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The Ontological Foundations of Event Semantics

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Topical value of the research

A noticeable tendency in the contemporary logical semantics is active usage and investigation of approaches focused on such categories as 'event', 'situation', 'process', 'state'. Below, they will be called 'dynamic categories', because the content of these notions is connected with dynamics (events and processes happen, situations may emerge and disappear, states may interchange). Logico-semantic conceptions based on these categories may be called 'event semantics' in the broad sense, although in some contexts this expression is used narrower (primarily for Davidsonian semantics, which will be addressed in details below). The mentioned tendency is brought about by a number of factors:

Firstly, many researchers believe that these categories are indispensable in formal semantics for natural languages. As a rationale for this position, it's stated that they allow to solve problems which pose difficulties for standard logical semantics. For instance, it's considered that Davidsonian event semantics allows to resolve the problem with formal representation of logical entailment between natural language sentences subjected to adverbial modification.

Secondly, these categories are solicited also in order to solve internal problems of logical semantics. An example is the problem of 'logical omniscience', characteristic to standard possible worlds semantics for modal logic. One of the approaches for dissolving of this problem is to use situation semantics.

Thirdly, such semantic theories may be popular due to relevant ontological conceptions (such as various versions of ontology of events, situation ontology, processual ontology, 'four-dimensional ontology'), which are widespread and actively discussed in the modern philosophy.

Fourthly, some researchers suggest usage of dynamic categories as a remedy for alleged fundamental conceptual shortages of post-Fregean logical semantics,

which, as they believe, is not suitable to deal with dynamic, temporal aspects of thought.

Investigation of the ontological foundations of these semantic approaches is of ultimate importance for clarification of their specificity and evaluation of their perspectives. As shown below, this topic is insufficiently investigated in the previous literature.

Extent of prior research of the topic

One usually connects the emergence of modern symbolic logic with development of technical means for logical analysis by integration of logic with mathematical theories and methods. The benefit of it is understood as possibility to approach more accurately and systematically the traditional logical problems, as well as to pose and to solve a number of new ones. However, the specificity of the conceptions proposed by the founders of symbolic logic is not limited to the technical means. Moreover, it's beyond their position in such particular domains as philosophy of mathematics and philosophy of language. The logico-semantic theories of G. Boole, G. Frege, B. Russell, J. Łukasiewicz represent in a certain way their ontological and epistemological creed, but this relation is not investigated enough yet.

According to a number of salient claims in the modern logico-philosophical literature, some problems posed in that period and remaining actual today are artefacts of the philosophical presuppositions of the logico-semantic theories emerged due to ignoring of dynamic aspects of reality and thinking. The possibility to resolve or dissolve these problems is often associated with development of logico-semantic conceptions based on the dynamic categories.

Some of the founders of symbolic logic also ascribe a fundamental role in logical semantics to the category 'event'. An illustrative example is the position of Boole who suggests to interpret some elements of his symbolic system with equal

propriety as representation of propositions and representation of events. For investigation of pure logic problems he employs symbols (x, y, \dots) to represent elementary propositions, while in the theory of probabilities he denotes with them simple events, supposing these interpretations to be equivalent ¹.

However, such influential person as Frege seems to hold the opposite intentions. The universe of his logical semantics is inhabited by objects and concepts, but not events. He criticises the logical semantics of Boole for temporalisation (treatment of implicative propositions as assertions of subordination of time instants classes), which, as he claims, is completely irrelevant ². The topic of logic for him are *thoughts*; they're not created but revealed by a human; they're not ephemeral, as events of the physical world, but non-temporal ³.

In connection with this, one can find in the modern literature utterances that Fregean atemporal and eventless logical semantics, which has become one of the main technical means for theoretical work, exerts distorting influence upon scientific and philosophical thinking. Such evaluation can be found, for example, in B. Smith. He believes that the position of the Jena logician is conditioned by his stance to work with non-temporal mathematical objects. According to Smith, this tendency leads the followers of Frege (R. Carnap and many other philosophers of XX–XXI centuries) to a totally corrupted ontology: all dynamics is gone from it and replaced with the description in terms of static worlds ⁴. Smith suggests to turn to the Aristotle's ontology as a remedy and use it, enriched by the category of 'occurrents' (events, actions), as basis for logical semantics.

¹ Boole, G. *An Investigation of the Laws of Thought*. Project Gutenberg, 2017. P. 129–130.

² Frege, G. On the Purpose of the Begriffsschrift. Tr. V. H. Dudman. In: *Australasian Journal of Philosophy*. 1968. Vol. 46. Iss. 2. P. 91.

³ Frege, G. The Thought: A Logical Inquiry. Tr. A. M. and M. Quinton. In: *Mind*. New Series. 1956. Vol. 65. No. 259. P. 308.

⁴ See: Smith, B. Against Fantology. In: *Experience and Analysis*. Vienna, 2005. P. 153–170.

One more source of criticism towards Fregean and post-Fregean logical semantics is the works of J. Barwise and J. Perry devoted to situation semantics. As stated by them, Frege's bicomponent semantics is designed to dissolve the difficulties connected to the idea that linguistic expressions refer immediately to outer-world objects (explanation of differences between expressions referring variously to the same object, as well as existence of expressions with no referent). According to Barwise and Perry, Frege himself hasn't proposed a full-fledged theory of sense but it was developed by his followers using the conceptual apparatus of possible worlds. This resulted in emergence of the tradition of possible worlds semantics (R. Carnap, J. Hintikka, D. Kaplan, S. Kripke, R. Montague). Barwise and Perry acknowledge their achievements but nevertheless believe that the foundations of this tradition are not completely correct. It's revealed in some persisting problems like the effect of 'logical omniscience' or lack of adequate methods to analyse sentences about propositional attitudes (according to Barwise and Perry, such methods aren't developed yet in this tradition despite of the close attention to this problem since the time of Frege). Barwise and Perry suppose that it's possible to really solve these problems using situation semantics suggested by them. They consider it to be a realisation of the postulate, rejected by Frege, that linguistic expressions refers immediately to objects in outer-linguistic reality. As they say, the basis of this semantics is a theory of situations developed by them – a theory for 'classifying events'⁵. It's mentioned that this semantics is close to B. Russell's and J. Austin's ideas which one may to some extent regard as an alternative to standard post-Fregean semantics.

An important question, answered differently by representatives of the two alternative lines described above, is the question about reference of sentences.

⁵ Barwise, J., and J. Perry. *Situations and Attitudes*. Cambridge (Mass.), 1998. P. 5.

This problem, a topic of disagreement amongst the founders of symbolic logic, is still being discussed today ⁶.

As commonly known, it's a postulate of Fregean bicomponent semantics that the referent of a sentence in a direct context is its truth value considered to be an object of a special kind (more exactly, one of the two objects – Truth or Falsehood). Frege discerns also another one component of a sentence semantics, i. e. sense, defining it as the thought expressed in that sentence. In indirect contexts, according to Frege, the sense of a sentence takes place of its referent. As was already said, bicomponent semantics seems to be a good way to solve some semantic problems. There are attempts to develop the theory of sense (intension) in more detailed and systematic way within the post-Fregean tradition ⁷.

⁶ Amongst the recent works in Russian on this topic one can mention the following: Shramko, Ya. V. Istina i lozh': chto takoe istinnostnye znacheniya i dlya chego oni nuzhny [Truth and falsehood: what truth values are and for what they are needed]. In: *Logos*. 2009. No. 2 (70). P. 96–121. Gorbatov, V. V. Iz chego 'sdelany' istinnostnye znacheniya? [Of what truth values are 'made out'?] In: *Epistemology and Philosophy of Science*. 2010. Vol. XXV. No. 3. P. 82–94. Kusliy, P. S. Yavlyaetsya li istina denotatom predlozheniya? [Is Truth a Denotation of a Sentence?]. In: *Epistemology and Philosophy of Science*. 2010. Vol. XXIII. No. 1. P. 67–83. Mikirtumov, I. B. Aspekty znacheniya i 'prashha' De'vidsona [Aspects of meaning and the Davidson's 'slingshot']. In: *Logicheskaya semantika: perspektivy dlya filosofii yazyka i e'pistemologii. Sbornik nauchnyx statej, posvyashhennyx yubileyu E. D. Smirnovoj* [Logical semantics: perspectives for logic and epistemology. A collection of research papers dedicated to the jubilee of E. D. Smirnova]. Moscow, 2011. P. 126–143. Vasyukov, V. L. *Situacii, sobytiya, fakty: formal'naya fenomenologiya situacij* [Situations, events, facts: formal phenomenology of situations]. Moscow, 2019.

⁷ See: Carnap, R. *Meaning and Necessity*. Chicago, 1947. Church, A. A Formulation of the Logic of Sense and Denotation. In: *Structure, Method and Meaning*. N. Y., 1951. P. 3–24. See also a description of intensional logic in: Mikirtumov, I. B. *Bikomponentnaya semantika i intensional'naya logika (problemy logiki smysla i denotata)* [Bicomponent semantics and intensional logic (the problems in logic of sense and denotation)]. A dissertation ... of candidate of sciences in philosophy. Saint-Petersburg, 1996. (In Russian.)

Some philosophers feel sceptical about the notion of sense in semantics considering it to be unclear and superfluous⁸. Hence, there are attempts to build purely extensional semantics. However, these attempts often remain within the framework formed by the thought of Frege: for instance, truth values still can be taken as denotations of sentences. One may suppose that such systems keep principles introduced by Frege. Possibly, they are even enhanced being implicit.

The projects of logical semantics featuring not truth values but situations as denotations of sentences can be regarded as a radical alternative both to standard intensional and standard extensional post-Fregean approaches. One can qualify non-Fregean logic and situation semantics as such projects.

The term 'non-Fregean logic' is being used primarily with reference to works of R. Suszko of the late 1960s and 1970s⁹. As other representatives of this strand, one may mention S. L. Bloom, R. Wójcicki, D. Martens, P. Aczel, P. Łukowski¹⁰. In a wider perspective, some authors see prerequisites for emergence of non-Fregean logic in the logico-philosophical literature from the 1920s to the 1950s (particularly, in J. Łukasiewicz, despite the fact that Suszko counterpose his theory to three-valued logic of Łukasiewicz) and trace development of this line in the 1990s – 2000s (e. g., in two-level semantics of V. A. Smirnov) and by contemporary researchers (V. L. Vasyukov, I. N. Griftsova, A. Grzegorzczuk, J. Golińska-Pilarek, T. Huuskonen, S. Lewitzka, etc.).

⁸ E. g., see: Quine, W. V. Quantifiers and Propositional Attitudes. In: *The Journal of Philosophy*. 1956. Vol. 53. No. 5. P. 177–187.

⁹ To mention some of these works: Suszko, R. Ontology in the "Tractatus" of L. Wittgenstein. In: *Notre Dame Journal of Formal Logic*. 1968. Vol. IX. No. 1. P. 7–33. Suszko, R. Identity Connective and Modality. In: *Studia Logica*. 1971. Vol. 27. P. 7–39. Suszko, R. The Fregean Axiom and Polish Mathematical Logic in the 1920s. In: *Studia Logica*. 1977. 36 (4). P. 377–380.

¹⁰ For review, see: Vasyukov, V. L. Op. cit.

The ideas of Suszko are addressed in more details in the present dissertation. It's important to notice that they substantially depend on distinguishing of the logical and the ontological aspects of formalised systems. Suszko does not reject to regard truth values as logical values of sentences and holds the principle of bivalence with respect to them. However, in the ontological aspect he takes the Fregean bivalence as an unacceptable thesis that only two situations exist. Hence, strictly speaking, that is namely ontology what is 'non-Fregean' in Suszko.

The term 'situation semantics' in the narrow sense refers to the projects of Barwise and Perry, as well as to works of the researchers rather closely adjoining to it, among which one may mention A. Kratzer. The motivation for this project is to some extent addressed above. One may say that the program of situation semantics is shaped by onto-epistemological preferences of its authors, along with their aim to solve a number of concrete problems. Some of these problems are rather general (for instance, the problem of 'logical omniscience' and puzzles in semantics of propositional attitudes), while other relate to particular phenomena of natural languages and ordinary communication (such as semantics of the 'naked infinitive' sentences in English). A very attractive feature of this project is the aspiration to put solutions of concrete riddles into a fundamental onto-epistemological framework. However, in the literature one can encounter with opinion that the general theoretical speculation prevail in the works of Barwise and Perry, while the details of solutions for concrete problems are insufficiently addressed there ¹¹.

Barwise and Perry counterpose their situation semantics to standard possible worlds semantics. However, there are also conceptions without this

¹¹ See: Moiseeva, A. Yu. Situacionnaya semantika A. Kratcer: fakty i vidy sledovaniya [A. Kratzer's situation semantics: facts and kind of consequences]. In: *Philosophy of Sciences*. 2019. No. 4 (83). P. 147–167. (In Russian.)

contraposition, in which situations are treated as ‘partial’ possible worlds¹². Apparently, one should qualify them as situation semantics taken broadly, although this leads to undesirable ambiguity. Various theoretical contexts presuppose different understandings of both situations and possible worlds. Some (maybe all) of these treatments are connected to certain ontological assumptions and problems.

