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## LOGICAL FALLACIES AS CODIFIED WITHIN THE CONCEPTUAL SYSTEM OF THE LVOV-WARSAW SCHOOL

**Abstract.** The paper attempts to characterize the notion of logical fallacy present in Polish analytical philosophy, especially within the conceptual framework of the Lvov-Warsaw School. This framework is based on general methodological rules of carrying out knowledge-gaining procedures. Three sample ideas significant for this purpose are: Czeżowski's concept of analytical description – as it may be employed in identifying some fallacies of describing and defining, Łuszczewska-Romahnowa's pragmatic account of entailment – as it constitutes a framework for analysing some fallacies of reasoning, and Kamiński's systematization of logical fallacies – as it may be treated as a point of departure for a research project aiming at giving a broad systematization of logical fallacies. Because of some key similarities with current approaches to logical fallacies, the conceptual system of the LWS may play a unifying role in bridging the gap between the study of the fallacies in argumentation theory and in Polish analytical philosophy.

**Keywords:** logical fallacy, logical culture, analytic description, pragmatic concept of entailment, systematization of logical fallacies.

### 1. Key tendencies in the contemporary study of fallacies

Amongst a number of definitions of fallacy proposed in the body of literature in contemporary argumentation theory, the term 'fallacy' is generally understood in two ways:

- a formal fallacy in reasoning (Johnson 1987, 241), as illustrated by the following idea:

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

- any violation of the rules governing cognitive activities, which appear within the argumentative discourse:

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, p. 257).

Both examples point to the fact that the concept of fallacy is related to the concept of rules (norms, criteria, standards) – not only and not necessarily rules of logic, but also to the rules of rational or reasonable discussion. Hence, it may be said that the general aim of a study of fallacies is providing criteria or standards for good argument (Johnson 1987, p. 246) or to elaborate the goal for a given argumentative procedure, and then to elaborate standards to judge when the goal is attained (Woods 2003, p. 5). Thus, any broad understanding of what (logical) fallacy is should allow us in the most general way to identify fallacies by indicating connections to certain rules (of logic, of discourse, of discussion).

The study of fallacies is considered by some logicians and argumentation theorists to be connected to teaching rather than systematic research (see e.g. Finocchiaro 1981, p. 13; Hołówka 1998, p. 9). One of the reasons for this attitude was given by Hamblin (1970), who criticized the so-called Standard Treatment of the Fallacies present in logic textbooks. The main argument for the devastating portrayal of the Standard Treatment pointed to (a) the lack of precise criteria for distinguishing main kinds of fallacies and (b) the incapability of identifying many types of common logical fallacies.

Hamblin's work motivated researchers to elaborate proper criteria for identifying and classifying fallacies in the early 1970's. The dominant tendency observed in early works in argumentation theory and informal logic was the *fallacy approach* to argumentation. It focused on categorizing argumentative fallacies by means of a list of traditional fallacies such as *argumentum an hominem*, *argumentum ad ignorantiam*, *argumentum ad misericordiam*, the fallacy of equivocation, and so on (Groarke 2009).

Although the *fallacy approach* is still popular (Groarke 2011), it has serious disadvantages. The main difficulty with this approach lies in the fact that it focuses on the negative aspect of argumentation – it spots typical errors which are difficult to define and classify, without any positive reference to norms or criteria useful for identifying fallacies. Hence, recent studies in argumentation theory take an indirect approach to the fallacies – their priority is to propose a repertoire of rules or schemes determining the use of arguments, and later to employ them in identifying typical fallacies.

During the subsequent decades, the fallacy approach to argumentation has been replaced by criterial accounts of argument aimed at giving precise tools to represent argument structures. For example, the pragma-dialectical theory of argumentation (van Eemeren & Grootendorst 1987; 1992; 2004) takes as its starting point the ideal model of a critical discussion (van Eemeren & Grootendorst 2004, p. 96) in order to deal with

fallacies as violations of pragma-dialectical discussion rules. Another example is argument scheme theory (e.g., Walton, Reed and Macagno 2008), which focuses on determining the most typical patterns of reasoning and putting forward critical questions which are instructive in fallacy identification. Moreover, some non-deductive patterns of reasoning are specified for inference, conflict, and preference (see e.g. Bex and Reed 2011). Once such patterns are discerned, the identification of typical fallacies (understood as improper patterns) becomes more precise.

A formal-logical approach to fallacies is present in Dale Jacquette's analyses of fallacies in terms of logical invalidities of reasoning (Jacquette 2007; 2009).<sup>1</sup> Sometimes fallacies are analysed in terms of informational shortcuts (Floridi 2009) which are treated as common ways of extracting necessary information in an effective way. This idea is present in some texts which regard deductively invalid inferences (such as denying the antecedent) as inductively proper ones (Stone 2012). The general characteristic of those example approaches to argumentation is the adoption of a set of norms as a point of departure for analysing fallacies.

