

# Bibliography on the Logical Work of Stanislaw Lesniewski

## Stanislaw Lesniewski's Logical Systems: Protothetic, Ontology, Mereology

### THE WORKS OF LESNIEWSKI IN ENGLISH TRANSLATION

- Introductory remarks to the continuation of my article *Grundzüge eines neuen Systems der Grundlagen der Mathematik*. In *Polish logic 1920-1939*. Edited by Mccall Storrs. Oxford: Clarendon Press 1967. pp. 116-169
- On definitions in the so-called theory of deduction. In *Polish logic 1920-1939*. Edited by Mccall Storrs. Oxford: Clarendon Press 1967. pp. 170-187
- "On the foundations of mathematics," *Topoi. An International Review of Philosophy* 2: 7-52 (1983).

*The Ballieu Library and the Philosophy Department of the University of Melbourne have formed the Lesniewski Collection. This Collection comprises all materials published by Stanislaw Lesniewski during his lifetime, and some unpublished materials in their original languages.*

- *S. Lesniewski's Lecture Notes in logic*. Edited by Srzednicki Jan and Stachniak Zbigniew. Dordrecht: Kluwer 1988.  
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On this edition of the *Collected works* see the review by Peter Simons: *Discovering Lesniewski - History and Philosophy of Logic*, 15 (1994) pp. 227-235.

## STUDIES ABOUT THE WORK OF LESNIEWSKI (in progress)

1. *S. Lesniewski's Systems. Ontology and Mereology*. Edited by Srzednicki Jan, Rickey Frederick V., and Czelakowski J. The Hague: Martinus Nijhoff 1984.  
 Contents: Editorial Note 7; 1. Z. Kruszewski: Ontology without axioms (1925) 9; 2. B. Sobocinski: Lesniewski's analysis of Russell's Paradox (1949) 11; 3. C. Lejewski: Logic and existence (1954) 45; 4. J. Slupecki: S. Lesniewski's Calculus of Names (1955) 59; 5. C. Lejewski: On Lesniewski's Ontology (1958) 123; 6. J. Canty: Ontology: Lesniewski's logical language (1969) 149; 7. B. Iwanus: On Lesniewski's elementary Ontology (1973) 165; 8. B. Sobocinski: Studies in Lesniewski's Mereology (1954) 217; 9. E. Clay: On the definition of mereological class (1966) 229; 10. C. Lejewski: Consistency of Lesniewski's Mereology (1969) 231; 11. E. Clay: The dependence of a mereological axiom (1970) 239; 12. E. Clay - Relation of Lesniewski's Mereology to Boolean algebra (1974) 241; Protothetic bibliography 253; Index of Names 261.
2. "Stanislaw Lesniewski aujourd'hui," *Recherches sur la Philosophie et le Langage* 16 (1995).  
 Contents: Denis Miéville et Denis Vernant: Présentation 5; Bibliographie de Stanislaw Lesniewski 21; Czeslaw Lejewski: Remembering Stanislaw Lesniewski 25; Denis Miéville: Stanislaw Lesniewski et l'importance d' une logique développementale 93; Jan Wolenski: Lesniewski's logic and the concept of Being 93; Peter Simons: Lesniewski and ontological commitment 103; Georges Kalinowski: Les démonstrations de la non-existence des objets généraux chez Lesniewski 121; Frédéric Nef: Sémantique et ontologie: réflexions sur la théorie des objets et les propriétés 179; Denis Vernant: Logique et pragmatique: la genèse du concept d'assertion 179; Alain Lecomte: Une descendance des systèmes de Lesniewski. Le calcul de Lambek (de la grammaire logique aux grammaires de logiques des types) 207; Alain Berrendonner: Anaphore associatie et méréologie 237; Jacques Roualt: Représentations centrées objets, formalisation en linguistique et systèmes de Lesniewski 257; Mounia Fredj: Implémentation des principes méréologiques 275; Olivier Houdé: Le "langage méréologique" ajoute-t-il quelque chose aux descriptions psychologiques 297; List des numéros déjà publiés 321; Adresses des auteurs 330.
3. *S. Lesniewski's Systems. Protothetic*. Edited by Srzednicki Jan and Stachniak Zbigniew. Dordrecht: Kluwer 1998.