In my view, the most significant ontological (as well as semantical) issue for justification of situation semantics is individuation of situations. Considering it impossible becomes an argument for the Fregean theory that the referent of any true sentence is one and the same entity (which one may regard as a truth value), and similarly for the false sentences. Reasonings of this direction are being called, at the instigation of Barwise and Perry, ‘slingshot arguments’. In various sources, G. Frege, A. Church, K. Gödel, W. V. Quine, D. Davidson are named as authors of ‘slingshot arguments’¹³.

One may consider the theory of exemplification of sentences by situations suggested by Kratzer as an attempt to solve the problem of individuation of situations. The present dissertation addresses the question whether the criteria of this theory allow to get rid of the ontological issues of situation semantics.

Another important group of semantic theories endowing basic status to dynamic categories is Davidsonian event semantics. In the present work, the term ‘Davidsonian event semantics’ is used to denote a family of semantic approaches which central idea may be formulated as following:

¹² See: Bach, E. *Informal Lectures on Formal Semantics*. Albany (N. Y.), 1989.

¹³ See: Neale, S. The Philosophical Significance of Gödel’s Slingshot In: *Mind*. 1995. Vol. 104. No. 416. P. 761–825. Perry, J. Evading the Slingshot, In: *Philosophy and Cognitive Science: Categories, Consciousness, and Reasoning*. Dordrecht, 1996. P. 95–114.

in a broad class of natural language sentences, verb predicates have an implicit argument, which is an existentially quantified variable ranging over the set of events, the latter should be understood as logical individuals.

Thus, the term 'Davidsonian event semantics' embrace here the approach proposed by D. Davidson in the late 1960s, as well as its later expansions and modifications, such as 'neo-Davidsonian semantics' of T. Parsons, 'semi-Davidsonian semantics' of A. Kratzer, 'post-Davidsonian semantics' of G. Ramchand ¹⁴.

In the contemporary literature these approaches are often being called simply 'event semantics'. In such way this phrase is widely used already for several decades in English texts including dissertations ¹⁵ and overviews ¹⁶. In the Russian literature the term 'семантика событий' (or sometimes 'семантика события') is actively used this way since the 2010s ¹⁷.

¹⁴ See: Davidson, D. The Logical Form of Action Sentences. In: *The Logic of Decision and Action*. Pittsburgh, 1967. P. 81–95. Parsons, T. *Events in the Semantics of English: A Study in Subatomic Semantics*. Cambridge (Mass.), London, 1990. Kratzer, A. Severing the External Argument from the Verb. In: *Phrase structure and the Lexicon*. Dordrecht, 1996. P. 109–137. Ramchand, G. C. *Verb Meaning and the Lexicon: A First Phase Syntax*. Cambridge, 2008.

¹⁵ E. g.: Piñon, Ch. J. *An Ontology for Event Semantics. Dissertation... for the degree of doctor of philosophy*. Stanford, 1995.

¹⁶ E. g.: Maienborn, C. Event Semantics. In: *Semantics: An International Handbook of Natural Language Meaning. Vol. 1*. Berlin, Boston, 2011. P. 802–829.

¹⁷ See: Tatevosov, S. G. Semantika sobytiya kak e'mpiricheskaya problema [Event semantics as an empirical problem]. In: *Filosofiya yazyka i formal'naya semantika* [Philosophy of language and formal semantics]. Moscow, 2013. P. 9–42. Tatevosov, S. G. *Akcional'nost' v leksike i grammatike. Glagol i struktura sobytiya* [Actionality in lexicon and grammar. Verb and event structure]. Moscow, 2015. Vasyukov, V. L. and E. G. Dragalina-Chernaya, V. V. Dolgorukov. *Logica Ludicra: aspekty teoretiko-igrovoj semantiki i pragmatiki* [*Logica Ludicra: aspects of game-theoretic semantics and pragmatics*]. Saint-Petersburg, 2014. Kusliy, P. S. Kvantory i ontologiya estestvennogo yazyka [Quantifiers and the ontology of natural language]. In: *The Philosophy Journal*. 2016. Vol. 9. No. 1. P. 25–41. Vostrikova, E. V. and P. S.

One should take into account that the phrase ‘event semantics’ is used also in other contexts and meanings. It can refer to various model structures with ‘events’ as semantic units ¹⁸, however their authors sometimes are critical about the approaches inspired by Davidson.

Taken broader, event semantics may be considered to include also some other strands, for instance situation semantics. The relation between categories ‘event’ and ‘situation’ is not quite clear. For instance, Kratzer since certain period treats events as ‘minimal situations’, supposing that to discern ‘event’ as a distinct category is superfluous, but there are also other views.

At last, one can encounter the phrase ‘event semantics’ in the works of rather distant subject fields that are devoted, for instance, to analysis of video data ¹⁹ or interaction between verbal and non-verbal thinking ²⁰. All this suggests that it’s better to use a more accurate term for approaches more or less closely following Davidson.

Kusliy. *Logiko-filosofskij analiz yazyka: sovremennyj vzglyad* [Logico-philosophical analysis of language: a contemporary view]. Moscow, 2017. Chernyak, A. Z. Semantika sobytiya i diskurs [Event semantic and discourse]. In: *Voprosy filosofii* [Problems of Philosophy]. 2017. No 2. P. 83–93. (All these works are in Russian.)

¹⁸ E. g., see: Kamp, H. Events, Instantants and Temporal Reference. In: *Semantics from Different Points of View*. Berlin, 1979. P. 376–417. van Benthem, J. *The Logic of Time*. Dordrecht, 1983. Smirnov, V. A. Utverzhdenie i predikaciya. Kombinirovannye ischisleniya vyskazyvanij i sobytij [Assertion and predication. Combined calculi of propositions and events]. In: *Sintaksicheskie i semanticheskie issledovaniya ne'kstensional'nyx logik* [Syntactic and semantic research in non-extensional logic]. Moscow, 1989. P. 27–35. (In Russian.) Landman, F. *Structures for Semantics*. Dordrecht, 1991. van Lambalgen, M., and F. Hamm. *The Proper Treatment of Events*. Malden (Mass.), 2005.

¹⁹ Salev, K., and T. Tomii, H. Arisawa. Extracting Event Semantics from Video Data Based on Real World Database. In: *Advances in Database Technologies*. Berlin, Heidelberg, 1999. P. 554–567.

²⁰ Ivanova, A. A., and Z. Mineroff, V Zimmerer, N. Kanwisher, R. Varley, E. Fedorenko. The Language Network is Recruited but not Required for Nonverbal Event Semantics. In: *Neurobiology of Language*. 2021. 2 (2). P. 176–201.

It's important to notice that Davidsonian event semantics (hereinafter: DSS) had emerged in philosophical literature but then expanded beyond it and nowadays is being actively used in other spheres, among which one can mention the following:

- theoretical linguistics, including such fields as aspectology, lexical semantics, semantic decomposition ²¹;
- analysing of results of experimental research in cognitive science and psycholinguistics ²²;
- approaches to computer processing of natural languages ²³;
- research in sphere of artificial intelligence ²⁴.

Nevertheless, there are still a lot of philosophical questions that one should pose regarding DSS. Is usage of it tantamount to acknowledging that events, treated as logical (and ontological) individuals, exist on a par with 'ordinary' individuals (to which, as it's usually said, they happens)? Is this approach compatible with ontological parsimony (or maybe it, undertaken persistently, leads to the most consistent version of such parsimony)? And, above all, what is the content of the notion 'event'?

²¹ E. g.: Borer, H. *Structuring Sense. Vol. II: The Normal Course of Events*. Oxford, 2005. Ramchand, G. C. *Op. cit.* Rappaport Hovav, M. and E. Dorot, I. Sichel. (eds.). *Lexical Semantics, Syntax, and Event Structure*. Oxford, 2010. Croft, W. *Verbs: Aspect and Causal Structure*. Oxford, 2012.

²² E. g.: Pietroski, P. M. Framing Event Variables. In: *Erkenntnis (1975–)*. 2015. Vol. 80. Supplement 1: Inner and Outer Boundaries of Language. P. 31–60.

²³ E. g.: Copestake, A. and D. Flickinger, I. A. Sag, C. Pollard. Minimal Recursion Semantics: An Introduction. In: *Research on Language and Computation*. 2005. 3. P. 281–332. Demberg, V. and A. Sayeed. Incremental Neo-Davidsonian Semantic Construction for TAG. In: *Proceedings of the 11th International Workshop on Tree Adjoining Grammars and Related Formalisms (TAG+11)*. Paris, 2012. P. 64–72.

²⁴ E. g.: Nakamura, M. and S. Nobuoka, A. Shimazu. Towards Translation of Legal Sentences into Logical Forms. In: *JSAI 2007: New Frontiers in Artificial Intelligence*. Heidelberg, 2008. P. 349–362.

It's often considered that one may leave such questions just for philosophers and pay no attention to them when using DSS for solution of concrete problems. This stance is supported by believe that DSS is primarily a 'formal' approach allowing one to reveal implicit elements of natural language syntax (or so called 'syntax-semantics interface'), while ontological aspects are superficial to this structure. The present work shows that this opinion is incorrect.

Statements that (some) natural language sentences can be viewed as assertions about existence of an event were articulated by F. Ramsey²⁵ and H. Reichenbach²⁶, both are mentioned by Davidson in corresponding contexts²⁷. One can hardly characterise this idea as exclusively original; for example, something similar was proposed even earlier by H. Bergson (though he mentioned not 'event' by 'process')²⁸. Moreover, according to T. Parsons, one can find similar views in the ancient Indian Pāṇini's grammar, in Plato and in the Port-Royal grammar²⁹. However, the latter assertion is probably based on excessive generalisation.

The contribution of Davidson consists in applying this general idea to a particular problem formulated a bit earlier by A. Kenny. The latter in a work devoted to philosophy of language and philosophy of action wants to demonstrate dramatical difference between actions and relations (in the logical sense of this word). According to Kenny, any relation can be described with a certain predicate of a

²⁵ Ramsey, F. P. Facts and Propositions. In: *Proceedings of the Aristotelian Society, Supplementary Volumes*. 1927. Vol. 7. P. 156.

²⁶ Reichenbach, H. *Elements of Symbolic Logic*. N. Y., 1947. P. 271.

²⁷ Davidson, D. *Op. cit.* P. 90–91. Davidson, D. *Essays on Actions and Events*. 2nd ed. Oxford, 2001. P. 135.

²⁸ See: Bergson, A. *Creative Evolution*. Tr. A. Mitchell. N. Y., 1998.

²⁹ Parsons, T. *Op. cit.* P. 4.

defined arity, while one and the same action can be described in various details, for instance:

(1) *Brutus killed Caesar in the Curia of Pompey.*

(2) *Brutus killed Caesar.*

The assumption that actions are, from the logical point of view, a subclass of relations – and, thus, can be described in the same formalised way as for other relations – leads to the conclusion that one and the same action corresponds to predicates of various arity. For the examples above it gives the following:

(3) $Killed_in^3(Brutus, Caesar, the_Curia_of_Pompey)$

(4) $Killed_in^2(Brutus, Caesar)$

However, according to Kenny, this formalisation is inadequate to our ordinary intuitions about actions and sentences describing them: we believe that the sentence (1) logically infers the sentence (2), while the formula (3) doesn't infer the formula (4), because they are atomic formulae with different predicates.

The solution proposed by Davidson is to ascribe to the sentences (1) and (2) logical forms (5) and (6) correspondingly:

(5) $\exists(x)[Killed(Brutus, Caesar, x) \wedge In(the_Curia_of_Pompey, x)]$

(6) $\exists(x)[Killed(Brutus, Caesar, x)]$

Thus, according to Davidson, the sentence (1) at the level of logical form consists of two clauses joined by conjunction, as the formula (5) shows. Both clauses contain the same existentially quantified variable. Initially, Davidson regards it as a variable ranging over the set of actions; then he asserts that one may generalise its semantics to the category of events (assuming that actions are a subclass of events). It will be called 'Davidsonian variable' hereinafter. Also, the term 'event variable' is in use in the literature; but, taking into account the information below, one should consider it as more narrow.

The first clause represents the assertion that an event happened, designates the participants of the event (*Brutus, Caesar*) and its type (*kill*). This clause accumulates the contents of the main parts of the original natural language sentence: the type of the event is expressed by the verb, while its participants are designated by the syntactic subject and the direct object³⁰. The second clause introduces a detail – an adjunct of place. The preposition ‘in’ from the original sentence is regarded as a binary predicate, with the event and the place (*the Curia of Pompey*) as its two arguments (thus, it’s an assertion that this event happened in this place). Number of such auxiliary clauses joined with conjunction may vary, as well as the kind of described details.

The sentence (2) bears only a part of the content of the sentence (1). Thus, its counterpart is the logical form (6) – without the second clause. It’s easy to see that there is the desirable inference from the logical form (5) to the logical form (6).