The given characteristics of the main research strands in the study of fallacies enables the observation of some crucial resemblances between argumentation theory and the study of fallacies in Polish analytical philosophy, especially the Lvov-Warsaw School (LWS). The LWS was a philosophical movement (1895-1939) concentrated in two main research centres: Warsaw and Lwów (Lvov) (see e.g. Woleński 1989; Jadacki 2009). The flourishing of the school is also labelled *the Golden Age of Science and Letters* (Simons 2002). The main thesis concerning the tradition of the LWS holds that within the logico-methodological studies of the LWS logical fallacies are considered as violations of logical norms, broadly conceived as the rules of formal logic, semiotics and a methodology of science. The discussion of these issues will provide reasons for claiming that in order to build a fallacy theory we should establish sets of rules for particular knowledge-gaining procedures. The following section discusses the point of departure for this discussion, i.e., the concept of logical culture.

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<sup>1</sup> I do not claim, however, that this formal approach is sufficient for the systematic study of fallacies. It may be treated as a necessary, but not sufficient tool employed in argument analysis and representation.

## **2. Logical culture as a framework for analysing fallacies**

When discussing the conceptual system of the LWS, Jadacki (2009, pp. 68-76) lists crucial research achievements and unique approaches to language and reasoning in the LWS such as: (a) the tendency of treating language as a tool of cognition, (b) the notion of conceptual apparatus, (c) the idea of applying the rule of conceptual optimization and the rule of precision as crucial methodological rules of inquiry, (d) the concept of metaphor, (e) the distinction between ideal and real notions, (f) the concept of object, (g) the semantic nest of object, and (h) the historical order of concepts. In the present section I will focus on the general conceptual framework which constitutes the point of departure for building the concept of logical fallacy within the logico-methodological tradition of the LWS.<sup>2</sup>

“Logical culture” is one of the most basic terms used in Polish analytical philosophy to refer to the knowledge and skills of logic (see e.g. Wybraniec-Skardowska 2009). The concept of logical culture has been discussed in detail e.g. by Ajdukiewicz (1974) and Czeżowski (2000).<sup>3</sup> For the purpose of this paper I shall briefly present key features of logical culture.

Logical culture is built on two elements: knowledge of logic and the skills of applying this knowledge:

Logical culture, just as social, artistic, literary or other culture, is a characteristic of someone who possesses logical knowledge and competence in logical thinking and expressing one’s thoughts (Czeżowski 2000, p. 68).

This idea of logical culture points to the value of logical thinking, which is one of the most important values in human individual and social behaviour. For example, Ajdukiewicz’s understanding of logical culture is clearly expressed in his idea of logical thinking. The concept of logical thinking also shows what is his most general understanding of logic. According to Ajdukiewicz (1957, p. 3) logical thinking is a skill which is possessed by someone, who (1) thinks clearly and consequently, (2) expresses

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<sup>2</sup> Since the tradition of logical studies in LWS associates the concept of fallacy with violations of the norms of logic, hence the common use of the term “logical fallacy”. My use of this term is also partly suggested by Whately’s distinction between logical fallacies and non-logical fallacies (see, e.g., Hamblin 1970; 169-171; van Eemeren 2001, 144-145).

<sup>3</sup> The concept of logical culture found in the works of Ajdukiewicz is related to his programme of pragmatic logic. For a discussion of Ajdukiewiczian idea of logical culture in the context of pragmatic logic see (Koszowy 2010). For a specification of Ajdukiewiczian idea of logical culture see (Łyczek 2010).

her/his thoughts precisely and systematically, (3) makes proper inferences and justifies her/his claims.

Logical culture is particularly important for human scientific and argumentative activities, because it involves the skill of performing various cognitive and linguistic procedures which play a crucial role in scientific inquiry. Hence, the main point made by Czeżowski is that logical culture is a skill that allows us to think logically, and this skill is built on the knowledge of logic. Czeżowski points to some criteria which tell us what thinking is non-fallacious by further explaining his initial definition by giving a list of procedures which constitute logical thinking (Czeżowski 2000, p. 68): (a) describing and defining, (b) ordering and systematizing, (c) explaining, (d) inferring, (e) predicting, (f) proving, and (g) verifying.

Czeżowski's definition of logical culture points to crucial knowledge-gaining procedures. Those procedures are useful for evaluating our thinking and language use not only in scientific research and debate, but also in everyday discussion (Czeżowski 2000, p. 75). So, the study of fallacies built on these procedures could also focus on fallacies present in scientific discourse and fallacies in political or legal discourse.

