This article defines the way of interaction between formal and transcendental logic through introducing ontological considerations based on P. Strawson’s descriptive metaphysics. The notions of a particular, a sortal universal, and a feature universal are introduced into the transcendental limitation on the inferences of formal logic.

Key words: formal logic, transcendental logic, descriptive metaphysics, ontology, particular, universal.

A model of interaction between formal and transcendental logics

As I suggested in my earlier article [2], the function of transcendental logic (TL) in relation to the inferences of formal logic (FL) consists in limiting the set of all possible conclusions of the given judgements. Not all conclusions deemed valid by formal logic are valid from the perspective of transcendental logic; and, what is more important, the limitations to the space, within which the search for logical inference is conducted, are not arbitrary, but have clear ontological bases relating to Kant’s limitations on the application of categories.

In the Analytic of Concepts [B 128–129] Kant draws an example of interaction between formal and transcendental logic, when describing the relation of the category of substance to the function of categorical judgements. Let us pay attention to this excerpt:

Thus the function of the categorical judgment was the relation of the subject to the predicate, e.g., all bodies are divisible. Only in regard to the merely logical employment of the understanding it remains undetermined which of the two concepts one is to give the function of the subject and which that of the predicate. For one can also say: Something divisible is a body. Through the concept of substance, how-

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1 This article is an attempt to improve the concept of interaction between formal and transcendental logics offered in [8] and further developed in [2]. Thus, I will have to repeat some ideas presented in those works.
ever, if I bring the concept of a body under it, it is determined that its empirical intuition in experience must always be considered only as subject, never as mere predicate; and so with all the other categories [10 p. 131 — B 128—129].

The above statement is very important for Kant, since he includes similar considerations into his explanation of the three major premises transcendental philosophy rests upon. In the *Metaphysical Foundations of Natural Sciences* he wrote as follows:

*Granted:* that the table of categories contains all pure concepts of the understanding, just as it contains all formal actions of the understanding in judging, from which the concepts of the understanding are derived, and from which they differ only in that, through the concepts of the understanding, an object is thought as determined with respect to one or another function of judgment. (Thus, for example, in the categorical judgment the *stone is hard*, the *stone* is used as subject, and *hard* as predicate, in such a way that the understanding is still free to exchange the logical function of these concepts, and to say that something hard is a stone. In contrast, if I represent it to myself as determined in the object that the *stone* must be thought only as subject, but hardness only as predicate, in any possible determination of an object (not of the mere concept), then the very same logical functions now become pure concepts of the understanding of objects, namely, as substance and accident.) [12, p. 11 — A XVIII].

Both the first and the second editions of *Critique of Pure Reason* have similar fragments [B 149; B 186; B 288; A 242 / B300; A 348; A 401]. The above excerpts contain an important thought about the correlation between formal and transcendental logics, from which we can derive the method of their interaction. TL considers the meanings of different terms (concepts) in judgements depending on what determines their function in inferences of FL. It makes one think about distinguishing between the two types of terms and their different roles in the structure of categorical judgements. Summarising earlier analysis, one can say that, from the perspective of transcendental logic, formal deduction should be constructed so that the judgements that have an interpretation within the possible experience, spawn only judgements of the same kind rather than judgements that do not have such interpretation. TL discards judgements that cannot be interpreted in the terms of possible experience or do not require it. The identification of the position of categories within the structure of judgements is the first stage of such procedure. The second stage is the limitation on category application through conditions of sensible intuition within transcendental schematism. However, in this article, I will focus on further development of a purely logical aspect of interaction between FL and TL.

I would like to stress that, in the above excerpt from the *Metaphysical Foundations of Natural Sciences* (MFNS), Kant speaks of placing one term of a judgement under the category of substance and the other under the concept of accident. This requirement divides all terms of a certain language according to their possible role of subjects of predicates of categorical judgements.

Let us give the following definitions:

a) terms that refer to substances will be called *substantial terms* — *s-terms*;

b) terms that refer to characteristics and relations, i.e. properties will be called *accidental terms* — *a-terms*.

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2 Square brackets enclose references to the Cambridge translations of Kant’s works listed in the bibliography and — separated by a dash — standard pagination according to the first (A) and second (B) edition of the *Critique of Pure Reason*. 
For example, in the judgement, “all bodies are divisible”, “body” is an s-term, whereas “divisible” is an a-term.