For Davidson, this approach is significant not only locally (as a way to solve the problem posed by Kenny) but also as a part of a wider complex of views towards problems of action, consciousness and causality. In all these contexts, it’s important for the American philosopher to treat an event as a particular – objectively existing concrete object of knowledge which may be introduced ‘under different descriptions’. Talking about various ways to describe an event, Davidson appeal to an approach introduced by E. Anscombe towards problems in philosophy of action³¹.

For some period of time, the Davidsonian approach provoked an average-scale discussion in the literature on philosophy, formal semantics and theoretical

³⁰ The example sentence has a transitive verb pointing to two participants of the event. Intransitive verbs introduce only one participant.

³¹ See: Anscombe, E. *Intention*. 2nd ed. Cambridge (Mass.), 2000.

linguistics³². It was often an object of criticism, some aspects of which are addressed below. However, since the 1980s many researchers strongly believe that Davidson was right at the basic level – but suggest modifications for some particular aspects of his approach. This movement can be called ‘neo-Davidsonian semantics’ in the broad sense (while in the narrow sense this term refers to one of such approaches, proposed by T. Parsons).

A number of important features of neo-Davidsonian semantics worth mentioning. Firstly, after moving to the sphere of interests of linguists, it has become distant from some of the philosophical contexts that were important for Davidson (such as philosophy of action or philosophy of consciousness). However, it has received connection with some other philosophical topics, in particular with problems of semantic typology and mereology for verbal and nominal predicates in natural languages that are being developed at the interface of theoretical linguistics and analytical philosophy of language. Taking as a basis ideas of such authors as Z. Vendler, A. Kenny, A. Mourelatos, E. Bach³³, the researchers that work within the neo-Davidsonian framework modify the categorial apparatus. Now, as a possible value of the Davidsonian variable not only ‘event’ is considered but also ‘process’ or ‘state’. It’s important to notice that this modification brings not only an evident expansion of the semantic nomenclature but also an implicit change in the meaning of the very word ‘event’ compared to its usage by Davidson.

³² E. g., see: Montague, R. On the Nature of Certain Philosophical Entities. In: *The Monist*. 1969. Vol. 53. No. 2. P. 159–194. Fodor, G. Troubles about Actions. In: *Synthese*. 1970. Vol. 21. No. 3/4. P. 298–319. Verkuyl, H. J. *On the Compositional Nature of the Aspects*. Dordrecht, 1972.

³³ See: Vendler, Z. Verbs and Times. In: *The Philosophical Review*. 1957. Vol. 66. No. 2. P. 143–160. Mourelatos, A. P. D. Events, Processes, and States. In: *Linguistics and Philosophy*. 1978. Vol. 2. No. 3. P. 415–434. Bach, E. The Algebra of Events. In: *Linguistics and Philosophy*. 1986. Vol. 9. No. 1. P. 5–16. Kenny, A. *Action, Emotion and Will*. 2nd ed. London; N. Y., 2003.

Secondly, there are some changes to the way of analysis of the logical form of a sentence. Following Parsons, one should discern in such sentence as “Brutus killed Caesar” at least the following semantic components:

- an event e , which is a *killing*;
- the agent of the event e , which is *Brutus*;
- the patient of the event e , which is *Caesar*;
- the culmination of the event e , which is in some time in the past.

Parsons proposes the following basic scheme of analysis:

- The central verb of a sentence corresponds to a unary predicate indicating type of an event (process, state). The argument of this predicate is a Davidsonian variable.
- Other semantic components are introduced with help of individual terms (constants or variables) in separate clauses joined by conjunction. Such a clause has a binary predicate with an individual term as an argument and the Davidsonian variable as another argument. The predicate shows the thematic role of a semantic component – *agent*, *patient*, *culmination* (spectrum and nomenclature of thematic roles vary in different versions of neo-Davidsonian semantics).

Using the approach suggested by Parsons, one can analyse the sentence “Brutus killed Caesar” as following:

$$(7) \quad \exists e \exists t [Killing(e) \wedge Agent(e, Brutus) \wedge Patient(e, Caesar) \\ \wedge Culmination(e, t) \wedge t < t_0],$$

where e is a Davidsonian variable ranging over the set of events,

t is an individual variable ranging over the set of times (one may understand the latter as time instants),

t_0 is an individual constant denoting the current time,

< is a binary predicate constant denoting the relation of temporal preceding.

(The approach of Parsons is presented here in a modified form in order to fit it to the standard for the modern logical literature method of expressing temporal relations using many-sorted first order predicate logic.)

Thirdly, the Davidsonian variable is being used now for explication of semantics not only of verbs and verbal nouns but also of adjectives and non-verbal nouns. An interesting approach is suggested by Kratzer with use of some ideas expressed earlier, particularly in a book of G. Carlson devoted to the phenomenon of reference to kinds in English³⁴. An important part of this book is a philosophical reasoning in spirit of 'four-dimensional ontology', in which individuals are regarded as aggregates of spatio-temporal stages. According to Kratzer, in natural languages some words functions as predicates of the individual level, while some – as predicates of the stage level (i. e., refer correspondingly to individuals or to stages, in terms of Carlson), and this difference can be shown by means of event semantics: lexical items of the first category introduce the event variable as an implicit argument, while items of the second category don't do this. However, as Kratzer points out, such usage of event semantics is more selective compared to some other approaches in the neo-Davidsonian trend, in which a variable representing event (process, state) is associated with all types of natural language predicates³⁵.

It should be stated that the problem of ontological foundations of event semantics is not sufficiently analysed in the literature. It's necessary to make clear the role, which the category 'event' and other dynamic categories play in logico-semantic theories. As shown below, the usage of these categories in formalised approaches leads to introducing of semantic postulates. These postulates may

³⁴ Carlson, G. *Reference to Kinds in English*. London; N. Y., 1980.

³⁵ Kratzer, A. Stage Level and Individual Level Predicates. In: *The Generic Book*. Chicago, 1995. P. 126.

remain implicit, but the capability of that approaches to solve some problems and reach some objectives significantly depends on them. The diversity of views towards ontology of events leads to variability of these postulates, and the differences are not always articulated. To make clear which version of event ontology underpins any given semantic theory is necessary in order to more accurately understand its specificity and to answer the question whether it really allows to solve the logico-philosophical and linguistic problems for solution of which it's designed.

Aim and objectives of the research

The aim of the present research is to analyse ontological foundations of logico-semantic approaches focused on dynamic categories (situation semantics, non-Fregean logic, Davidsonian event semantics).

The objectives of the research:

1. To show what opportunities for constructing logico-semantic systems are available due to contemporary ontological conceptions (various versions of ontology of events and ontology of situations, process ontology, 'four-dimensional ontology').
2. To evaluate how successfully one can solve concrete logico-semantic problems by virtue of these ontological conceptions.
3. To show the difficulties that one faces using categories 'event' and 'situation' in semantics, to describe and evaluate ways for overcoming such difficulties suggested in the literature.
4. To reveal semantic postulates implicitly adopted in the addressed logico-semantic theories due to ontological preferences of their authors.

Theoretico-methodological foundations of the research

An ontology, on which a semantic theory is based upon, in the present work is considered as a system of concepts devised for explanation of functioning of

syntactical categories of a language. For instance, given that in some semantic theory a sort of variables is characterised as 'event variables', the ontology of this semantic theory includes the concept of 'event'.

The terms taken from natural languages (e. g., 'event') shouldn't be loaded with content by an arbitrary choice of the author of a semantic theory. Voluntaristic ascription of sense is allowed only for new linguistic forms, whereas expressions borrowed from natural languages already have an established usage and connections with other elements of the natural language system. It's needed to reveal these links, independently on whether it's possible to enunciate a univocal formulation or only to point at a 'family resemblance'.

Ontological categories aren't just taxonomy ranks. Functioning in a linguistic system, they express metaphysical principles. The latter are understood in the present work as such assertions which are not a product of applying of cognitive procedures but ground the design of such procedures. In this sense, one may say that metaphysical principles are not *a posteriori* but *a priori*.

For instance, the principle of unity of nature lays in the foundation of cognitive procedures directed to revealing of natural laws. As shown by Hume, this principle cannot be a result of such procedures. At the same time, given that this principle isn't postulated initially, these procedures were not only not well-founded but couldn't take place as such (in other words, it's a condition of their possibility). The metaphysical principle of unity of nature is expressed by the ontological category of laws of nature.

Along with logico-philosophical theories and approaches, the present dissertation addresses problems and results of linguistic investigations. Attention is paid also to data and conclusions of recent experimental investigations directed to revealing the 'naive' worldview of early age children, as well as connection of native language features with features of cognitive activity.

Amongst the methodological and technical details of the present work one may point out the following. As basic expressive and analytical means, the standard languages of classical propositional logic and predicate logic are used, as well as the standard set-theoretical semantics (familiarity of a reader with them is presupposed). Elements of non-standard logical systems and languages are introduced when necessary with corresponding comments. One of the features of the present work is that a number of logico-semantic approaches addressed in it can be considered both as a method and an object of the research due to the philosophical reflection on them.

A technical aspect also deserving explanation is that the examples of natural language sentences, serving as illustrations of problems and approaches to logico-philosophical analysis, are provided mainly in English (supplemented with Russian translation in brackets). The reason for this is that examples in English are considered in a major part of the literature discussed in the present work. It's better to use the original material in order to accurately address the considered problems and ideas, because the equivalent Russian translation is not always possible. (For instance, in some cases it's needed to choose between perfective and imperfective verb forms in Russian translation, while in the original English example this aspect is not specified). English is also usually employed for explanation of logical form, because it often allows to save space and evade some purely technical difficulties.

Scientific novelty of the research

1. It's shown that various versions of event semantics contain unexplicated semantic postulates connected with positions in ontology of events. These implicit postulates exert influence on formal aspects of the semantic theories and their capabilities for solving concrete logico-semantic problems.

2. A comparison of capabilities for representation of the ontological category 'event' with different logico-semantic categories (individual terms, first order predicators, propositional operators) is provided. The correlation of these approaches with ontological positions is revealed.
3. An original solution for the 'double vision' problem by means of situation semantics is provided. In connection with this, the epistemic load of the categories 'situation' and 'object' is explicated.
4. A critical analysis of the concept of minimal situation and the theory of exemplification of a sentence by a situation is provided. It's shown that events of Davidsonian semantics shouldn't be treated as minimal situations.
5. A notion of the limit facticity of an event is introduced. It has allowed to clarify the distinction of veridical, non-veridical and anti-veridical sentences. The criteria of the limit facticity of an event are formulated.
6. An authorial approach to explication of the category 'event' is suggested, according to which an event is a change of a diachronic situation. The perspective of using this understanding of events in semantics is outlined.

Theses to be defended

1. The problem of logical entailment between natural language sentences subjected to adverbial modification, the possibility to solve which is claimed as a main substantiation for Davidsonian event semantics, from the formal point of view could be successfully solved in other way. It means that usage of Davidsonian event semantics can't be grounded purely formally. One should admit that the ontological motivation to its usage prevails.
2. Meaning of the term 'event' varies depending on ontological framework in which it's used. Due to this, usage of the term 'event' in a semantic model makes obligatory to explicate its ontological foundations.

3. Ontological assumptions adopted along with some version of event semantics define capabilities of its usage for concrete objectives. Such ontological assumptions serve as implicit semantic postulates. Among them are the postulate of actuality, the postulate of contingency and the postulate of minimality described in the present work. In some cases these implicit postulates conflict with explicitly adopted assumptions; due to this, theoretical problems emerge.

Main contents of the dissertation

In the **introduction**, the topical value of the research is substantiated with consideration to the extent of prior investigations of the topic. The aim, the objectives, the theoretico-methodological foundations and the scientific novelty of the research are described. The theses to be defended are enunciated. The introduction also contains lists of the author's publications and talks devoted to the research topic.

In the **first chapter**, an analysis of the ontological conceptions relevant to the topic (various versions of ontology of events, process ontology, 'four-dimensional ontology') is provided. It's shown how such ontological theories are used for analysis of logical form of natural language sentences and for construction of semantic model structures. A critical look at reductionism, eliminativism and monism in ontology of events is suggested. An authorial conception of event as an ontological category is proposed.

The section **1.1** is devoted to Aristotelianism and Wittgensteinianism, as programs in ontology of events playing a paradigmatic role for modern conceptions in this sphere.

In the subsection **1.1.1**, it's shown that the contemporary logico-philosophical investigations tend to revise the ontological foundation of post-Fregean semantics. According to a number of authors, its standard categorial apparatus isn't adequate

for expressing such aspects of reality as actions, events, temporality. If one tries to represent them by the standard logico-semantic means, it leads to the inadequate 'cinematographic' mode of expressing dynamics, its surrogate³⁶. The overcoming of the 'ontological orthodoxy' is often associated with the turn to Aristotelianism³⁷ or Wittgensteinianism³⁸.

Due to this, the following questions are actual: what conceptual resources allow Aristotelianism and Wittgensteinianism to serve as such programs? are they strict alternatives to each other or have common features?

In the subsection **1.1.2**, a description of the basic distinctions and analogies between Aristotelianism and Wittgensteinianism is provided. The way in which the category 'event' appears in these philosophical programs is demonstrated.