- Contents: Editor's Foreword VII; 1. Peter M. Simons: Nominalism in Poland (1983) 1; 2. V. Frederick Rickey: A survey of Lesniewski's logic (1977) 23; 3. Alfred Tarski: On the primitive term of logistic (1923) 43; 4. Boleslaw Sobocinski: An investigation in Protothetics (1949) 69; 5. Jerzy Slupecki: St. Lesniewski's Protothetics (1953) 85; 6. Boleslaw Sobocinski: On the single axiom of Protothetic (1960) 153; 7. V. Frederick Rickey: Axiomatic inscriptional syntax. Part II. The syntax of Protothetic (1973) 217; VIII. Audoënus Le Blanc: investigations in Protothetic (1985) 289; Protothetic bibliography 299; Author Index 309.
4. Ajdukiewicz Kazimierz. Syntactic connection. In *Polish logic 1920-1939*. Edited by McCall Storrs. Oxford: Clarendon Press 1967. pp. 207-231  
Originally published in German as: *Die syntaktische Konnexität* - *Studia Philosophica*, 1, 1935, pp. 1-27.
  5. Betti Arianna, "Logica ed esistenza in Stanislaw Leniewski", Università degli Studi di Firenze, 1995. Tesi di laurea (Relatore: Ettore Casari).
  6. Betti Arianna. *De Veritate*: another chapter. The Bolzano-Lesniewski connection. In *The Lvov-Warsaw School and contemporary philosophy*. Edited by Kijania-Placek Katarzyna and Wolenski Jan. Dordrecht: Kluwer 1998. pp. 115-137
  7. Betti Arianna, "Il rasoio di Lesniewski," *Rivista di Filosofia*: 87-112 (1998).
  8. Betti Arianna. Sempiternal truth. The Bolzano-Twardowski-Lesniewski axis. In *The Lvov-Warsaw School. The new generation*. Edited by Jadacki Jacek Jusliuz and Pasniczek Jacek. Amsterdam: Rodopi 2006. pp. 371-399
  9. Canty John Thomas, "Lesniewski's terminological explanations as recursive concepts," *Notre Dame Journal of Formal Logic* 10: 337-369 (1969).  
"The terminological concepts for the system of Ontology extended by the axiom of infinity are shown to be definable within that system. in 1929 Lesniewski first published terminological explanations for his system of logic, where he used certain concepts from his system of Mereology along with others such as equiformity. In this paper the terminological concepts are given entirely within the system of Ontology extended by the axiom of infinity. Since the definitions given are recursive, the incompleteness of this extension of Ontology is readily established."
  10. Chrudzimski Arkadiusz. The young Lesniewski on existentials propositions. In *Actions, products, and things: Brentano and Polish philosophy*. Edited by Chrudzimski Arkadiusz and Łukasiewicz Dariusz. Frankfurt: Ontos Verlag 2006. pp. 107-120
  11. Clay Robert F., "The consistency of Lesniewski's Mereology relative to the Real Number System," *Journal of Symbolic Logic* 33: 251-257 (1968).
  12. Clay Robert F., "Introduction to Lesniewski's logical systems," *Annali dell'Istituto di Discipline Filosofiche dell'Università di Bologna*: 5-31 (1980).
  13. Cocchiarella Nino, "A conceptualist interpretation of Lesniewski's ontology," *History and Philosophy of Logic* 22: 29-43 (2001).  
"A first-order formulation of Lesniewski's Ontology is formulated and shown to be interpretable within a free first-order logic of identity extended to include nominal quantification over proper and common-name concepts. The latter theory is then shown to be interpretable in monadic second-order predicate logic, which shows that the first-order part of Lesniewski's Ontology is decidable."
  14. Davis Charles C., "A note on the axiom of choice in Lesniewski's Ontology," *Notre Dame Journal of Formal Logic* 17: 35-43 (1976).
  15. Gobber Giovanni, "Alle origini della grammatica categoriale: Husserl, Lesniewski, Ajdukiewicz," *Rivista di Filosofia Neo-Scolastica* 76: 258-295 (1985).
  16. Gombocz Wolfgang, "Lesniewski und Mally," *Notre Dame Journal of Formal Logic* 20: 934-946 (1979).
  17. Grzegorzczuk Andrzej, "The systems of Lesniewski in relation to contemporary logical research," *Studia Logica* 3: 77-95 (1955).
  18. Henry Desmond Paul, "Lesniewski's Ontology and some medieval logicians," *Notre Dame Journal of Formal Logic* 10: 324-326 (1969).  
"In the issue of this journal dated October 1966 (Vol. VII, No. 4, pp. 361-364) Professor John Trentman suggested limitations on my claim that Lesniewski's Ontology is of use in furnishing

formal analyses of medieval logical theories, his grounds being that certain medieval theories deny what is called the "two-name theory of predication" allegedly common to Ockham and Ontology. Hence while the work of Ockhamists would be analysable with reference to Ontology, that of those "Thomists" who deny the two-name theory would not. Professor Trentman then goes on to suggest that for such "Thomist" analyses to take place, "something like Frege's functional analysis of predication", is needed to show the "disparity of semantic category that holds between the subject and the predicate", thereby implying that no such form is available in Ontology, and that the allegations about the inadequacy of the two-name theory could have escaped my notice.