Czeżowski's idea is a clear example of accepting a broad framework for analysing logical fallacies. As Jadacki points out, one of the central concerns of the LWS was the systematic study of various *knowledge-creative procedures*. They include: (a) verbalizing, defining, and interpreting, (b) observation, (c) inference (deduction and induction), (d) formulating problems, and (e) partition, classification, and ordering (Jadacki, 2009, pp. 98-100; see also Koszowy 2010, p. 35). On the basis of those remarks we may state that the study of fallacies within a framework of logical culture is based on a set of rules for procedures, which are evaluated as fallacious or non-fallacious. The aim of these procedures is to gain knowledge. In this sense, we are justified in naming these procedures "knowledge-gaining".<sup>4</sup>

In what follows I will illustrate how particular types of logical fallacies may be put within this knowledge-gaining framework of logical culture. The next three sections will discuss examples of the logico-methodological ideas which are significant for this purpose, namely (1) the conception of describing – as presented within Czeżowski's theory of analytical description (2000), (2) the procedure of inferring – as illustrated by Łuszczewska-Romahnowa's idea of pragmatic entailment (1962), and (3) the systematization of fallacies

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<sup>4</sup> A similar idea of putting fallacies into the framework of knowledge-gaining was suggested by Hintikka (1987, p. 232).

as proposed by Kamiński (1962).<sup>5</sup> I will argue that all three approaches, despite the differences between them, can in fact be put in the broad framework of logical culture.

### **3. Czeżowski's account of description**

This section discusses some ideas related to the method of analytic description proposed by Tadeusz Czeżowski (1889–1981). His main areas of inquiry covered logic, methodology of science, epistemology, ontology, and practical philosophy.

According to Czeżowski (2000, pp. 43-45), the method of analytic description consists in making “a general description of a whole class of objects on the basis of an intuitive cognition of one or several standard elements of this class” (Gumański 2000, p. 11). The general instruction for an appropriate description points to the criteria of logical correctness of description (Czeżowski 2000, p. 68):

We say that a description is logically correct if it is faithful and not fantastic, exhaustive and not superficial, concise and not lengthy, systematic and not chaotic.

To specify this idea, Czeżowski, directly or indirectly, points to particular rules for describing and defining. Although he does not formulate these rules as a list, it can be extracted from his writings on description (2000, pp. 68-69; see also Koszowy 2004, pp. 127-128).

**Rule 1:** Make a proper selection of the elements of description.

This general rule is determined by distinguishing four sub-rules:

- Make your selection in such a way “as to include in the description what is important with regard to the purpose of the description while disregarding nonessential details”.
- In making your selection be consistent with the context.
- Make your description by including only the relevant qualities rather than all the qualities of the described object that have been noticed.

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<sup>5</sup> Although Kamiński was a representative of the generation which followed the LWS, his work in methodology of science may be conceived as a continuation of the tradition of the School.

- Among these relevant qualities choose the constitutive ones i.e. those which determine the whole, and usually disregard consecutive qualities which depend on and are determined by the constitutive ones.

**Rule 2:** Make your description in a certain justified order, “for instance in the way established by the schemes adopted in the descriptive natural sciences” or defined by the rules of a literary analysis of poetic works.

This general rule also has a further specification:

- While describing any object indicate its similarities to and differences from other familiar objects.

An example of a condensed description is defining. According to Czeżowski, the model way of making condensed description is giving a classical definition *per genus proximum et differentiam specificam*, “where by specifying *genus* we indicate similarities between the described object and those which constitute this genus with it, while *differentia* is a difference characterizing *definiendum* with the *genus*” (2000, p. 69). Here we can observe that Czeżowski’s concept of description is strictly linked to the concept of definition. Defining is one of the crucial knowledge-gaining procedures, since definitions (as results of defining) are often understood as means for avoiding fallacies (see Kublikowski 2009; Koszowy 2013); for the discussion of the relationship between description and definition see also Kublikowski (2010).

The aforementioned rules of description allow us to make some remarks on the correspondence between Czeżowski’s concept of description and some contemporary research strands in the study of argumentation. The use of the concepts of standards and rules by many argumentation theorists shows that the important condition for grasping the concept of fallacy is the construction of a model of procedures, within which typical fallacies are performed. “Model” is understood as a systematic set of rules. In this sense, rules of argumentative discussion constitute a model of argumentative procedures. Among various kinds of models, some authors elaborate the “ideal normative model of the speech acts performed in a critical discussion” (van Eemeren & Grootendorst 1987, p. 298) or a model of knowledge-gaining questioning procedures (Hintikka 1987, pp. 231-232). We should however bear in mind that models are not treated here as universal tools that help us recognize fallacies in a discourse. The authors who aim to establish these kinds of models do not suggest that these models should guarantee that fallacies are not committed, although we have the possibility of comparing our factual argumentative procedures with their ideal model.