As the starting point for analysis, a work of B. Wolniewicz (who has exerted a significant influence on the development of situation semantics) is addressed³⁹. Supporting a point of view expressed in an authoritative book of M. Black⁴⁰, Wolniewicz counterpose Aristotelianism and Wittgensteinianism to each other as the ontology of substances and the ontology of facts correspondingly. According to

³⁶ E. g., see: Davidson, D. *Inquiries into Truth and Interpretation*. Oxford, 1984. P. 212. Landman, F. *Structures for Semantics*. Dordrecht, 1991. P. 186. Kenny, A. Op. cit. P. 107.

³⁷ E. g., see: Smith, B. Against Fantology. In: *Experience and Analysis*. Vienna, 2005. P. 153–170. Dolgorukov, V. V. and A. O. Kopylova. 'Ontologicheskij kvadrat' i teoretiko-tipovaya semantika [The 'ontological square' and modern type theories]. In: *Logical Investigations*. 2018. Vol. 24. No. 2. P. 36–58. (In Russian.)

³⁸ E. g., see: Suszko, R. Ontology in the "Tractatus" of L. Wittgenstein. In: *Notre Dame Journal of Formal Logic*, 1968. Vol. IX. No. 1. P. 7–33. Vasyukov, V. L. Op. cit. Griftsova, i. N. *Logika kak teoreticheskaya i prakticheskaya disciplina: k voprosu o sootnoshenii formal'noj i neformal'noj logiki* [Logic as a theoretical and practical discipline: towards the question about the relation between formal and informal logic]. Moscow., 1998. (In Russian.)

³⁹ Wolniewicz, B. A Parallelism between Wittgensteinian and Aristotelian Ontologies. In: *Boston Studies in the Philosophy of Science*. Vol. IV. Dordrecht, 1969. P. 208–217.

⁴⁰ Black, M. *A Companion to Wittgenstein's 'Tractatus'*. Ithaca (N. Y.), 1964. P. 27.

him, this distinction is exposed ontologically (in Aristotelianism 'to be = to be a substance', while in Wittgensteinianism 'to be = to be a fact') and semantically (Aristotelian substances are denotations of individual names, while Wittgensteinian facts are denotations of true propositions).

Nevertheless, Wolniewicz supposes that there's a parallelism between the two ontologies, connected with the following asserted analogies between the basic categories ('first substances' in Aristotelianism and 'atomic facts' in Wittgensteinianism):

1. The actual world consists of items of these categories and nothing more (in Aristotelianism it is treated as the totality of substances, in Wittgensteinianism – as the totality of facts).
2. The both categories correspond to the modality of contingency.
3. The both categories are connected with the thesis about 'true' and mutually independent existence of their items.
4. Items of the both categories are particulars.

I state that the first three assertions are heuristically valuable and convincing, however the fourth assertion begs a question because the notion of 'particulars' as such originates from one of the two ontologies, namely from Aristotelianism. Importantly, in Aristotelianism this notion is a part of a certain categorial system and may be adequately understood only in its context.

This system is constituted by two dichotomies: *universals/particulars* and *substances/accidents*. Particulars include concrete entities (substantial particulars) and contingent characteristics of concrete entities (accidental particulars). Universals include generic categories of concrete entities (substantial universals) or their contingent characteristics (accidental universals). Thus, two categories of characteristics of objects are distinguished: substantial universals, regarded as necessary (substantial) characteristics, and accidental particulars, regarded as

contingent characteristics ('what happens' to objects). For an object, only a certain range of accidents is possible, defined by its essence (a substantial universal).

In the framework of Aristotelian ontology, it appears natural to identify the category of events with the category of accidental particulars. Such treatment is declared in some works⁴¹, although in some other Aristotelian theories the category of events is introduced along with the category of accidents⁴².

The Wittgensteinian ontology of facts, expressed in 'Tractatus Logico-Philosophicus', sometimes is regarded as close or identical to the philosophy of B. Russell (for instance, by J. Hintikka). However, there are important differences between them.

Russell uses the terms 'particulars' and 'universal', but other way than in Aristotelian ontology. By 'particulars' he means a kind of logical atoms (cognitive elements which are the final points of logical analysis), suggesting as examples momentary 'patches' of colour or sound⁴³. By 'universals' he means another kind of logical atoms – properties and relations. Russell treats logical atoms dually: as elements of cognitive activity of a subject and as elements of the reality. By 'atomic facts' he means structures, in which particulars are connected with universals, like terms are connected with predicators in the logical syntax.

As I point out, the term 'event' is used by Russell as equivalent to the term 'particular'. Saying that events are the only content of reality (and that the traditional concepts of time and space are mere abstractions), Russell characterise events as elements of sense data treated realistically⁴⁴.

⁴¹ Löwe, E. J. Op. cit. P. 80–81.

⁴² See: Smith, B. Op. cit.

⁴³ Russell, B. *The Philosophy of Logical Atomism*. London; N. Y., 2010. P. 3.

⁴⁴ Ibid. P. 148.

In the philosophy of Wittgenstein, the counterpart of Russellian atomic facts are actual elementary configurations of objects. In Hintikka's opinion, the 'objects' of Wittgenstein are equivalent to the 'particulars' of Russell⁴⁵. However, I suppose that Wittgensteinian objects include not only sense data but also cognitive elements of other kind, e. g. the idea of material point. The will of Russell to reduce all such entities to sense data can be explained by his adherence to the tradition of empiricism, but to assert that Wittgenstein share it would be groundless⁴⁶.

One can explain why the mood of the 'Tractatus' isn't argumentative but declarative, by adopting that its aim is a *description* of the functioning of thought and language. Unlike Russell, Wittgenstein doesn't reject the concept of substance, but he uses it in a non-trivial way. According to a correct (however, repeatedly criticised in the literature⁴⁷) observation of Wolniewicz, in Wittgensteinianism objects are regarded as substance. In order to ground this thesis, I point at the following analogies between them and Aristotelian substrate: 1) they serve as material (for facts); 2) they are independent of events⁴⁸; 3) like substantial universals, they (and only they) define necessary aspects of facts⁴⁹.

Importantly, in the philosophy of Wittgenstein neither facts nor their constituents are regarded to be events (German: *Ereignisse*). A Wittgensteinian fact is merely a representation of event by means of a sign system. The conception

⁴⁵ See: Hintikka, J. *On Wittgenstein*. Belmont (CA), 2000.

⁴⁶ One can feel solidarity with the position about this enunciated in: Sokuler Z. A. *Lyudvig Vitgenshtejn i ego mesto v filosofii XX v.* [Ludwig Wittgenstein and his place in the philosophy of the 20th century]. Dolgoprudny, 1994. P. 37. (In Russian.)

⁴⁷ See: Ruf, H. Wolniewicz on Wittgenstein and Aristotle. In: *Boston Studies in the Philosophy of Science. Vol. IV.* Dordrecht, 1969. P. 218–225. Surovtsev, V. A. *Avtonomiya logiki: istochniki, genezis i sistema filosofii rannego Vitgenshtejna* [Autonomy of Logic: Origins, Genesis, and System of Philosophy of Earlier Wittgenstein]. Tomsk, 2001. (In Russian.)

⁴⁸ See: Wittgenstein, L. *Tractatus Logico-Philosophicus*. Tr. C. K. Ogden. London, 1922. (The aphorism 2.024.)

⁴⁹ See: *ibid.* (The aphorism 6.37.)

of the 'Tractatus' presupposes predominance of symbolic syntactics in thinking and language. The thesis about isomorphism between factual and linguistic, which is often articulated in its address, should be understood only as an assertion of possibility of mapping between different sign systems. The sphere of designata (events) have aspects that cannot be described with use of a sign system. For instance, physical reality isn't identical to its description by the symbolism of physics as a science. However, according to an apparently paradoxical thought of Wittgenstein, designatum as such is revealed by the way in which it remains unexpressible with a sign system. One can bring such aspects to notice by comparison of expressive capabilities of various sign systems ⁵⁰.

In the subsection **1.1.3**, an analysis of Wolniewicz's theses about the semantic aspect of the parallelism between Aristotelian and Wittgensteinian ontologies is provided. It's shown that, despite of heuristic value of the work of the Polish philosopher, an outline of formalisation proposed by him is problematic from ontological and semantical points of view.

The section **1.2** is devoted to conceptions and problems of ontology of events as a part of analytical philosophy.

In the section **1.2.1**, the theoretical factors which conditioned the development of analytical ontology of events are pointed out. The relevant aspects of the philosophy of D. Davidson, which to a large extent has shaped the ontology of events, as well as event semantics, are described.

I mention that the development of ontology of events as a special sphere in analytic philosophy is connected with discussions in philosophy of action. By the

⁵⁰ A clear illustration of this thesis is the reasoning dated 6 December 1914 in the notebooks of Wittgenstein, see: Wittgenstein, L. Notebooks 1914–1916. Eds. G. H. von Wright and G. E. M. Anscombe. Oxford, 1961. In this way one can interpret also some famous aphorisms of the 'Tractatus'.

words of G. H. von Wright, the interest to action has entailed the demand in logic for investigation of the conceptual structure of the dynamic world ⁵¹.

A seminal work is a book of E. Anscombe ⁵² in which the following ideas are enunciated: 1) one and the same physical movement can be viewed as intentional (i. e. an action) 'under a description' and non-intentional under another description; 2) motives shouldn't be regarded as causes of actions, because causal relations correspond to (natural) laws, while there's no law-like connection between motives and actions.

Davidson extends the idea of physical movements 'under a description' to all events, defining actions as their subclass. The Davidsonian conception of anomalous monism allow to admit substantial unity of mental and physical events without requirement to reduce a description in mental terms to a description in physical terms ⁵³. This position is supported by the argumentation from the inferential relations between natural language sentences.

In order to confirm causal role of motives, Davidson states that natural laws are abstractions designed for idealised situations (intellectual constructions), while concrete situations are immeasurably more complex. One really shouldn't talk about nomological relations between motives and actions, but it doesn't mean that there's no causal connection between them ⁵⁴.

I finish this subsection with considerations about the relation between the Davidson's conception, in which the notion of causality is important, and the Russell's idea that this notion is non-scientific and should be replaced with the

⁵¹ See: von Wright, G. H. *Time, Change and Contradiction*. Cambridge, 1969.

⁵² See: Anscombe, E. Op. cit.

⁵³ See: Davidson, D. Mental Events. In: D. Davidson. *Essays on Actions and Events*. 2nd ed. Oxford, 2001. P. 207–225.

⁵⁴ See: Davidson, D. Actions, Reasons, and Causes. In: D. Davidson *Essays on Actions and Events*. 2nd ed. Oxford, 2001. P. 3–19.

notion of functional dependence⁵⁵, along with the similar statements of Wittgenstein⁵⁶. I point out that, despite of the apparent difference, the position of Davidson is close to the position of Russell and Wittgenstein.

In the subsection **1.2.2**, the two alternative positions in ontology of events are addressed: particularism (thesis that events are particulars) and universalism (thesis that events are universals). The significance of this problem from logico-semantic point of view is characterised.

As said above, the categories ‘particular’ and ‘universal’ are traced back to Aristotelian ontology, but in the later philosophy may be treated in different ways. In analytical philosophy, universals are usually characterised as entities able to recur, i. e. to be represented by different concrete entities, the latter are particulars⁵⁷. In this context, any properties and relations are often treated as universals (without the distinction of generic categories and contingent features of beings, established in Aristotelian ontology).

The Davidson’s conception is a well-known (but not the only) example of particularism⁵⁸. This ontological position serves as a foundation for Davidsonian event semantics. It allows to justify the quantification over events regarded as individuals in the framework of first-order predicate logic. Events are treated in it as extensional entities in the extralinguistic reality, able to appear under different descriptions.

⁵⁵ See: Russell, B. On the Notion of Cause. In: *Proceedings of the Aristotelian Society. New Series*. 1912–1913. Vol. 13. P. 1–26.

⁵⁶ E. g, the aphorism 5.1361 in the ‘Tractatus’; *à propos*, Anscombe is a pupil of Wittgenstein.

⁵⁷ See: Staniland, H. *Universals*. London, 1972.

⁵⁸ See: Davidson, D. Events as Particulars. In: *Noûs*. 1970. Vol. 4. No. 1. P. 25–32. Davidson, D. Eternal vs. Ephemeral Events. In: *Noûs*. 1971. Vol. 5. No. 4. P. 335–349.

R. Montague and R. Chisholm are considered to be proponents of treating events as universals⁵⁹. Montague defines events as properties of temporal units – moments or intervals of time⁶⁰. Chisholm on the cusp of 1970s characterise events as contingent states of affairs. According to him, the sentence ‘John walks’ refers to one and the same event that recurs⁶¹. Universalism regarding events may be understood as ascribing intensional or linguistic nature to them.