On the basis of the above fragments, one can formulate a principle, which I will call *transcendental limitation* (TL).

(TL) In any categorical judgement, an s-term can serve only as the subject and never as the predicate, whereas an a-term can serve as the predicate and never as the subject.

In an earlier article [2], I described in detail the limitations imposed by (TL) on syllogistic deduction and came to a conclusion that (TL) prohibits certain rather natural inferences, whose conclusions are used in Kant’s transcendental philosophy. Of course, Kant never intended to eliminate such natural judgements as “no spirit is a body” or “every metal is a body”. It means that our (TL) itself should be accepted with certain limitations. Kant formulates such limitation in the section On the logical use of understanding in general in the CPR. He writes there that “Concepts... as predicates of possible judgments, are related to some representation of a still undetermined object” [11, p. 205 — A 69 / B 94]. If other representations are contained in this concept, it can be used as a predicate in a judgement, in which a term referring to “some representations” serve as the subject. Kant draws an example: “every metal is a body” [11, p. 20 — A 69 / B 94]. According to this approach, an s-term can be a predicate of a judgement, where the subject becomes a representation subordinate to that s-term.

Such judgements are, however, analytic. Indeed, Kant writes in section 10 of the *Analytic of concepts* “by means of analysis different representations are brought under one concept—a procedure treated of in general logic” [11, p. 211 — A 78 / B104]. It means that we can use a categorical judgement where the s-term serves as the predicate, if it is an analytic judgement of the form “S is P”, where P is the s-term, and S stands for a representation subordinate to this term. I will call such judgements substantial analytic judgements, supposing that TL does not prohibit the generation of judgements of this kind.

Our initial (TL) is applicable only to judgements that include at least one a-term. Consequently, we need to modify the (TL) as follows.

(TL*) In any categorical judgment, except substantial analytic ones, an s-term can serve as the subject and never as the predicate, and in any categorical judgement, an a-term always serves as the predicate and never as the subject.

This limitation imposes a weaker, but more feasible condition on the FL inferences.

Descriptive metaphysics helps transcendental logic

In general, an approach to the construction of deduction systems, which is based on the idea of transcendental limitations, implements the idea of procedure of search for logical inference, in which the reduction of the number of search runs relates to the metarules that impose limitations on deduction and have a clear ontological interpretation. This circumstance distinguishes these procedures from merely technical reductions of search space, when limitations stem from the capacity to reduce the inference search space. An example of such methods is search strategies relating to the resolution method. Kant’s TL suggests another path, following which, we use metarules based on clear ontological considerations in order to reduce search space. These ontological considerations are meant to construct deduction procedures, which give us the conclusions to
the accepted premises harmonised with the ontology, on the basis of which we are building our metarules. In case of Kant’s TL, ontology is a general philosophical model of the world, our conceptual scheme, which makes it possible to gain consistent knowledge of the world. All in all, it is possible to harmonise deduction procedures with more concrete ontologies. However, our objective is to clarify the methods of interaction between FL and TL, whereas TL relates to general human methods of learning about the world. Thus, I will focus on philosophical ontologies that can cast light on the transcendental limitations I formulated above. I will use the ontology suggested by Peter Strawson in his descriptive metaphysics, more precisely, that part of his metaphysics that he applies to the methods of subject-predicate distinction in judgements. Even more precisely, I will focus on the elements of the conceptual scheme that will make it possible to identify the language expressions that serve predominantly as subjects or predicates in a judgement in a natural language. The first complication in applying Strawson’s constructions to transcendental logic lies in that he deals with a natural language, where the problem of subject-predicate distinction is relevant. As the starting point, Kant uses the semi-formalised language of syllogistic, more precisely, those categorical judgements that are free from the problem of identifying subject and predicate expressions. It is solved through separating the connective (“to be”) from the terms of judgement and the strict structure of judgements, in the framework of which the position of the term in the judgement indicates whether it serves as the subject or the predicate. It means that most of Strawson’s ideas about subject-predicate distinction in natural language judgements is inapplicable to our topic relating to the interaction between FL and TL. However, the results of Strawson’s analysis, which consists in identifying ideal subjects of predication — particulars — and classifying universals, are essential for it. Strawson starts his analysis with the classical concept, according to which, in a judgement, particulars serve as the subject and universals as the predicate, which resembles our (TL), if we identify Kant’s concept of accidence with Strawson’s concept of universal. More precisely, if the s-term is understood as a particular, and the a-term as a universal, we obtain a (TL*), which duplicates our (TL). Above I put forward arguments in favour of that, in terms of pure logic, the limitations this rule imposes on deduction are too strict. Strawson does not even consider such strict rule and describes the conventional point of view: “the traditional doctrine we have to investigate is the doctrine that particulars can appear in discourse as subjects only, never as predicates; whereas universals, or non-particulars generally, can appear either as subjects or as predicates” [17, p. 137]. This doctrine resembles our (TL*) — with the exception that the mentioned substantial analytical judgements do not let every universal be the subject of judgement. (TL*) relates only to such s-terms, whose extent is a set of objects brought within the category of substance. Our task is to determine how Strawson’s concept can help us clarify our transcendental limitation and attach a new ontological meaning to it. To this end, we must analyse the relation between the s-term (substance), particular, a-term (accident), and universal concepts.