The general procedure for identifying fallacies committed within knowledge-gaining procedures consists of specifying rules for these procedures. In other words, we cannot claim that a fallacy has been committed within a given procedure, unless we refer to the set of rules for the correctness of that procedure. Then we may identify a fallacy – we just compare the results of applying a given procedure with the rules. This method can be seen when applying e.g. pragma-dialectical rules of argumentation to various argumentative procedures (van Eemeren and Grootendorst 1992). A similar method is applied also to other knowledge-gaining procedures. If we deal, for example, with a questioning procedure, the result of this procedure is a question (or a set of questions). By using the rules of proper questioning, we can tell whether a given question (or a set of questions) breaks any of those rules. If at least one of the rules has been broken, a fallacy has been committed.

This context allows a list of the rules of description, based on the work of Czeżowski, to be conceived as a general model for identifying fallacies of description. For example, the list of rules of description allows us to make a list of possible fallacies, such as:

- a description which focuses on nonessential details while disregarding what is important with regard to the purpose of the description;
- a description based on a selection which is inconsistent with the context;
- a description which includes irrelevant qualities of the described object;
- a description which includes consecutive qualities (instead of constitutive ones);
- a description made without any justified order;
- a description of an object made without indicating its similarities to and differences from other familiar objects.

Although this list is just an initial attempt at proposing argument evaluation using the rules given by Czeżowski, it clearly shows, for the purpose of this paper, the idea of analysing some logical fallacies within the framework of analytic description.<sup>6</sup>

#### **4. Łuszczewska-Romahnowa's pragmatic account of entailment**

The main areas of research covered by Seweryna Łuszczewska-Romahnowa (1904–1978) are mathematical logic, methodology of science and seman-

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<sup>6</sup> See Kublikowski (2009) for an account of the rules of definition and description within the structure of arguments.

tics (Batóg, 2001). One of the topics significant for the scope of this paper is the pragmatic concept of entailment (Łuszczewska-Romahnowa 1962) which has been employed in defining fallacies of reasoning, such as formal fallacies (*non sequitur*) and begging the question (*petitio principii*). The theoretical framework for this inquiry is built upon the concept of argument, which is explained by the example of argument structure called  $Arg^+$ :

$$Arg^+ \left\{ \begin{array}{l} P_1(as) \\ P_2(as) \\ P_3(P_1, P_2) \\ P_4(as) \\ P_5(P_1, P_3, P_4) \end{array} \right.$$

The elements of such a structure may be characterized as follows:

- proposition  $P_i$  marked with *as* is qualified as asserted;
- propositions  $P_a, P_b, \dots$  placed on the right from  $P_i$  qualify  $P_i$  as inferred from  $P_a$  and  $P_b$ ;
- $P_5$  is the thesis of  $Arg^+$ .

This means that  $Arg^+$  may be interpreted as follows: *since  $P_1$  and  $P_2$ , then  $P_3$ ; and since,  $P_1$  and  $P_3$  and  $P_4$ , then  $P_5$ .*

Arguments are here conceived as finite sequences of qualified propositions, i.e., those which are asserted or inferred from asserted ones. On the basis of the concept of qualified (*ql*) propositions, Łuszczewska-Romahnowa proposes the following definition of argumentation: a finite sequence of qualified propositions  $P_1(ql_1), \dots, P_n(ql_n)$  is called an argumentation about the thesis  $T$  if:<sup>7</sup>

1. the qualification  $ql_i$  of a given proposition in this sequence is either a qualification of an asserted proposition (*as*) or qualifies the proposition  $P_i$  as inferred from one or more propositions placed before  $i$ -s;
2. it is not the case that any sub-sequence of argumentation satisfies the conditions determined above.

In order to justify the applicability of this model in argument analysis and evaluation, Łuszczewska-Romahnowa focuses on two problems:

- how to formulate a counterplea for a given argument in order to justify the rejection of the main thesis of the argument?
- what are the possible fallacies of argumentation?

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<sup>7</sup> An initial condition holds that  $T$  is placed last in this sequence; this condition, however, tailors argumentation structures just to those in which the conclusion is at the end of the argumentative structure. For a broader account of argument structures see e.g. Trzęsicki (2011, pp. 61-63).

The connection between these two problems lies in the fact that a counterplea may be treated as an assessment of an argument which points to a typical fallacy. The *counterplea for the argumentation* is conceived as any proposition concerning this argumentation which may justify the refusal of the thesis of a given argument. Łuszczewska-Romahnowa lists possible counterpleas to  $Arg^+$ :

- (1)  $P_1$  is false or  $P_2$  is false or  $P_4$  is false.

or, equivalently:

- (1') Some of the assumptions of  $Arg^+$  are false.