In the simplest semantic approaches, universalism towards events allows to treat sentences about events as assertions about belonging of ordinary individuals to sets. In the basic approach in the tradition of Montague, the sentence “Anna makes music”, which can be read as a statement about an event⁶², is treated as $a \in M$, where a – Anna, M – $\{x: x \text{ makes music}\}$ ⁶³. Events turn to be indistinguishable from generic categories to which individuals belongs. In more developed approaches, for representation of aspectual meanings of verbs, a model structure may include temporal units treated as individuals and possible worlds.

The choice of particularism allows to include in a model structure events as individuals instead of temporal units. There is an opinion that this approach is

⁵⁹ Employing of the term ‘universal’ isn’t typical for Montague and Chisholm, but this way their positions are described in the later works: Brandl, J. L. Op. cit. Pianesi, F. and A. Varzi. Events and Event Talk. In: *Speaking of Events*. Oxford, 2000. P. 3–48. J. L. Brandl also proposes his own version of universalism.

⁶⁰ See: Montague, R. Op. cit.

⁶¹ See: Chisholm, R. Events and Propositions. In: *Noûs*. 1970. Vol. 4. No. 1. P. 15–24. However, in the later work Chisholm defines events as ‘contingent states of contingent things’, see: Chisholm, R. Events Without Times: An Essay On Ontology. In: *Noûs*. 1990. Vol. 24. No. 3. P. 417.

⁶² In another reading, it’s a statement about a disposition (see below).

⁶³ See an analysis of a similar sentence in: Gerasimova, I. A. *Formal'naya grammatika i intensional'naya logika* [Formal grammar and intensional logic]. Moscow, 2000. P. 17. (In Russian.)

preferable due to the possibility to represent causality, for which some languages have grammaticalised means of expression ⁶⁴.

On the other hand, some natural language sentences pose an apparent problem for particularism, e. g. “Ivanov bought a leopard, and Kuznetsov did the same” ⁶⁵. It seems to be an utterance about a recurring event. In order to clarify this problem, in the present dissertation I point out an asymmetry between particularism and universalism: understanding events as particulars presupposes also that there are corresponding ‘universals’ (types of events), while universalism means placing events in the sphere of universals without the corresponding category of particulars.

The subsection **1.2.3** is devoted to the problem of events individuation (defining of criteria for their identity/non-identity). This question is especially important for constructing of semantic theories based on the treatment of events as particulars. The most well-known positions on this topic in analytic ontology of events were suggested by W. Quine, D. Davidson and J. Kim.

By the Quine’s criterion, an event (as well as a material body) is a content of some spatiotemporal region, and the identity of events is merely identity of spatiotemporal regions ⁶⁶.

As an objection to the Quine’s criterion, Davidson provides the example with a metal sphere which is rotating and heating up simultaneously. According to him, in

⁶⁴ See: Tatevosov, S. G. Semantika sobytiya kak e'mpiricheskaya problema [Event semantics as an empirical problem]. In: *Filosofiya yazyka i formal'naya semantika* [Philosophy of language and formal semantics]. Moscow, 2013. (In Russian.)

⁶⁵ Cf. similar examples and their analysis in: Davidson, D. Events as Particulars. In: *Noûs*. 1970. Vol. 4. No. 1. P. 28–29.

⁶⁶ Quine, W. V. *Word and Object*. The New Edition. Cambridge (Mass.), 2013. P. 156.

this example two different events (rotation of the sphere and heating up of the sphere) occur in one and the same spatiotemporal region ⁶⁷.

By the criterion suggested by Davidson in the late 1960s, events are identical if and only if they have exactly the same causes and consequences ⁶⁸. However, later Davidson admitted that this criterion is implausible taking into account the criticism of Quine who had pointed at a vicious circle: the causes and the consequences of the event e_1 are events e_2, \dots, e_n which demand individuation themselves. It should be noticed that the emergence of this vicious circle is connected with the treatment of causality as a relation between events.

According to Kim, an event is an exemplification of a property (or a relation) by some substrate at some time. By his criterion, events are identical if and only if the following three conditions are observed:

- 1) the substrate (an object or n-ary tuple of objects) is identical;
- 2) the property (or the relation), exemplified by the substrate, is identical;
- 3) the time of exemplification of this property (or this relation) in this substrate is identical ⁶⁹.

In case of the sphere which is simultaneously rotating and heating up, by this criterion, two events occur: the substrate and the time is identical, but the exemplified properties are different.

As I point out, this criterion is problematic too. In order to apply it, one needs yet another criterion allowing to individuate properties (relations). Apparently, this task requires to distinguish cases when properties (relations) differ from cases

⁶⁷ Davidson, D. The Individuation of Events. In: *Essays in Honor of Carl G. Hempel: A Tribute on the Occasion of his Sixty-Fifth Birthday*. Dordrecht, 1969. P. 230–231.

⁶⁸ Ibid. P. 231.

⁶⁹ See: Kim, J. On the Psycho-Physical Identity Theory. In: *American Philosophical Quarterly*. 1966. Vol. 3. No. 3. P. 231. Kim, J. Events as Property Exemplifications. In: *Action Theory*. Dordrecht, 1976. P. 160–161.

when only linguistic forms are different. Two other aspects (substrate and time) also require criteria for individuation.

The criteria of Quine and Davidson can be called extensional, while the Kim's criterion can be called intensional, since the latter addresses the identity of properties (relations), which are usually regarded as intensional entities in philosophical logic.

Taking into account the difficulties of these most well-known approaches to the individuation of events, one can state that the problem isn't solved yet or its solution hasn't become commonly recognised. I suppose that this is due to insufficient clarification of the category 'event' as such and of its connections with other categories, as well as variability of its usage in different ontological and semantical conceptions.

For some philosophers (e. g., D. Davidson, J. Bennett ⁷⁰, C. Cleland ⁷¹), any event is a *change*. However, some other philosophers (e. g., W. V. Quine and J. Kim) don't tie the category 'event' to changes. Yet another aspect of the diversity of positions is contingency of events. Some philosophers regard contingency as an essential attribute of events (e. g., R. Chisholm and D. Lewis), while others don't stress this.

I state that *change* and *contingency* are essential aspects of the category 'event'. However, the difficulties of the approaches suggested earlier show that one needs to define more accurately the specificity of these aspects: what namely changes when an event happens and what the thesis about contingency of events means.

In the subsection **1.2.4**, different positions about the ontological status of the category 'event' are systematised and evaluated. The following positions are discerned:

⁷⁰ See: Bennett, J. *Events and Their Names*. Oxford, 1988.

⁷¹ See: Cleland, C. On the Individuation of Events. In: *Synthese*. 1991. Vol. 86. P. 229–254.

1. *Events-oriented monism*: the thesis that reality on the fundamental level consists only of events and can be described most adequately with use of the category 'event'. Sometimes in the literature this position is being called 'eventism'⁷².
2. *Events-oriented pluralism*: considering the category 'event' to be one of a (greater) number of categories each of which is equally demandable for an adequate description of reality.
3. *Reductionism regarding events*: the thesis that one can use the category 'event' in true sentences describing reality, but there is a more accurate or economy description of reality, without usage of this category.
4. *Eliminativism regarding events*: the thesis asserting the falsity of any sentence in which the category 'event' is used.

The positions of B. Russell and D. Davidson, addressed above, may be considered as examples of events-oriented monism and events-oriented pluralism correspondingly. A number of the described above views on events and criteria of their individuation, apparently, correspond to reductionism regarding events (e. g., the approaches of W. V. Quine and J. Kim).

An example of eliminativism regarding events is, according to the literature⁷³, the position of T. Horgan who proposed the thesis that the category of events treated as particulars is superfluous in ontology⁷⁴. I analyse the Horgan's

⁷² E. g., see: Augustynek, Z. Eventism and Pointism. In: *Logic & Logical Philosophy*. 1993. Vol. 1. P. 157–169. Maxwell, N. Special Relativity, Time, Probabilism and Ultimate Reality. In: *Philosophy and Foundations of Physics. Vol. 1. The Ontology of Spacetime*. Amsterdam, 2006. P. 229–245.

⁷³ See: Goswick, D. and P. R. Daniels. The Philosophy of Events. In: *Oxford Bibliographies*. Edition of 28 February 2017. Online access: <https://www.oxfordbibliographies.com/view/document/obo-9780195396577/obo-9780195396577-0335.xml>.

⁷⁴ See: Horgan, T. The Case Against Events. In: *The Philosophical Review*. 1978. Vol. 87. No. 1. P. 28–47.

argumentation and conclude that the thesis isn't well-grounded. His basic strategy of argumentation relies on the usage in semantics, instead of 'events', sentential operators to connect sentences which internal logical form remains not clarified. However, in this case the truth-makers of these sentences remain not clarified too, and thus no real alternative for event semantics emerge.

Regarding the reductionist approaches to the category 'event', addressed above, I state that none of them completely represents by other categories truth conditions of sentences about events. This is indicated by the difficulties characteristic of them.

Regarding events-oriented monism I point out that this position can be understood in two different ways:

1. 'Event' is a completely indifferent category.
2. 'Event' is understood not indifferently, it bears some specific content. The thesis that everything is an event can be understood as the assertion that all that happens is contingent, nothing is necessary and law-governed (except for the necessities and laws introduced by thought and language).

I state that the both options of events-oriented monism aren't promising for semantic analysis of natural languages.

Thus, there is a ground to suppose that events-oriented pluralism is the most adequate position for constructing semantic models for natural languages.

The subsection **1.2.5** is devoted to philosophical views on the relation between events and times, as well as to model structures designed for formalisation of the alternative of temporal units vs. events.

Many philosophers share the believe that events (changes) have a priority over time. For instances, this point of view is supported by G. H. von Wright, who traces it back to Aristotle and Augustine, while as an alternative he regards the position of Kant. The latter writes about 'subjective time' as 'pure duration' independent of

changes. However, Kant also tells about 'objective time' as an order of events determined by causal relations (the causal theory of time) ⁷⁵.

On the other hand, the change is usually defined in terms of time. Sometimes such definition is called 'the Cambridge criterion'. According to its formulation by P. Geach, "The thing called 'x' has changed if we have 'F(x) in time t' true and 'F(x) in t¹' false, for some interpretation of 'F', 't', and 't¹'" ⁷⁶.

In some of the approaches addressed above, temporality seems to be more fundamental than events. For instance, it's the common feature of the approaches of Quine, Montague, Kim. On the other hand, Davidson gives priority to events, considering time as an abstraction derived from them. The conception of events as particulars, defended by him (without a strict definition), can be considered as expressing this position.

The treatment of events as particulars is rejected by A. Prior, by whose words, events are only quasi-subjects ⁷⁷. Taking this into account, one may consider Prior's logic of temporal modalities as an alternative to event semantics. This is an alternative not only in logical, but also in ontological aspect.

A number of researchers (H. Kamp, J. van Benthem, F. Landman, M. van Lambalgen and F. Hamm ⁷⁸) build model structures based on the category 'event' and compare their properties to properties of structures based on temporal units (moments or periods of time). This line of research is closely bind to the believe in the ontological priority of events and can be regarded as a continuation

⁷⁵ von Wright, G. H. Op. cit. P. 16.

⁷⁶ Geach, P. *God and the Soul*. London, 1969. P. 71–72.

⁷⁷ Prior, A. N. *Past, Present and Future*. Oxford, 1967. P. 18.

⁷⁸ See: Kamp, H. Events, Instants and Temporal Reference. In: *Semantics from Different Points of View*. Berlin, 1979. P. 376–417. van Benthem, J. *The Logic of Time*. Dordrecht, 1983. Landman, F. *Structures for Semantics*. Dordrecht, 1991. van Lambalgen, M. and Hamm, F. *The Proper Treatment of Events*. Malden (Mass.), 2005.

of the Russell's project. In the present subsection, the ontological aspects and formal means of this strand are addressed. I point at the following questionable aspects of the structures based on the category 'event':

1. It's doubtful that they really allow to reject the priority of temporal categories, because these structures are underpinned by postulated temporal relations between events. The declared mechanism of generating times by events remains unclarified.
2. The content of the category 'event', presupposed in conceptualisation of these structures, is not quite clear. Apparently, events are regarded as propositional contents of any sentences evaluated as true. Then, the main difference between the structures based on temporal units and the structures based on the category 'event' consists in the following: in the former sentences are qualified as true related to times, while in the latter this parametrisation is replaced by postulated temporal relations between propositions themselves. One may tend to see a categorial mistake in the latter.

The project of event semantics, addressed in this subsection, isn't identical to Davidsonian semantics in which events are treated as a sort of individuals. By the words of F. Landman, "the main reason why interval and event semantics (in whatever form) is so hard, has precisely to do with the fact that we *do* want to do more with them than with individuals"⁷⁹. However, in a later work Landman turns to Davidsonian event semantics in connection with investigation of natural language phenomena⁸⁰.

⁷⁹ Landman, F. Op. cit. P. 199.

⁸⁰ See: Landman, F. *Events and Plurality*. Dordrecht, 2000.

In the section **1.3**, the relations between the category ‘event’ and other dynamic categories are analysed. A number of philosophic and linguistic conceptions relevant to this topic are considered.

The subsection **1.3.1** is devoted to linguistic and philosophic semantic typologies of verb phrases in natural languages.