Strawson conducts a systematic analysis of the methods of subject-predicate distinction in the sentences of a natural language, aiming to study the special position of particulars among objects of reference: “among things that can be referred to, i.e. among things in general, particulars have traditionally been held to occupy a special position. It is the doctrine of the special position of particulars

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3 With the limitation that particulars are denoted by singular terms.
among objects of reference, that we have now to investigate” [17, p. 137]. The answer to the question as to what can serve as the subject of a sentence, entails significant complications. Of course, one is tempted to say that particulars always serve as the subject and universals as the predicate, but such answer gives rise to certain difficulties. Thus, Strawson carefully states, “for the moment we are simply to note the existence of a tradition according to which there is an asymmetry between particulars and universals in respect of their relations to the subject-predicate distinction” [17, p. 138]. Unlike Kant, Strawson does not attempt to move from logic to metaphysics; true to his views on the conceptual system, he tries to study the usual concept built in our methods of using a natural language. Nevertheless, Strawson, not unlike Kant, relies on logic when it is necessary: “If current logic has the significance which we are inclined to attach to it, and which our contemporary style of philosophizing in particular assumes, then it must reflect fundamental features of our thought about the world. And at the core of logic lie the structures here in question, the ‘basic combination’ (as Quine once called it) of predication” [16, p. 13]. In this fragment, Strawson follows Kant’s line of reasoning, when trying to base his ideas about the structure of the world on taking into account the features of logical languages, more precisely, on his more modern fundamental scheme of “functor — argument”, where the argument stands for subject and the functor for the predicate. Here Strawson addresses Frege, who distinguishes between proper names and predicate concepts: “a proper name can never be a predicative expression, though it can be part of one” [6, c. 259]. Strawson tries to distinguish between subject and predicate expression according to the role of these linguistic structures in judgements. He brings this distinction down to the difference in the style of object introduction: “the distinction we have arrived at is a distinction between styles of introduction of terms. It says nothing of any distinction between types or categories of terms, between kinds of object” [17, p. 154]. In this context, Strawson refers to “that characterization of the subject-predicate distinction which finds, first, a likeness between subject-expression and predicate-expression in that both introduce terms and, second, the essential difference in the fact that the predicate-expression, but not the subject-expression, carries the symbolism which, in the primary case, differentiates a proposition from a mere list of terms” [17, p. 162]. Strawson calls it substantive and assertive (or propositional) styles of introduction of objects, stressing that the former is characteristic of subject-expressions, whereas the latter to predicate-expressions (see [17, p. 166]). Such purely grammatical criterion requires, according to Strawson, an additional categorical criterion, which relates to the type of introduced objects. When discussing the categorical criterion of subject- and predicate-term distinction, the philosopher comes to the following conclusion “we can build up a sense of ‘to predicate’ for which it is true that universals can both be simply predicated and have things predicated of them (i.e. be subjects), whereas particulars can never be simply predicated, though they can have things predicated of them (i.e. be subjects) and can be parts of what is predicated” [17, p. 167]. Strawson shows that this criterion also underlies Frege’s distinction, as well as the ideas of other authors, and subtly analysed the existing criteria of subject-predicate distinction and formulated his own criteria — the “grammatic” and “categorical” ones — which made it possible to take into account the essence of earlier attempts at studying this problem. However, up until now, Strawson’s concept can be characterised as an improvement to the traditional perspective in view of the achievements of analytical philosophy and assiduous attention to the ways the expressions are used.
in everyday speech in the light of the achievements of modern logic. Something new emerges, when a philosopher turns to the question as to when the identifying designation of a particular takes place. When answering this question, Strawson comes up with the idea, according to which, “particular-introducing expressions carry a presupposition of empirical fact” [17, p. 243]. This idea helps formulate the final criterion for subject-predicate distinction, which is harmonized with both grammatical and categorical criteria. Strawson proposes “a new, or mediating, criterion for the subject-predicate distinction. A subject-expression is one which, in a sense, presents a fact in its own right and is to that extent complete. A predicate-expression is one which in no sense presents a fact in its own right and is to that extent incomplete” [17, p.187].