The next possible counterplea states:

- (2)  $P_1$  has not been justified or  $P_2$  not been justified or  $P_4$  not been justified in a given theoretical context.

or, equivalently:

- (2') One of assumptions of  $Arg^+$  has not been justified.

The third counterplea may be formulated as follows:

- (3)  $P_1, P_2$  do not entail  $P_3$  or  $P_1, P_3, P_4$  do not entail  $P_5$ .

or, equivalently:

- (3') For a given argument  $Arg^+$ , its premises do not entail its conclusion.

The next counterplea refers to assumptions of an inference:

- (4) The implication  $(P_1 \wedge P_2) \rightarrow P_3$  has not been justified or the implication  $(P_1 \wedge P_3 \wedge P_4) \rightarrow P_5$  has not been justified.

or, equivalently:

- (4') For  $Arg^+$  the implication which is the assumption of the inference has not been justified.

These counterpleas constitute a groundwork for discussing typical fallacies of reasoning. For instance, the counterplea (2') which holds that one of the assumptions of  $Arg^+$  has not been justified may be treated as a charge of *petitio principii*, and the counterplea (4') which states that for  $Arg^+$  the implication which is an assumption of this inference has not been justified, is in fact the charge of *non sequitur*. The counterplea (4') is a point of departure for defining *pragmatic entailment*:

The sequence of propositions  $p_1, \dots, p_n$  entail pragmatically the proposition  $p_k$  (given the theoretical context) iff the implication  $p_1, \dots, p_n \rightarrow p_k$  has been justified within this context.

This concept of entailment allows formulating a sentence which is equivalent to the counterplea (4'):

(4'') For  $Arg^+$ , the conclusion does not follow pragmatically (relatively to a given context) from its premises.

Amongst major objections which may be raised against the proposed approach there are:

1. the poor repertoire of logical fallacies – as this approach focuses just on general kinds of fallacies of reasoning,
2. the fact that the author considers just one direction of argumentation: from the set of premises to the set of conclusions,<sup>8</sup>
3. the fact that the given understanding of counterpleas represents a very narrow approach, tailored to a couple of counterpleas to a given inference;<sup>9</sup> however, this conception is a clear example of accepting the dialectical approach to arguments, even within such a limited model.

Despite its weak points, this general framework for analysing fallacies of reasoning is a clear example of the logical approach to arguments in the Lvov-Warsaw School – as discussed in Section 2. It also corresponds to contemporary study of argumentation. Amongst the significant similarities there are:

- the fact that the structure of arguments proposed by Łuszczewska-Romahnowa takes into account not only arguments – but also counterpleas to arguments. We can here observe the dialectical dimension of the proposed account;
- the tendency to use the description of argument structure to identify typical logical fallacies; although the structure of argument proposed by Łuszczewska-Romahnowa allows us to identify only basic logical fallacies of reasoning;
- an attempt at precisifying main claims of argumentation theory by defining pragmatic entailment and counterpleas.

Because of the fact that the approach discussed in this section is tailored to particular types of fallacies, the next section aims at answering the following question: is there any broader account of logical fallacies formulated from the viewpoint of the conceptual system of the LWS which may be employed in the contemporary study of arguments?

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<sup>8</sup> For the inclusion of other relationships between propositions, such as the direction of entailment and the direction of justification, see the method of argument diagramming proposed by Trzęsicki (2011).

<sup>9</sup> For the study of the role of counterpleas within the structure of argumentation see Budzyńska (2004, p. 142) and Nieznański (2006, p. 117).

## **5. Kamiński's systematization of logical fallacies**

A broader methodological approach to logical fallacies was proposed by Stanisław Kamiński (1919–1986). Kamiński was one of the leading researchers of the Lublin School of Philosophy at the Catholic University of Lublin. Amongst his vivid research interest in the methodology and philosophy of science (see Bronk 2001), he attempted to classify linguistic fallacies (Kamiński 1960), and typical logical errors and fallacies (Kamiński 1962). The crucial idea present in this area of Kamiński's inquiry is treating logical fallacies as a broad class of instances of human irrationality. Logical and methodological norms of carrying out knowledge-gaining procedures were, for Kamiński, the fundamental point of departure for dealing with fallacies. Since this approach is in accord with some crucial research strands in Polish analytical philosophy, I will first briefly discuss the research context, within which Kamiński's approach will be later considered.