Some relevant results of linguistic research in sphere of aspectology are described. The main theses of the aspectologic theory of Russian language proposed by Yu. S. Maslov ⁸¹ are presented, its categorial framework is explicated. Also, the approach enunciated in a book by A. A. Zaliznyak, I. L. Mikaelyan and A. D. Shmelev ⁸² is addressed. The content of the semantic categories ‘state’, ‘event’ and ‘process’ is described there in the following way:

- a state is a state of affairs that is unchanging during some time;
- an event is a transition from one state to another;
- a process is a succession of phases changing each other during some time; unlike an event, a process isn’t connected to the presupposition about the emergence of a new state.

The authors believe that this categorial framework is characteristic of various languages, which means its objective significance. I state that the approach suggested by them is adequate in general, but it should be made more accurate in some aspects. Firstly, a more accurate explication of the content of the category ‘event’ is needed (see the section 1.4 of the present work). Secondly, possible

⁸¹ See: Maslov, Yu. S. *Izbrannyye trudy. Aspektologiya. Obshhee yazykoznanie* [Selected works. Aspectology. General linguistics]. Moscow., 2004. (In Russian.)

⁸² See: Zaliznyak, Anna A. and I. L. Mikaelyan, A. D. Shmelev. *Russkaya aspektologiya: v zashchitu vidovoj pary* [Russian aspectology: in defence of the aspectual pair]. Moscow., 2015. (In Russian.)

meanings of verb phrases aren't completely encompassed by the listed categories: one also should take into account the category 'disposition'.

Semantic typologies of natural language verb phrases are proposed also in analytic philosophy. The formation of this line of research is connected to the work of the Oxford school of ordinary language philosophy, which representatives actively address Aristotelianism as a theoretical basis.

G. Ryle has pointed out the necessity to distinguish categories 'event' and 'disposition'⁸³. As an illustration, one may consider the sentence "Water boils at 100 °C":

- in one of the possible readings, it tells that there are concrete situations of water boiling at 100 °C. This reading is false if such situations don't occur.
- In another reading, it tells that water has a disposition: it boils, given it has reached the temperature of 100 °C. This reading is true even if such a situation never occurs (for instance, on a planet where temperature is always below 0 °C).

Z. Vendler proposed a semantic typology of verb phrases, which to a large extent has shaped the later approaches. It has the types 'state', 'activity', 'accomplishment' and 'achievement'⁸⁴. The Vendler's criteria are oriented to English language, but later it was shown that this typology is applicable (in the original form or with some additions) to other languages, e. g. Russian⁸⁵ and Chinese⁸⁶.

⁸³ See: Ryle, G. *The Concept of Mind*. The 60th anniversary edition. London, N. Y., 2009.

⁸⁴ See: Vendler, Z. Op. cit. There are various versions of translation of the Vendler's terms to Russian.

⁸⁵ See: Mehlig, H. R. Satzsemantik und Aspektsemantik im Russischen (Zur Verbklassifikation von Zeno Vendler). In: *Slavistischen Beiträgen*. Band 147. München, 1981. S. 95–151.

⁸⁶ See: Peck, J. and J. Lin, Ch. Sun. Aspectual Classification of Mandarin Chinese Verbs: A Perspective of Scale Structure. In: *Language and Linguistics*. 2013. 4(4). P. 663–700.

A. Kenny, practically contemporarily with Vendler, proposed a somewhat different approach with three types. However, in the later literature one can encounter mentions of the single Vendler and Kenny's typology. E. g., A. Mourelatos in a work of the late 1970s states that these typologies are analogous, except that the Kenny's typology has only one type instead of two types ('accomplishment' and 'achievement') in Vendler. Mourelatos also proposes a trichotomy of types: 'state' – 'process' – 'event' ⁸⁷. In the later literature, including works in neo-Davidsonian semantics, this typology is practically common.

A more ramified typology was proposed by a linguist E. Bach in the early 1980s. The most general category in it is named with a neologism 'eventualities' ⁸⁸, that has become rather widely used later. There are also other typologies.

I state that the proliferation of such conceptions was followed by a loss of some aspects of the content of the Vendler's theory, which contains an interesting treatment of event ('achievement') as a category for which temporality is irrelevant.

The subsection **1.3.2** is devoted to the modern conceptions of process ontology. This strand of thought is prominent nowadays, both in foreign and domestic literature. Speaking only about the works of the new millennium, one may mention J. Dupré, J. Seibt, D. Nicholson, N. Rescher, P. Simons, A. V. Smirnov, V. K. Solondaev, V. I. Shalak as its proponents. A characteristic of their works is the contraposition of process philosophy and Aristotelianism. The processualists usually suppose that Aristotelian ontology is based on absolutisation of solid medium-sized physical bodies observed by people in daily life, and the concept of substance is a result of this absolutisation. They regard also atomism and a number

⁸⁷ See: Mourelatos, A. P. D. Op. cit.

⁸⁸ See: Bach, E. The Algebra of Events. In: *Linguistics and Philosophy*. 1986. Vol. 9. No. 1. P. 5–16.

of other classic philosophical conceptions as instances of substantial ontology. Heraclitus of Ephesus is usually considered by them to be the first representative of processualism, while the beginning of the modern movement of process is associated with W. James, H. Bergson and A. Whitehead. One may also mention K. Popper and W. Sellars among the influential philosophers of the 20th century involved in this movement. The processualists tend to believe that their philosophy corresponds to the contemporary scientific worldview. By their opinion, the theory of relativity leads to the treatment of physical objects as four-dimensional entities, while quantum mechanics reveals the fundamentally processual level of reality, at which no stable objects are given.

The subsection **1.3.3** is devoted to the sphere of ideas which may be referred to as ‘four-dimensional ontology’ (using broadly a term which may have a narrower meaning). In particular, the ontological conceptions based on the notions ‘continuant’ and ‘occurrent’ are addressed. The category ‘continuant’ has been introduced in the beginning of the 20th century by W. E. Johnson, who defined it as “that which continues to exist while its states or relation may be changing”⁸⁹. Thus, the term ‘continuant’ is used analogously to the term ‘substance’. Johnson has contraposed to it the term ‘occurrent’, adopted from Middle-Age philosophy, meaning phenomena in experience such that it’s irrelevant or difficult to point at their substance (e. g., a flash of lightning).

Then, the term ‘occurrent’ has gained currency as the general one for states, processes and events. For instance, this is the way in which it’s used by P. Simons. In his conception a continuant is understood as the invariant of spatiotemporal

⁸⁹ Johnson, W. E. *Logic*. Part 1. Cambridge, 1921. P. 199.

phases of an occurrent, the result of a cognitive operation which is a kind of abstraction⁹⁰.

Also, the discussion between proponents of endurantism and perdurantism in contemporary philosophy is addressed. Endurantism is the thesis that there are endurants, or ‘three-dimensional objects’, keeping self-identity over time. Perdurantism is the thesis that, due to the principle of indiscernibility of identicals, one should consider the existence of endurants impossible, turning to perdurants (‘four-dimensional objects’) as their alternative. A perdurant is usually regarded as a totality of spatiotemporal phases united by a certain joining relation.

In the subsection **1.3.4**, the conclusion based on the material of the two previous subsections is proposed. According to it, the term ‘process’ is used differently in various versions of process philosophy and ‘four-dimensional ontology’. The differences are related to several aspects, but in general one can show their range by describing the polar, strong and weak, versions of the category ‘process’. In the strong version, a process is an entity that develops over time and is internally heterogeneous or even organised (e. g., in Rescher). In the weak version, a process is the content of some spatiotemporal region (including momentary spatial ‘slices’), not necessarily heterogeneous over time (e. g., in Quine).

Both versions are open to criticism. The strong one is connected with the declared rejection of the concept of substance, but one can tend to see in it features of substantial ontology⁹¹. As for the second version, it is significantly impoverished, compared to the ordinary notion of process, and is of doubtful value for description and explanation of reality.

⁹⁰ See: Simons, P. Processes and Precipitates. In: *Everything Flows: Towards a Processual Philosophy of Biology*. Oxford, 2018. P. 49–60.

⁹¹ See: Austin, C. J. Organisms, Activity, and Being: on the Substance of Process Ontology. In: *European Journal for Philosophy of Science*. 2020. 10. Article no. 13.

In the section **1.4**, an authorial conception of event as an ontological category is proposed.

Despite of a usual opinion, the category 'event' shouldn't be treated on a par with the categories 'situation', 'state', 'process'. States and processes occur to objects, while events occur to states and processes (although the natural language way of speaking allows to tell about events as of something that occur to objects).

An important and usually ignored in analytic philosophy aspect of events is that they are relativised to cognitive agents (this may be seen from such sentences as "It has become an event for me"). To say more exactly, events are relativised to nomological schemes of description and prediction of reality; however, the latter don't exist without agents that abide them. Nevertheless, nomological schemes are usually attributed to reality itself (as natural laws, etc.), and it often leads to the loss of sensitivity to this aspect.

An event (in the weak sense) is defined as emergence of a situation which is not considered as necessary within the nomological scheme abided by an agent. An event (in the strong sense) is characterised as change of a diachronic situation (i. e., a succession of interconnected situations presupposed by an agent).

This approach reveals the natural languages intuitions connected with the notion of event. E. g., in the ordinary discourse one doesn't say that regular and 'known in advance' occurrences, such as *a sunrise*, are events. This intuition is explicated by the strong version of understanding of the category 'event' given above. However, *a sunrise* is one of such occurrences for which it is possible to admit that they'll not happen despite of the expectations based on regularities; this allows to say that *a sunrise* is an event in the weak sense.

The suggested point of view allows to answer the questions posed above: *what changes* when an event happens and in what sense events are contingent.

The proposed ontology of events is compatible with various metaphysical frameworks, but should be differently comprehended in their contexts. Adoption of indeterminism or restricted determinism provides to it the objective significance. Adoption of determinism leads to loss of its objective significance: there are no events for the 'Laplace's demon', since every past and future situations is definitely given to him as already established ⁹². However, in the latter case the category 'event' keeps its epistemic significance for real agents, who are not 'Laplace's demons'.

In the **second chapter**, the ontological and epistemological aspects of non-Fregean logic and situation semantics are addressed. An authorial approach to solution of the 'double vision' problem, with use of the conceptual apparatus of situation semantics, is proposed.

The section **2.1** is devoted to non-Fregean logic of R. Suszko.

In the subsection **2.1.1**, the different meanings, with which the term 'non-Fregean logic' is endowed in the literature, are described. The development of investigations in this sphere is briefly characterised. Below, the attention is focused on the initial version of non-Fregean logic proposed by R. Suszko.

It's pointed that the conception of Suszko has primarily ontological specificity. In the logical aspect it bases on the classical logic principles (including the principle of logical bivalence). The novelty of the system consists in the ontological content, with which it's endowed by the ontological definitions and axioms distinguished from the logical ones.

⁹² To say more exactly, the Laplacian determinism apparently presupposes the existence of only one event, which has determined the 'initial' configuration of all elements of reality. It may be regarded as an argument against such metaphysics showing that the latter has some non-grounded inclination (the existence of all events is rejected, except for the initial one).

In the subsection **2.1.2**, the Suszko's view on Wittgensteinian ontology is addressed⁹³. The Polish logician considers his systems to be a representation of the ontology of the 'Tractatus Logico-Philosophicus', the interpretation of which for him is mediated by Wolniewicz. He discerns two parts of this ontology, calling them *s*-ontology and *o*-ontology. According to Suszko, the first one is devoted to situations, while the second one – to objects, and the both topics are considered independently of place and time. By his words, the concepts of a state of affairs and a configuration of objects link these parts together.

In the subsection **2.1.3**, the question about possibility and purpose of the quantification over propositional (sentential) variables is considered⁹⁴.

This question is addressed in connection with its significance to Suszko. In order to demonstrate the difference between *o*-ontology and *s*-ontology, he provides the following example:

(2.1.3.1) *Some situations are not facts.*

(2.1.3.2) *Some philosophers are not logicians.*

According to him, these sentences are analogous in their grammatical form but dramatically differ in content: the expressions 'philosopher' and 'logician' are one-place predicators, while the expressions 'situation' and 'fact' are not predicators but one-place sentential operators similar to negation. In order to show this, he juxtaposes to the sentences (2.1.3.1) and (2.1.3.2) correspondingly the logical forms (2.1.3.3) and (2.1.3.4):

(2.1.3.3) $\exists p[S(p) \wedge \neg F(p)],$

⁹³ See: Suszko, R. Ontology in the "Tractatus" of L. Wittgenstein. In: *Notre Dame Journal of Formal Logic*. 1968. Vol. IX. No. 1. P. 7–33.

⁹⁴ In the present work, the terms 'propositional' and 'sentential' are used as interchangeable in regard to variables and operators.

$$(2.1.3.4) \quad \exists x[P(x) \wedge \neg L(x)]^{95},$$

where p is a sentential variable, x is a nominal variable, S and F are one-place sentential operators, P and L are one-place predicates.