Unlike Kant, Strawson never mentions substance in Individuals, which points to the specific nature of descriptive metaphysics that formulates a conceptual scheme of the analysis of the world built in our language. Concrete objects (particulars) and empirical facts (presuppositions) form the basis of Strawson’s reasoning. However, in order to identify the relations of the presented in Individuals concept to the concept of substance, a philosopher would have to deal with more traditional views excluding metaphysical — in terms of revising metaphysics — assumptions. In a later publication dedicated to Kant’s perspective on substance, he links the problem of subject-predicate distinction to the category of substance. In order to identify the ability of terms occupy the position of a subject or a predicate in a judgement, Kant’s concept focuses on the relation between the categories of substance and accident. It is it that underlies a thorough analysis of Kant’s category of substance carried out by Strawson. He maintains that, at first sight, Kant’s concept of substance resembles that of Aristotle and Quine. Substances are primary entities, whose concepts can be subjects of judgement or which can be objects of reference [15, p. 271]. When speaking of the concept of substance, Strawson uses the word ‘irreducibly’, i.e. he understands substance as an entity that cannot be reduced to other entities. The philosopher starts his analysis with Kant’s answer to the question of formal, or logical criterion of substance: “The formal criterion of substance is: that which can exist (or be thought) (only) as subject, never as (mere) predicate (or determination) of something else (or other things) (see [B 149, 186, 288])” [15, p. 268—269]. However, it does not mean that only particulars can serve as the subject in judgements. This problem was addressed as early as by Aristotle, who describes primary substances as a paradigmatic subject and extends the scope of possible subjects of judgement. Aristotle identifies unconditional subjects: “Substance, in the truest and primary and most definite sense of the word, is that which is neither predicable of a subject nor present in a subject; for instance, the individual man or horse” [7]. Below, in order to emphasise the substantial aspect of the category of “substance”, Aristotle adds: “thus everything except primary substances is either predicated of primary substances, or is present in them, and if these last did not exist, it would be impossible for anything else to exist” [7]. It is worth noting that, for Aristotle, it is a metaphysical rather than logical and grammatical consideration. As to logic and grammar, he is inclined to extend the scope of possible subject of judgements to secondary substances — species and genera: “but of secondary substances, the species is predicated of the individual, the genus both of the species and of the individual” [7]. Thus, according to Aristotle, substances can be subjects of judgements, whereas that contained in them cannot. Aristotle identifies as special objects of thought that “are present in a subject, but are never predicatable of a subject” and draws an example: “certain point of grammatical
knowledge is present in the mind, but is not predicatable of any subject; or again, a certain whiteness may be present in the body (for colour requires a material basis), yet it is never predicatable of anything” [7]. Here we encounter distinction between the types of predication. That which can be predicated and can have things predicated of it is a secondary substance; that which can be predicated, but cannot have things predicated of it is “present in the subject”. If we add to the above a primary substance, which can have things predicated of it but which cannot be predicated, we obtain a full list of types of existence in relation to the problem of predication.