Neither of these implications is tenable. Ignoring the second of them, I can deal with the first by exemplifying the manner in which the Ontology in question deals with the relations between names and verbs (i.e. functors which when completed with nominal arguments form propositions)."

19. Henry Desmond Paul. *Medieval logic and metaphysics*. London: Hutchinson 1972.
20. Ishimoto Arata. Logicism revisited in the propositional fragment of Lesniewski's Ontology. In *Philosophy of mathematics today*. Edited by Agazzi Evandro and Darvas György. Dordrecht: Kluwer 1997. pp. 219-232
21. Iwanus Boguslaw, "An extension of the traditional logic containing the elementary ontology and the algebra of classes," *Studia Logica* 25: 97-135 (1969).  
"The paper deals with the axiomatic Calculus of Names (S sub 2) which is an extension of the system S sub 1 presented in my paper "Remarks about syllogistic with negative terms" (*Studia logica*, vol. XXIV). The primitive terms of S sub 2 are the function of a categorical universal-affirmative proposition, the complement of a set, and the empty set. In S sub 2 one is given the definitions of addition and multiplication of sets, the universal set and the relation epsilon (... is ...) which corresponds semantically to the primitive term of Lesniewski's Ontology. It is proved that the elementary ontology and the elementary algebra of classes are fragments of s sub 2."
22. Iwanus Boguslaw, "Remarks about syllogistic with negative terms," *Studia Logica* 24: 131-137 (1969).  
"The article presents a system S of syllogistic based on three axioms. The functor "a" / every...is.<http://www.ontology.co/> and the sign of nominal negation are primitive terms of system S. The known axiomatic systems of syllogistic with negative terms constructed by I. Thomas, A. Wedberg and C. A. Meredith are fragments of system S. It seems that the axioms of system S better characterize the categorical propositions containing negative terms since this characterization excludes some non-intuitive interpretations of such propositions, admissible in the above mentioned systems. It is also mentioned that there exists an extension of system S containing the elementary algebra of classes and the elementary Ontology of Lesniewski."
23. Kearns John, "The contribution of Lesniewski," *Notre Dame Journal of Formal Logic* 8: 61-93 (1967).
24. Kearns John, "Two views of variables," *Notre Dame Journal of Formal Logic* 10: 163-180 (1969).  
"This paper argues that there are two fundamental ways to regard variables in formalized languages. One way, associated with Russell and Quine, regards variables as autonomous referential expressions. On this view, quantification is the fundamental device for indicating ontological commitments. The second way to regard variables is linked to Frege and Lesniewski; variables are regarded as replacements for constant expressions. Such a view leads to an understanding of quantifiers in terms of substitution instances of the quantified expressions. It is argued that the second way of regarding variables is preferable to the first way, and that no logical results need be given up if this way is adopted."
25. Kotarbinski Tadeusz. *Gnosiology. The scientific approach to the theory of knowledge*. Oxford: Pergamon Press 1966.  
Original Polish edition 1929; second revised edition 1961.  
Translated from the Polish by Olgierd Wojtasiewicz; translation edited by G. Bidwell and C. Pinder
26. Küng Guido, "The meaning of quantifiers in the logic of Lesniewski," *Studia Logica* 26: 309-322 (1977).
27. Küng Guido, "La logique est-elle une discipline des mathématiques out fait-elle partie de l'ontologie?," *Dialectica* 39: 243-258 (1985).  
"Heinrich Scholz and J. M. Bochenski have claimed that the laws of formal logic are the most

general laws about things, properties, relations, states-of-affairs, etc. Others have mixed up logic and set theory. But Lesniewski's interpretation of the quantifiers shows that properly speaking logic belongs neither to ontology nor to mathematics."

28. Lejewski Czeslaw, "Logic and existence," *British Journal for the Philosophy of Science* 5: 104-119 (1954).

"I wish to conclude with a brief summary of the results. The aim of the paper was to analyse rather than criticize. I started by examining two inferences which appeared to disprove the validity of the rules of universal instantiation and existential generalization in application to reasoning with empty noun-expressions. Then I distinguished two different interpretations of the quantifiers and argued that under what I called the unrestricted interpretation the two inferences were correct. Further arguments in favour of the unrestricted interpretation of the quantifiers were brought in, and in particular it was found that by adopting the unrestricted interpretation it was possible to separate the notion of existence from the idea of quantification. With the aid of the functor of inclusion two functors were defined of which one expressed the notion of existence as underlying the theory of restricted quantification while the other approximated the term exist(s) as used in ordinary language.