The quantification over sentential variables, used by Suszko, seems to be a deviation from the standard of logical semantics instantiated in classical propositional logic. However, his system is not the sole example of investigation of such quantification. Along with protothetics of S. Leśniewski, mentioned by Suszko, one can mention works of K. Fine, R. A. Bull, D. M. Gabbay, D. Kaplan⁹⁶.

I state that, actually, such quantification is not just a feature of some specific systems. The universal quantification of all propositional variables is tacitly presupposed for the interpretation of sense of the laws of classical propositional logic. The latter are meta-propositions about propositions (designated by propositional variables).

Taking this into account, the topic of the quantification over propositional variables may be reduced to the following two questions:

1. Are there meta-propositions which are true only in case of existential quantification of some propositional variables in them?
2. If so, what *logically (or ontologically)* interesting features of propositions are such meta-propositions about?

It's easy to answer affirmatively to the first question with the following example: "Some propositions are given in the papers of Suszko". Thus, a significant question is the second one.

One may state that the position of Suszko allows to answer this question affirmatively by enunciating the following examples: 1) "Some propositions refer

⁹⁵ Here and below, the notation is adapted.

⁹⁶ See: Fine, K. Propositional Quantifiers in Modal Logic. In: *Theoria*. 1970. Vol. 36. Iss. 3. P. 336–346. See also the literature referred to in this paper.

to situations which are facts and not identical to each other"; 2) "Some propositions refer to situations which are not facts and not identical to each other".

In the subsection **2.1.4**, the meaning of the categories 'situation' and 'fact' in the Suszko's system is described. By a 'situation' he means any configuration of objects, no matter is it actual or not. An actual situation (corresponding to a true sentence) Suszko calls a 'positive fact', or simply a 'fact', while a non-actual situation (corresponding to a false sentence) he calls a 'negative fact'. He considers the terms 'situation', '(positive) fact' and 'negative fact' to be not predicators but sentential operators.

In the subsection **2.1.5**, the specificity of the 'languages of the type W ', used by Suszko, are characterised. For instance, the language \mathcal{L}_O , which, according to the Polish logician, is used for representation of Wittgensteinian ontology, has the following features:

1. The existential and universal quantifiers are applicable in it not only to nominal but also to sentential variables.
2. It has a two-place operator of identity applicable to nominal expressions and a two-place connective of identity applicable to sentences. The latter is treated not as logical equivalence but as a symbol of the identity of situations, which are (according to Suszko) denotations of sentences.

In the subsection **2.1.6**, the distinction of the logical and the ontological aspects of the system, conducted by Suszko, is considered. The rules of inference used in non-Fregean logic are listed.

In the subsection **2.1.7**, the definitions, axioms and schemes of axioms for the identity of objects and situations (co-reference of nominal expressions and sentences) in the system of Suszko are presented.

In the subsection **2.1.8**, the concept of *ontological bivalence* is characterised. Suszko expresses it with the formula (*):

$$(*) \quad p \equiv q \supset p = q,$$

where p and q are sentential (propositional) variables, \equiv and \supset are symbols for classical equivalence and implication respectively, $=$ is a symbol for the connective of 'non-Fregean identity' (co-reference) of sentences introduced by Suszko.

According to Suszko, the formula (*), admitted in Fregean logical semantics and rejected in his system, means the following:

1. There are exactly two situations.
2. There is exactly one (positive) fact.
3. There is exactly one negative fact.
4. Due to this, the quantification over sentential variables cannot play an essential role.

Suszko criticise the ontological bivalence, but not the logical one. The contrary, he believes in adequacy of classical bivalent logic.

By his opinion, logic L_3 of Łukasiewicz should be correctly understood as a system in which only three situations are considered as possible denotations of sentences⁹⁷. He supposes that the notion of possibility has no connection with logical values and with reference.

In the subsection **2.1.9**, the usage of the modal operators of possibility and necessity in the Suszko's system is characterised, the axioms and theorems related to them are presented.

In the subsection **2.1.10**, the Boolean algebra of situations in the Suszko's system, based on the relation of inclusion between situations, is described. This relation is expressed by the notation " pEq ", which Suszko reads as "The situation p includes the situation q " or "The situation p entails the situation q " or "The

⁹⁷ Suszko, R. The Fregean Axiom and Polish Mathematical Logic in the 1920s. In: *Studia Logica*. 1977. 36 (4). P. 379.

situation q occurs in the situation p " (these assertions are considered to mean the same).

As Suszko advisably notices, the assertion " p includes q " in this usage corresponds to the contrary assertion " p is included in q " in that set-theoretic aspect to which relations between situations are reduced in the Boolean algebra of situations.

In connection with this I point that inclusion of terms not by extension but by sense gives the direction corresponding to the assertion "The situation p includes the situation q ". It allows to assume that behind the relation of inclusion between situation stays the relation of intensional inclusion of notions. Apparently, Suszko would reject such understanding of his conception, as well as its understanding as a modal or an intensional logic. Its noticeable, however, that V. L. Vasyukov proposes a project of 'non-non-Fregean' logic of sense as a *sui generis* continuation of the Suszko's line⁹⁸.

In the subsection **2.1.11**, the place of the notions of a possible world and a state of affairs in the Suszko's system is addressed. General conclusions regarding interpretation and evaluation of his project are provided.

Non-Fregean logic, in Suszko's account, is a clear enunciation of the questions and answers which are reflected, but less successful, in modal logic. I state that non-Fregean is based on a certain metaphysical position which is expressed also in some systems of modal logic, but not in any such systems. The metaphysics of the Suszko's system is indeterministic. The 'Fregean axiom' (*) is rejected in it as a deterministic postulate. At the same time, the indeterministic metaphysics is regarded as compatible with classical logic. The following two important theses, quite likely held by Suszko, are connected with this believe:

⁹⁸ Vasyukov, V. L. Op. cit.

1. Frege is a proponent of deterministic metaphysics, but usage of classical logic isn't necessarily connected with this metaphysical position.

2. Non-classical logic systems (e. g., three-valued logic of Łukasiewicz) bear metaphysical content that has no relation to logic itself, the latter may and should remain classical.

Among the questionable aspects of Suszko's ontology of situation, one may point at the insufficient development of the very concept of a situation. For Suszko, any sentential formula refers to some situation. The operator S ('situation') is applicable to any sentential formula and doesn't affect its meaning. The purpose of the operators F ('fact') и N ('negative fact') isn't quite clear too. Apparently, N works just as negation, while F doesn't do any work at all. One may suppose that F is used similarly to the symbol of affirmation of truth of a thought in Frege. However, in this case the direction in which Suszko leads logical semantics is the contrary to that of Wittgenstein, since the latter regards this symbol as superfluous. Another mismatch to the conception of Wittgenstein is related to the question whether logical truths are facts. Wittgenstein supposes that they are not; this important aspect of his position is ignored in the Suszko's system.

The section **2.2** is devoted to theoretical foundations and problems of situation semantics.

In the subsection **2.2.1**, a general description of situation semantics is provided. In the broad sense, one may characterise as situation semantics any logico-semantic theories in which the category 'situation' is regarded as basic or just actively used. In this sense, it includes non-Fregean logic and theories in which situations are understood as 'partial worlds'. In the narrower sense, situation semantics is a certain group of approaches inspired by the ideas of B. Russell and J. Austin, primarily the conception of J. Barwise and J. Perry, as well as the semantics of A. Kratzer.

In the subsection **2.2.2**, the theoretical motivation of J. Barwise for constructing situation semantics in collaboration with J. Perry is addressed. One of the main objectives of this project is to provide a correct analysis for sentences about perception, in particular naked infinitive sentences (*NI*-sentences) in English. The specificity of this class of sentences may be shown with the following example:

(1.4.1.1) *Ralph saw a spy hide a letter under a rock.*

(1.4.1.2) *Ralph saw that a spy hid a letter under a rock.*

NI-sentence (1.4.1.1) means that Ralph observed the described situation, but it doesn't necessarily mean that he described it this way for himself (maybe he thought that the spy was tying her shoelace). By contrast, the sentence (1.4.1.2) means that Ralph has formed the enunciated propositional attitude towards the perceived situation.

According to Barwise, this shows that analysis of perception sentences based on the traditional possible worlds semantics is problematic: in this analysis any perception is treated as an adoption of certain propositional attitude. The development of situation semantics is considered to be the solution. Situations are regarded as fragments of reality which may be perceived by a cognitive agent. The perception of a situation is aspectual and, like the situation itself, isn't limited to a certain propositional content (a description).

The subsection **2.2.3** is devoted to the concept of support of a sentence by a situation and to the quantification over situations in semantics of Barwise and Perry. According to this theory, for any sentence φ , there is a set of situations supporting its truth in a world M , which may be designated as $[[\varphi]]^M$. If φ is true, then $M \in [[\varphi]]^M$, else $M \notin [[\varphi]]^M$. *NI*-sentences about perceptions in the form “ a sees φ ” are understood as assertions that, in the world M for which the sentence is evaluated, there is (at least one) situation s which is visually perceived by the agent a and supports the truth of the sentence φ .

In the subsection **2.2.4**, the relation between the concepts ‘situation’ and ‘proposition’, the distinguishing of which is important for the theory of Barwise and Perry, is analysed.

I point that the term ‘proposition’ is being used in various ways; this causes conceptual, as well as technical, difficulties. In some conceptions propositions are regarded as structures which constituents has extensional or intensional nature (this alternative is a topic of discussions), in some other conceptions they are reduced to sets of possible worlds. Some treatments of propositions and situations make these categories indiscernible, in others they are distinguished.

An idea, important for Barwise and Perry, is that an agent of cognition has a dual connection with reality: firstly, via physical causal relations, and secondly, via language. Accordingly, two concepts of situations are discerned: real situations and abstract situations. The *real situations* are understood as fragments or aspects of reality as such, involved in causal connections, including connections with cognitive agents. The perception at the pre-conceptual level can be regarded as one type of causal connections. The *abstract situations* are defined as configurations of objects, their properties and relations in spatiotemporal regions. These constituents are considered to be products of the cognitive/linguistic activity of an agent.

I state that the category of real situations is an abstraction which could be associated with such concepts as Kantian ‘thing-in-itself’ or Aristotelian *hyle*. Apparently, the main (or the only) way to involve the category of real situations in semantics is their treatment as truth factors of sentences and the connected idea about the quantification over them, as described above.

In the subsection **2.2.5**, the conceptual foundations of traditional possible worlds semantics and situation semantics are compared. The mechanism of emergence of some problems of possible worlds semantics is explicated.

In the subsection **2.2.6**, the discussions around the thesis that a situation is the referent of a sentence are addressed. This position may seem to be intuitively convincing, but it faces the counterarguments which are usually being called ‘slingshot arguments’. I point that in order to overcome them in event semantics one needs to reach the following objectives: 1) to find a criterion for individuation of situation which could allow to avoid their merging into one ‘great situation’; 2) to enunciate the relation between situations and sentences due to which a sentence is referentially ‘focused’ on one definite situation.

The subsection **2.2.7** is devoted to the A. Kratzer’s theory about the exemplification of situations by sentences which may be considered as a version of solution for these problems. According to her, the situation s exemplifies the sentence p if, given that there is such part of the situation s with respect to which the sentence p isn’t true, the situation s is a ‘minimal situation’ with respect to which the sentence p is true. In other words, the situation s exemplifying the sentence p is such situation which provides truth of the sentence p and doesn’t contain anything that doesn’t contribute to the truth of the sentence p . This condition is satisfied in the following two types of cases:

1. Given that the sentence p is true with respect to any subsituation of the situation s .
2. Given that the situation s is a minimal situation with respect to which the sentence p is true.

The minimal situation⁹⁹ (of truth of the sentence p) is characterised as following:

1. This situation as a whole provides truth of the sentence p .

⁹⁹ This concept has been introduced in: Berman, S. R. Situation-Based Semantics for Adverbs of Quantification. In: *Studies in Semantics*. Amherst, 1987. P. 46–68.

2. None of the proper (not identical to the whole) parts of this situation provides truth of the sentence p .

To solve the problem with ‘counting of entities’, Kratzer employs mereotopological criteria proposed by R. Casati and A. Varzi¹⁰⁰.

I state the following questionable aspects of the Kratzer’s theory: 1) one may tend to see a vicious circle in it; 2) apparently, due to some features, it’s applicable only to a restricted class of sentences; 3) despite of the formal direction, it’s based on ordinary thought categories.

In the subsection **2.2.8**, an analysis of the relation between the categories ‘situation’ and ‘event’ is provided. In particular, the Kratzer’s account that one should understand event as a minimal situation is addressed. I state that to identify events with situations (or minimal situations) is incorrect because it leads to loss of specific content of the category ‘event’.

In the section **2.3**, the capability for solution of a concrete logico-semantic problem (the ‘double vision’ problem) within the conceptual framework of situation semantics is shown.

In the subsection **2.3.1**, the ‘double vision’ problem, posed by W. V. Quine¹⁰¹, is described.

In the subsection **2.3.2**, the typology of known approaches to solution of this problem is provided. One of them is to forbid ‘quantifying in’ for explication of the logical form of sentences with believe ascriptions. The approaches avoiding this forbiddance may be divided in two types: 1) the approaches with blocking of substitutability of variables; 2) the approaches with differentiation of sorts of variables.