This tradition of Aristotle is developed by Strawson in *Individuals*, although he does not mention the distinctions drawn by Aristotle. Strawson’s particulars often closely correspond to Aristotle’s first substances. Now we have to understand what corresponds to secondary substances and that, which is “present in the subject” in Strawson’s vision of the problem. Most natural candidates are universals. Strawson distinguishes between three classes of universals: sortal, characterising, and feature ones. We will not discuss the latter class yet; however, the former two closely correspond to Aristotle’s concept of secondary substance and that, which is “present in the subject”. Strawson approaches the problem with a distinction between “the sortal, or instansial, tie and the characterizing tie” [17, p. 167]. On this basis, he distinguishes between sortal and characterizing universals. “Man” will be a sortal universal, whereas “white” a characterizing one. With certain reservations, Strawson accepts the following assumption: “certain common nouns for particulars introduce sortal universals, while verbs and adjectives applicable to particulars introduce characterizing universals” [17, p. 167]. The distinction between sortal and characterizing universals stems in terms of predication from their different relation to particulars:

A sortal universal supplies a principle for distinguishing and counting individual particulars which it collects. It presupposes no antecedent principle, or method, of individuating the particulars it collects. Characterizing universals, on the other hand, whilst they supply principles of grouping, even of counting, particulars, supply such principles only for particulars already distinguished, or distinguishable, in accordance with some antecedent principle or method [17, p. 168].

Thus, the function of a sortal universal in a judgment is similar to that of particulars (i.e. it relates to the principles of particular identification), whereas a characterizing universal does not identify particulars, but relates to those already identified otherwise.

Another improvement to our metarule relates to Strawson’s concept of a particular. The “empirical intuition in experience”, which Kant mentions in the excerpt from the *Critique of Pure Reason* reminds us of Strawson’s concept of basic particulars, to which all other particulars that might not have a spatial—temporal status can be reduced to. To an extent, Kant anticipates Strawson’s solution to the problem — a particular as a paradigm for the logical subject, and the expression for the identifying designation of particulars as a paradigm for the expression of the logical subject in the language. Kant’s “empirical intuition in experience” almost coincides with that, which Strawson calls “identifiability of basic particulars”. Hence, Kant’s condition points to that a concept can be considered in a judgement only as the subject, if there is a method of identifying a certain object of this concept as a basic particular.

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4 For the argumentation in favour of that Strawson’s concept requires the consideration of only two types of universals — sortal and characterising ones — see in [13].
Thus, according to Strawson, the conceptual scheme is based on the distinction between the following objects: particulars, sortal universals, and characterizing universals. These considerations help give a new interpretation of our transcendental limitation, strengthening its link to ontology.

(TL*): In a categorical judgement, a particular can serve as the subject, and cannot serve as the predicate, sortal universals\(^5\) can serve as both the subject and the predicate, whereas characterizing universals always serve as the predicate and cannot serve as the subject.

In effect, the (TL*) is a more precise version of our (TL*) formulated in view of Strawson’s ontology of particulars and universals. Its significance lies in that it replaces the rather artificial concept of “substantial analytic judgement” from (TL*) with ontological distinction, which helps us introduce into the deduction procedure such negative heuristics, which would have a clear ontological basis.

However, Strawson did not keep to this principle and insisted on that characterizing universals can also serve as subjects of judgements:

> “to allow that universals may be predicated of universals, we have to show that there are non-relational ties between universals and universals analogous to the characterizing or sortal ties between universals and particulars. And, of course, it is easy to find such analogies. Is not thinking of different species as species of one genus analogous to thinking of different particulars as specimens of one species? Again, the tie between different musical compositions, themselves non-particulars (types), and their common form, say, the sonata or the symphony, is analogous to the sortal tie between a particular and a universal. Or again, thinking of different hues or colours as bright or sombre, thinking of different human qualities as amiable or unamiable, is analogous to thinking of different particulars as characterized in such-and-such ways. In all these cases we think of universals collecting other universals in ways analogous to the ways in which universals collect those particulars which are instances of them or are characterized by them” [17, p. 171].

It brings him to the following conclusion:

In this way, by taking as the fundamental case of y being predicated of x, the case in which x (a particular) is asserted either to be an instance of, or to be characterized by, y (a universal), and by proceeding thence to develop other cases by analogy or extension, we can build up a sense of ‘to predicate’ for which it is true that universals can both be simply predicated and have things predicated of them (i.e. be subjects), whereas particulars can never be simply predicated, though they can have things predicated of them (i.e. be subjects) and can be parts of what is predicated [17, p. 172].