Systematizations of logical fallacies which were built within the tradition of the Lvov-Warsaw School constituted a substantial part of academic courses in logic (see Jadacki 1997; Hołówka 2002), for knowledge of the most typical logical fallacies was treated as a necessary foundation for the acquisition of analytical skills. Moreover, knowledge and skills of recognizing logical fallacies were also claimed to be one of the key dispositions of the researcher (see e.g. Ajdukiewicz 1974). So, logical fallacies were considered in the LWS not exclusively from the point of view of teaching logic, but also from a scientific perspective. Hence, the framework for analysing fallacies in the LWS is deeply grounded in the methodology and philosophy of science. This methodological attitude is clearly exposed by Woleński (2009), who points to the philosophy of science as one of the most important areas of inquiry in the LWS. This general characteristic of the study of fallacies in Polish Analytical philosophy is deeply grounded in a framework of logical culture, which was discussed in Section 2.

The systematization of logical fallacies proposed by Kamiński is fully in line with those research tendencies. It may justifiably be treated as a unique work in Polish logical studies, for Kamiński does not deal exclusively with one particular type of logical fallacies (of description, of reasoning or of questioning), but he attempts to classify a broad class of logical fallacies. Moreover, instead of proposing an uncoded list of fallacies he puts forward a framework for analysing and classifying fallacies based on a broad conception of logic (see Koszowy 2010, pp. 32–34). Since logical fallacies are treated here as violations of norms of logic, the concept of a logical norm constitutes

a point of departure for further analysis. The term “logical norm” may be understood thus:

1. in a narrow sense – as any violation of the norms of formal logic;
2. in a broad sense – as any violation of the norms of logic conceived as a discipline which encompasses: formal logic, semiotics and methodology of science.

When building his systematization of fallacies, Kamiński accepts the broad understanding of “logic” and “logical norm”. Amongst the norms of logic in a broad sense there are: (1) rules governing cognitive activities (epistemology),<sup>10</sup> (2) rules for deductive inference (formal logic), (3) rules for language use as elaborated in semiotics (syntax, semantics and pragmatics), and (4) rules for scientific inquiry, i.e. rules of definition, questioning, rules for inductive inference (as elaborated in the methodology of science).

On the basis of this broad account of logical norms, Kamiński refers to the general understanding of “logical fallacy” as a hidden incompatibility of a given cognitive procedure with the rules of logic (1962, p. 25). Following this definition he distinguishes four general types of logical fallacies, namely:

- epistemological fallacies;
- semiotic fallacies;
- fallacies of reasoning also labelled “logical fallacies in a strict sense”;
- methodological fallacies of applying rules governing knowledge-gaining procedures.

Basing on this general distinction, Kamiński proposes the following systematization of logical fallacies:<sup>11</sup>

## A. Epistemological fallacies

### I. Improper cognition of a given subject-matter

1. Cognition directed by extra-cognitive factors:
  - (a) superstitions which are the effect of education, social environment or laziness of thought;
  - (b) cognition dominated by affects (emotions);

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<sup>10</sup> Including epistemology in this broad approach to logical fallacies alludes to the understanding of epistemology as part of logic broadly conceived. A historical illustration of this idea is the labelling of epistemology as *logica maior* (or *logica materialis*), as distinguished from *logica minor* (or *logica formalis*), i.e. formal logic.

<sup>11</sup> For the purpose of the paper I tailor Kamiński's systematization just to the main types of logical fallacies. For the details of this account see Kamiński (1962, pp. 29–39).

- (c) inclinations towards: hasty generalization, anthropomorphisation, oversimplification and not distinguishing between the main domains and methods of cognition;
2. Cognition of the formal subject (i.e. aspect) unsuitable for a given cognitive disposition.
3. Cognition gained without proper coordination of the various cognitive dispositions and their mutual control;
4. Statements based on careless or inexact perception;
5. Statements which extend the act of perceiving;
6. Statements determined by alleged obviousness, especially when they are not preceded by a sufficient analysis of facts.

## **II. Uncritical reception of information**

1. Information gained without any critical cognitive activity:
  - (a) gained in the process of education, readings, tradition, social environment, habits, and superstitions;
  - (b) accepted automatically only because of the fact that the new information is coherent with one's system of beliefs.
2. Information gained only because of the irrational acceptance of authority:
  - (a) because of the association of the source of information with the famous name of someone, who is not in fact an authority in a given domain;
  - (b) because of social or material profit associated with accepting this information.
3. Information accepted only because of the form of utterances:
  - (a) a convincing formulation of information in the form of a paradox or a slogan;
  - (b) information which is repeated (e.g., advertisement or propaganda).
4. Information gained from:
  - (a) inadequate sources (e.g. indirect sources instead of direct sources);
  - (b) inauthentic sources.