¹⁰⁰ See: Casati, R., and A. Varzi. *Parts and Places. The Structures of Spatial Representation*. Cambridge (Mass.), 1999.

¹⁰¹ See: Quine, W. V. Op. cit.

In the subsection **2.3.3**, the general description of the approaches with blocking of substitutability of variables is provided, as well as the example.

The subsection **2.3.4** is devoted to the approaches with differentiation of sorts of variables, which may be called ontologically-oriented approaches.

In the paragraph **2.3.4.1**, their general description is given. Unlike the approaches of the first type, designed to provide (or show) non-substitutability of variables of one sort, the approaches of the second type don't pose this demand. They are directed to dissolve the inconsistency in the vision of an object by an agent with ontological distinctions allowing to suppose that the agent's believes actually relate to different objects or are relativised due to a presence of some additional ontological categories in the cognitive scenario. Such approaches may be developed with different ontological foundations.

The paragraph **2.3.4.2** is devoted to the approach with temporal aspects of objects, which resembles 'four-dimensional ontology'¹⁰². I state that applicability of this approach is restricted due to its matter specificity: possible aspects in which an agent can see an objects aren't limited to spatio-temporal 'slices'.

In the paragraph **2.3.4.3**, an authorial approach based on the conceptual apparatus of situation semantics is proposed. In its framework, the 'double vision' scenario is formalised as follows:

$$\exists s_1 \exists s_2 [Supp_a(s_1, S(o)) \wedge Supp_a(s_2, \neg S(o)) \wedge Inv(o, s_1) \wedge Inv(o, s_2)],$$

where s_1 and s_2 are individual variables of a special sort ranging over the set of situations;

o is an individual constant referring to the perceived object;

¹⁰² See: Tiskin, D. B. *Logiko-semanticheskij analiz yavlenij nereferencial'noj prozrachnosti v vyskazyvaniyax o propozicional'nyx ustanovkax* [Logico-semantical analysis of phenomena of non-referential non-opacity in utterances about propositional attitudes]. A dissertation ... of candidate of sciences in philosophy. Saint-Petersburg, 2017. P. 143–144.

S is a predicate constant ascribing a property to the perceived object;

$Supp_a$ is a predicate constant referring to a support relation between a situation and a proposition, which holds for the agent;

Inv is a predicate constant referring to a relation of involvement of an object in a situation.

I also propose an approach based on doxastic logic which formally differs from the previous but is equivalent to it by the subject matter. It's based on a modal operator G which sense may be expressed as 'x has a ground to believe that...'. With its use, the propositional attitudes of the agent of the 'double vision' can be described as follows:

$$G(a, S(o)) \wedge G(a, \neg S(o)).$$

Due to semantics of the operator G , both clauses can be true, and the inconsistency is dissolved.

The provided analysis has allowed to conclude that such ontological categories as 'object' and 'situation' are, in a sense, equivalent to epistemic modalities.

In the **third chapter**, various versions of Davidsonian event semantics are addressed. The ontological postulates connected with the category 'event' in this group of theories are explicated.

The section **3.1** is devoted to the ideas of H. Bergson, F. Ramsey and H. Reichenbach which are, in some aspects, precursors of the Davidsonian approach to the logical form of natural language sentences.

In the section **3.2**, the question whether the possibility to solve the problem of adverbial modification is a real argument for Davidsonian event semantics is addressed.

In the subsection **3.2.1**, the problem of adverbial modification is described: to solve it, one needs to substantiate in a formal way that the sentence "Brutus killed Caesar in the Curia of Pompey" logically entails the sentence "Brutus killed Caesar"

(and for any similar cases). Its context in the A. Kenny's philosophy of language is considered ¹⁰³.

In the subsection **3.2.2**, the Davidsonian approach to this problem is addressed. Its central thesis is that, in such sentences as "Brutus killed Caesar in the Curia of Pompey", the verb has an implicit argument. This argument is a variable ranging over the set of events. Only this variable and the actants of a sentence (e. g., *Brutus* and *Caesar*) are arguments of a predicate expressed by the central verb of the sentence and build up the central clause of its logical form. The circonstants of a sentence (e. g., *in the Curia of Pompey*) are introduced with additional clauses that express relations between peripheral objects (*the Curia of Pompey*) and the event (in this case, the relation is that the event took place in the Curia of Pompey). The main clause is joined to the supplementary ones by conjunction. The logical entailment in question then has the form $\varphi \wedge \psi \vDash \varphi$.

In the subsection **3.2.3**, the criticism towards both the setting of the problem of adverbial modification and the Davidsonian approach to its solution is addressed, as well as alternative ways of the semantic analysis of adverbial modifiers.

In formal semantics of Montague, adverbial modifiers are represented as operators taking an argument of a certain type (a predicator or a sentence) and yielding a meaning of the same type but with modified conditions of satisfaction or truth. The rejection of Davidsonian approach by Montague can be explained taking into account their different ontological positions, but also the Montague's opinion that the Davidsonian argumentation from logical entailment is incorrect. A ground for this opinion is that the sentences with some adverbial modifiers (e. g., 'in a dream' or 'allegedly') not much guarantee the logical entailment to the corresponding sentences without them. In the later literature, the different effects

¹⁰³ See: Kenny, A. Op. cit.

of various adverbial modifiers to the logical entailment between sentences is addressed with use of the parameter 'veridicality' / 'non-veridicality' / 'anti-veridicality'.

However, I suppose that event semantics allows to explain this difference by explication a matter aspect (including what is expressed with the Davidsonian variable) and a modal aspect. On this ground, one can prefer it to the operator approach.

In the subsection **3.2.4**, a possibility of solving the problem of adverbial modification with alternative method is shown. This serves as an argument for the conclusion that the predominant motivation for construction of event semantics is not formal but ontological.

In the section **3.3**, the position of Davidson in the discussions about natural language ontology is shown, as well as its connection with Davidsonian event semantics.

The section **3.4** is devoted to the later modifications and applications of Davidsonian event semantics.

In the section **3.4.1**, the specific features of neo-Davidsonian semantics are described. They relate to treatment of logical form of sentences, as well as to ontological categories used: a value of the Davidsonian variable can be not only an event, but also a process or a state¹⁰⁴.

The subsection **3.4.2** is devoted to the approach proposed by A. Kratzer in the late 1980s, in which event semantics is applied in a certain way to nominal parts of speech (non-verbal nouns and adjectives). In the ontological aspect, this approach is based on discerning of the categories 'individual' and 'stage', suggested earlier by G. Carlson. A stage is regarded as a 'spatially or temporally bounded

¹⁰⁴ See: Parsons, T. Op. cit.

manifestation of something’¹⁰⁵, while an individual is considered to tie ‘a series of stages together to make them stages of the same thing’¹⁰⁶. The idea of Kratzer may be generally described as follows: in natural languages some words serve as stage-level predicates, while some others as individual-level predicates. The difference is that the former have an implicit argument, which is the event variable, while the latter don’t have it¹⁰⁷.

In the subsection **3.4.3**, the difficulties of neo-Davidsonian semantics, known as ‘the event quantification problem’ and ‘the event modification problem’, are described¹⁰⁸.

In the section **3.5**, the ontological suppositions shaping the usage of the category ‘event’ in (neo-)Davidsonian semantics are revealed. They serve as semantic postulates, being often unexplicated and varying in different theories.

In the subsection **3.5.1**, it’s shown that the solution of the problem of adverbial modification, supposed in Davidsonian semantics, cannot be purely formal but depends on ontological content with which the category ‘event’ is endowed.

In the subsection **3.5.2**, it’s demonstrated that some theories in sphere of event semantics are based on the *postulate of actuality*: existential quantification over an event variable is regarded as an assertion that the formula with this variable is true in the actual world. For instance, this postulate is manifested in the theories

¹⁰⁵ Carlson, G. Op. cit. P. 68.

¹⁰⁶ Ibid.

¹⁰⁷ See: Kratzer, A. Op. cit.

¹⁰⁸ See: Winter, Y. and J. Zwarts. Event Semantics and Abstract Categorical Grammar. In: *The Mathematics of Language*. Berlin, Heidelberg, 2011. P. 174–191.

of M. Krifka¹⁰⁹ and L. Champollion¹¹⁰. On the other hand, some theories include the category of non-actual events.

In the subsection **3.5.3**, the *postulate of contingency* is described, which may be expressed in a formalised way as follows:

$$\exists e[R(a_1, \dots, a_n, e)] \equiv R(a_1, \dots, a_n, w^*) \wedge \exists w[\neg R(a_1, \dots, a_n, w)],$$

where e is a variable ranging over the set of events;

w is a variable ranging over the set of possible worlds;

w^* is a constant referring to the actual possible world.

The meaning of this postulate is addressed in more details in other sections of the present work.

In the subsection **3.5.4**, the *postulate of minimality* is considered. It refers to the Kratzer's thesis that an event is a minimal situation. It's shown that this thesis isn't compatible with the Davidson's treatment of events.

In the subsection **3.5.5**, an alternative understanding of the 'minimality' of an event is proposed. It's formulated as the concept of 'the limit facticity of an event', or 'the limit fact for an event'. It's understood as such description of an event that contains the minimum of details but remains a fact, i. e. refers to an event that actually happened. I state that this concept allows to explain the objections in style of Montague against Davidsonian semantics (such objections appeal to non-veridical and anti-veridical adverbial modifiers).

In the **conclusion**, the results of the research are briefly summarised; the perspectives of the further work are outlined.

¹⁰⁹ See: Krifka, M. Nominal Reference, Temporal Constitution and Quantification in Event Semantics. In: *Semantics and Contextual Expression*. Dordrecht, 1989. P. 75–115.

¹¹⁰ See: Champollion, L. Quantification and Negation in Event Semantics. In: *Baltic International Yearbook of Cognition, Logic and Communication*. Vol. 6. Manhattan (KS), 2011. Article 3.

Approbation of the research results

Publications

1. Smirnov, M. A. Ontology of Substances and Ontology of Facts: back to the Comparison. To appear in: *RUDN Journal of Philosophy*. 2023. No. 2. (In Russian.)
2. Smirnov, M. A. Foundations, Problems and Perspectives of the Modern Conceptions of Semantic Correctness. In: *Philosophy Journal*. 2022. Vol. 15. No. 3. P. 140–156. (In Russian.)
3. Makeeva, L. B. and M. A. Smirnov. Conceptual Schemes and Relativism: Donald Davidson’s Critical Arguments. In: *Epistemology & Philosophy of Science*. 2020. Vol. 57. No. 1. P. 59–78. (In Russian.)
4. Smirnov, M. A. Kantian Philosophy and ‘Linguistic Kantianism’. In: *Kantian Journal*. 2018. Vol. 37. No. 2. P. 32–45.
5. Smirnov, M. A. On Some Difficulties in Event Semantics. In: *The 10th Smirnov Readings: Materials of the International Research Conference*. Moscow, 2017. P. 116–118. (In Russian.)
6. Smirnov, M. A. The Problem of Ontological Commitments in Event Semantics. In: *Epistemology & Philosophy of Science*. Vol. 50. No. 4. P. 135–150. (In Russian.)

Talks at conferences and seminars

1. “Semantics of Non-Knowing: on Some Aspects of Situation Semantics and Event Semantics.” At the research seminar “From the Logical Point of View” of the International Laboratory for Logic, Linguistics and Formal Philosophy of NRU HSE. Moscow, 27 January 2023.
2. “The Specificity of Propositional Attitudes in the ‘Double Vision’ Situations.” At the International Research Conference “Sense and the

Making of Sense” (SeMaSe2022). Saint-Petersburg State University, 2 June 2022.

3. “The Ontological Foundations of Event Semantics.” At the research seminar “From the Logical Point of View” of the International Laboratory for Logic, Linguistics and Formal Philosophy of NRU HSE. Moscow, 28 October 2020.
4. “On the Conceptual Scheme of the ‘Feature-Placing’.” At the 10th International Conference of the School of Philosophy of NRU HSE “The Modes of Thinking, the Ways of Speaking”, the section dedicated to the centenary of the birth of P. F. Strawson. Moscow, 25 April 2019.
5. “The ‘Feature-Placing’ Languages and Events-Oriented Ontology.” At the research seminar “From the Logical Point of View” of the International Laboratory for Logic, Linguistics and Formal Philosophy of NRU HSE. Moscow, 12 March 2019.
6. “The Most Radical Approach to the Logical Form of Event Sentences.” At the International Conference “Formal Philosophy”, NRU HSE. Moscow, 2 October 2018.
7. “The Ontology and Logic of Events.” At the research seminar “Formal Philosophy”, NRU HSE. Moscow, 28 June 2017.
8. “On Some Difficulties in Event Semantics.” At the 10th International Research Conference ‘Smirnov Readings’, Moscow State University. Moscow, 17 June 2017.
9. “The Problem of Ontological Commitments in Event Semantics.” At HSE Semantics & Pragmatics Workshop. Moscow, 30 September 2016.