However, Strawson set out to elucidate the unique role of particulars in our conceptual scheme. Moreover, he deals with the natural language. I aspire to apply transcendental limitations to organise the procedure of deduction within standardised fragments of a natural language (syllogistic) or formalised languages. Thus, one has to find out to what other conclusions Strawson’s position lead, for example, in syllogistic. What is the effect of that that characterizing uni-

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\(^5\) However, there are limitations to sortal universals. So, categories, since they are universal predicates, cannot serve as the subject of a judgement, although they can be sortal universals as, for example, category of substance itself. However, there are certain problems. For example, in connection with such concepts as category, literature on ontological analysis and computer science introduces the concept of dispersive universals, which do not relate to particulars directly, at least, do not have the properties of identifying particulars (see [9]).
versals can be subjects of judgements? Let us consider the judgement “All people are kind”. Here, “kind” is a characterizing universal. If we reverse it, we obtain “some of the kind are people”. The question is what this universal represents as the subject of a judgement. If, in the initial judgement, “kind” is a property of a human being, the conclusion deals not with a property, but with a set of beings that have a property of “being kind”; a more accurate phrasing of this judgement is “some kind beings are people”. Thus, we cannot just use a characterizing universal as the object of a judgement; we consider it as a characteristic (“kind”) of certain sortal universal (“being”). This simple example shows that, in the course of making inferences, within which the subject and predicate terms are reversed, one has to focus on the interpretation of the characterizing universal. Whereas the initial judgement does not require further analysis of how we understand the predicate “kind” — as a property (intentional) or as a set of kind beings (extensional), the reversion makes us accept the extensional interpretation. It is not surprising, since the subject falls into the field of quantification by objects comprising the extent of the concept (“all” or “some”), which makes us accept its extensional interpretation. If we accept the intentional interpretation as a property, the characterizing universal cannot serve as the subject, since, in this case, the abstract notion of “kindness” must be introduced, whereas the initial universal become an element of the extent of the abstract notion of “kindness”. (TL*) suggests a fundamental asymmetry of sortal and characterizing universals: judgements containing sortal universals are easily reversed, whereas those with characterizing ones are not. The reasons behind it are described in Strawson’s works. As mentioned above, a sortal universal contains the principle for identifying particulars, whereas a characterizing one does not; the latter are applied to already identified particulars, their application to new ones requires additional efforts aimed at identifying those particulars and proving that they have a property corresponding to the characterizing universal (see [17, p. 172]).

Another argument in favour of Strawson’s idea, according to which characterizing universals can serve as the subject, consists in that he identifies the property of “being wise” with the abstract notion of “wisdom”. In his article entitled Concepts and Properties or Predication and Copulation Strawson lists sentences, in which, as he claims, the concept of “wisdom” and the property of “being wise” are used interchangeably [14, p. 89]. However, it poses two problems. First of all, in the examples drawn by Strawson, both the concept and the property serve as the predicate. He does not analyse whether they are equipotent when used as subjects. The latter is more significant. The concept of “wisdom” and the property of “being wise” are certainly interconnected. The problem is how they are interconnected. The concept of “wisdom” is abstract, it means that the extent of this concept is the property of “being wise”, hence, the use of the concept of “wisdom” take us to the next level of object hierarchy — the level of abstract objects. The meaning of the abstract term “wisdom” is an abstract object, thus the possibility of quantification of this term as a subject suggests the acceptance of abstract objects and independent substances within our ontology. However, in Kant’s ontology, the concepts that serve as subjects must be interpreted with the help of schemes reflecting the sensible conditions of the application to the objects of possible experience, which means that they cannot be abstract. Therefore, characterizing universals can serve — in view of Kant’s ontology — as the predicate of a judgement, but cannot serves as the subject, which is stated by our metarule (TL*).

6 Aristotle calls it “present in a subject”.

14 Kant’s theoretical philosophy
Bibliography


About author

Prof. Vladimir Bryushinkin, Head of the Department of Philosophy, Immanuel Kant Baltic Federal University, e-mail: vbruireshinkin@kantiana.ru