### **B. Semiotic fallacies**

#### **I. Insufficient level of understanding of an utterance caused by:**

1. The use of professional terminology of a given field or the use of untypical metaphors or other specific expressions;

2. Invalid syntax and structure of a complex utterance;
3. Non-uniform intension of an utterance caused by the use of too general expressions, in particular:
  - (a) confusing languages of different levels;
  - (b) confusing various functions of language, e.g., informative, evaluative, expressive, and evocative.

## **II. Ambiguity of an utterance:**

1. The use of an ambiguous phrase where the context does not enable one to determine exactly one meaning;
2. Equivocation in reasoning (the fallacy of four terms);
3. The unambiguous use of expressions, which in fact have various meanings that should be distinguished;
4. Amphiboly – the ambiguous structure of an utterance;
5. Informational shortcuts which cause misunderstanding;
6. Partial ambiguity of an utterance.

## **III. Unclear understanding of an utterance**

1. Undetermined extension (vagueness);
2. Undetermined intension;
3. Insufficiently precise formulation of a complex utterance.

### **C. Fallacies of reasoning (logical fallacies in a strict sense)**

#### **I. Apparent indirect justification**

1. Persuasion aimed at the direct assertion of a statement.
2. Forcing the assertion of a thesis upon someone.
3. Making someone assert a given proposition by employing *argumentum ad personam*.
4. Forcing the assertion of a thesis by hiding or modifying this thesis.

#### **II. Invalid reasoning**

1. *Ignoratio elenchi* – ignorance of the thesis which is being argued for.
2. Modifications of the thesis which is being argued for.
3. Apparent conclusiveness of reasoning.

## **D. Methodological fallacies**

### **I. General methodological fallacies**

1. Fallacies of defining:
  - (a) formal;
  - (b) informal;
2. Fallacies of division and classification:
  - (a) formal;
  - (b) informal;
  - (c) semantic.
3. Fallacies of posing and solving scientific problems:
  - (a) invalid formulation of questions and hypotheses;
  - (b) invalid solutions of problems.
4. Fallacies of discussion:
  - (a) improper choice of the subject-matter of a discussion;
  - (b) improper point of departure of a discussion, e.g. posing a problem which is not relevant to the main controversy or posing a problem which is undecidable or intractable as decidable or tractable;
  - (c) employing semiotic fallacies in deception;
  - (d) convincing by means of emotional actions;
  - (e) employing eristic fallacies;
  - (f) employing invalid inferences.

### **II. Specific methodological fallacies**

1. Fallacious use of the formal-deductive method of scientific inquiry.
2. Fallacious use of the statistical method.
3. Fallacious use of the empirical method.
4. Fallacious use of the historical method.
5. Fallacious use of the methods of philological analysis.<sup>12</sup>

The systematization of logical fallacies proposed by Kamiński seems to capture a fairly rich repertoire of fallacies. It also clearly points to some specific rules (of epistemology, semiotics, formal logic and the methodology of science) useful for assessing utterances.

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<sup>12</sup> Kamiński states that within this subsection the fallacies of criticizing texts and fallacies of reasoning may be repeated.

However, this approach to systematizing logical fallacies raises serious objections. At first glance, Kamiński's broad account of logical fallacies pays the price for its imprecision: providing such a rich systematization of fallacies results in vague distinctions. In fact, two major objections to this systematization may be raised:

- this conception is too broad because it covers fallacies that are not violations of any logical norms strictly understood; for instance, it would be very difficult to point to any logical norm, strictly understood, which would be violated in the case of improper measurement – which is considered by Kamiński as a specific methodological fallacy (Kamiński 1962, p. 38);
- the main types of fallacies overlap; for example, the fallacy *post hoc ergo propter hoc* may be classified both as a fallacy of reasoning and as a methodological fallacy; the fallacy of four terms (*quaternio terminorum*) may be classified both as a fallacy of reasoning and as a semiotic fallacy; moreover, affirming the consequent may be classified as a fallacy of reasoning, amphibology as a semiotic fallacy and the vicious circle of definition as a methodological fallacy; Kamiński is fully aware of the overlap between the main types of fallacies, for he indicates some fallacies which in fact belong to different types (p. 39).

Kamiński is also aware of a number of other difficulties with building an adequate systematization of fallacies. Amongst them he mentions modifications of the very notion of logic (Kamiński 1962, pp. 25–26). He also points out that many historical attempts at classifying logical fallacies take into account the broad class of cognitive fallacies, of which the so-called “logical fallacies” constitute one subclass.

