belief. That is, they are capable of generating knowledge. By contrast, those explanations that neither contain an argument nor are accompanied by an argument are not characterized by the perlocutionary act of generating knowledge. This is because they fail to secure the necessary condition for the formation of knowledge – namely, justification – offering only true belief. Therefore, our analysis casts doubt on the claim that explanations, taken by themselves, can have knowledge as their perlocutionary act.

At the same time, explanations may be accompanied by the construction of an argument. The analysis indicates that, when the recipient of an explanation constructs an inductive argument appealing to the opinion of an epistemic authority, the explanation acquires the feature of justification, thereby making possible the perlocutionary act of forming a justified true belief, that is, knowledge. However, since this type of argument is inductive, the

truth of the resulting belief will not be necessary but only probable.

Explanations may also generate knowledge when they are carried out in the form of an argument. We have demonstrated that an explanation may take the form of inference to the best explanation (an abductive argument) or the form of a deductive argument. If the explanation proceeds in the form of an abductive argument, its truth can only have a probabilistic character. By contrast, since deductive-nomological explanation proceeds in the form of a deductive argument, it is capable of securing the necessary character of its truth.

We have argued that arguments are involved in explanations when the illocutionary act of the argument coincides with the illocutionary act of the explanation. For this reason, we disagree with the position that the difference between an argument and an explanation

always consists in a difference of speaker intentions. In certain situations, explanation and argument may be characterized by one and the same illocutionary act. The presence of an intention to clarify something is neither a necessary nor a sufficient condition for constructing an argument. Nevertheless, a person who constructs an argument may indeed have the intention of clarifying something.

Accordingly, we have demonstrated that those explanations which generate knowledge belong to the domain of logic. Since arguments fall within the domain of logic, and explanations that generate knowledge either take the form of an argument or are accompanied by an argument, they too fall within that domain. At the same time, we have argued that logic need not analyze all aspects of such explanations, but only those aspects that directly concern arguments.

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