Despite these and other objections, this representation clearly shows how logical fallacies may be put into the conceptual system of the LWS. Kamiński observes that despite its defects, the proposed codification of logical fallacies plays an important cognitive role, i.e. it helps deepen understanding of rational thinking and cognition (p. 26). In this respect, Kamiński's approach to logical fallacies differs from the pessimistic opinion of the study of fallacies as cognitively useless (see e.g. Lambert and Ulrich 1980). According to Kamiński, even though many attempts at classifying fallacies are imprecise and fail to capture some significant fallacies, they give a theoretical framework useful for ordering common cognitive mishaps and failures, thus sharpening the tools for identifying them. Hence, the tradition of Polish analytical philosophy may be placed amongst “optimistic” accounts of fallacies. Moreover, this optimistic attitude is supported by precise methodological tools useful in identifying fallacies. In

this context, Kamiński's systematization may be conceived as a unifying account which aims to grasp a variety of violations of the rules of proper cognition.

Thus, Kamiński's systematization clearly illustrates the accepted model of a critical thinker, who may be conceived as a person who avoids typical violations of logical norms. For example, the proposed model is in accord with the skills of a critical thinker who is characterized by informal logicians (e.g., Hoaglund, 2002, pp. 5-6) as a person who is well-informed, fair-minded in evaluation, who can distinguish fact from opinion and reliable reports from erroneous ones. These similarities point to a significant topic for further inquiry, which would be to discuss systematically the ideal of a critical thinker in the tradition of the LWS, as compared to the Critical Thinking Movement in North America.

## **6. Towards a programme for the study of fallacies**

In the concluding section I suggest some future research tasks which may be accomplished within the research programme of the study of fallacies rooted in the conceptual system of the LWS. The three ideas discussed (proposed by Czeżowski, Łuszczewska-Romahnowa, and Kamiński) point to research fields which may constitute the focus of a future project. The ideas discussed in the paper show that in order to analyze typical fallacies we should establish sets of rules (models) for particular knowledge-gaining procedures. On the one hand, those procedures are employed within argumentative discourse, so they are evaluated within argumentation theory. On the other hand, the same kinds of procedures are crucial in scientific research, so they are investigated by the methodology of science (see Koszowy 2013). The procedural rules for the argumentative process are built either in argumentation theory (van Eemeren and Houtlosser 2002, pp. 14-15) or in the methodology of science (Czeżowski 2000, p. 51). Hence, the methodology of science can serve not only as a source of inspiration for fallacy theorists, but also as a foundation for fallacy theory, since it provides well-developed tools for recognizing fallacies.

Moreover, the paper shows that the study of fallacies in the LWS was far from the imprecise fallacy approach, and much closer to detailed fallacy analysis. The foundation for such an approach lies in:

- the broad concept of a logical norm,
- the methodological approach to logical fallacies conceived as violations of the rules of performing knowledge-gaining procedures.

Another concluding remark is that within the conceptual system of the LWS there are definitely no attempts at building a fallacy theory as such. In other words, there is no urge to build a general theory of fallacies.<sup>13</sup> The reason for this attitude is the fact that the concept of a fallacy in the LWS is related to the concept of logical norms broadly conceived. Thus, within the tradition of Polish analytical philosophy there is definitely no need to build a separate theoretical framework for the study of fallacies.

Moreover, the conceptual system of the LWS contains an idea which is most significant for our purpose of grasping the concept of a logical fallacy. The tendency of analysing logical fallacies within a broad logical framework is in accord with major contemporary tendencies in the study of fallacies. In early works in argumentation theory a dominant tendency was to build a fallacy theory (Johnson 1987). However, some argumentation theorists and informal logicians (e.g. Johnson, 1987; van Eemeren, 2001; Hansen 2002) have noted the major difficulties of building such a theory. Those difficulties were among the reasons for rejecting the urge to theorise in the study of fallacies. Amongst many alternative propositions is the approach proposed by Cummings (2004, pp. 90-91) who argues for focusing on a descriptive approach to the study of fallacies which is to be founded on the analysis of relationships between the crucial concepts of argumentation theory. Within this context, the study of fallacies from the point of view of the conceptual system of the LWS appears to be a methodological programme close to such descriptive approaches developed by some logicians and argumentation theorists who pursue the analysis of concrete fallacies without stressing the need to build a fallacy theory (see e.g. Jacquette 2009).

As the discussed examples show, a strength of the programme of the study of fallacies based on the conceptual system of the LWS lies in the methodological foundations of the study of fallacies. This programme is close to criterial approaches to fallacies. Hence, it clearly differs from the unclear *fallacy approach*, which was present in argumentation theory at its earlier stage. In seeking possible directions for further research, the conceptual system of the LWS may serve as a framework for analysing and assessing various knowledge-gaining procedures.

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<sup>13</sup> Some arguments which question the need to build a unified theory are given or discussed by Hamblin (1970), Hintikka (1987), Johnson (1987), and Hansen (2002).

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