It may be useful to supplement this summary by indicating some aspects of the problem of existence which have not been included in the discussion. I analyzed the theory of quantification so far as it was applied in connection with variables for which noun-expressions could be substituted and my enquiry into the meaning of exist (s) ' was limited to cases where this functor was used with noun-expressions designating concrete objects or with noun-expressions that were empty. It remains to explore, among other things, in what sense the quantifiers can be used to bind predicate variables and what we mean when we say that colours exist or that numbers exist. These are far more difficult problems, which may call for a separate paper or rather for a number of separate papers."

29. Lejewski Czeslaw, "On implicational definitions," *Studia Logica* 8: 189-206 (1958).
30. Lejewski Czeslaw, "On Lesniewski's Ontology," *Ratio* 1: 150-176 (1958).
31. Lejewski Czeslaw, "A re-examination of the Russellian theory of descriptions," *Philosophy* 35: 14-29 (1960).
32. Lejewski Czeslaw, "A single axiom for the mereological notion of proper part," *Notre Dame Journal of Formal Logic* 4: 279-285 (1967).
33. Lejewski Czeslaw, "Consistency of Lesniewski's Mereology," *Journal of Symbolic Logic* 34: 321-328 (1969).
- "Lesniewski's Mereology presupposes his Ontology, which in turn presupposes his Protothetic. A proof is outlined to show that if we interpret name-variables as proposition-variables and if at the same time we interpret the ontological 'epsilon' as the functor of conjunction and the mereological 'el' as the functor of assertion then the axioms and directives of Ontology and Mereology become respectively theses and directives of Protothetic."
34. Lejewski Czeslaw, "A system of logic for bicategorical ontology," *Journal of Philosophical Logic* 3: 265-283 (1974).
35. Lejewski Czeslaw, "Outline of Ontology," *Bulletin of the John Rylands University Library of Manchester* 59: 127-147 (1976).
36. Lejewski Czeslaw. On the dramatic stage in the development of Kotarbisnki's pansomatism. In *Ontologie und Logik. Ontology and Logic*. Berlin: Duncker & Humblot 1979. pp. 197-214  
Proceedings of an International Colloquium (Salzburg, 21-24 September 1976)  
Discussion pp. 215-218
37. Lejewski Czeslaw. Logic and Ontology. In *Modern logic. A survey*. Edited by Agazzi Evandro. Dordrecht: Reidel 1981. pp. 379-398
38. Lejewski Czeslaw, "A note on Lesniewski's axiom system for the mereological notion of ingredient or element," *Topoi* 3: 63-72 (1983).
39. Lejewski Czeslaw, "Accommodating the informal notion of class within the framework of Lesniewski's Ontology," *Dialectica* 39: 217-241 (1985).

"Interpreted distributively the sentence 'Indiana is a member of the class of American federal states' means the same as 'Indiana is an American federal state'. In accordance with the *collective* sense of class expressions the sentence can be understood as implying that Indiana is a part of the country

whose capital city is Washington. Neither interpretation appears to accommodate all the intuitions connected with the informal notion of class. A closer accommodation can be achieved, it seems, if class expressions are interpreted as verb-like expressions of a certain kind as available within the framework of Lesniewski's Ontology."

40. Lejewski Czeslaw, "Logic and non-existence," *Grazer Philosophische Studien* 25/26: 209-234 (1986).  
"An attempt is made in the present essay to accommodate various senses of the notion of existence and of that of non-existence within the framework of logic. With this aim in view a system of Lesniewski's Ontology, referred to as System S, is outlined. Equipped with appropriate definitions and illustrated with a selection of theses it offers a logical theory of existence and non-existence. The usefulness of the theory is then tested by interpreting in its terms some of the principal notions and assertions of Meinong's ontology. A few brief comments on the notion of 'possible object' and on 'semantics' of fiction conclude the essay."
41. Lejewski Czeslaw, "Ricordando Stanislaw Lesniewski," *Quaderni del Centro Studi per la Filosofia Mitteleuropea* 1989 (1): 5-47 (1989).  
Edited by Massimo Libardi
42. Lejewski Czeslaw, "Formalization of functionally complete propositional calculus with the functor of implication as the only primitive term," *Studia Logica* 48: 479-494 (1989).  
"The most difficult problem that Lesniewski came across in constructing his system of the foundations of mathematics was the problem of 'defining definitions', as he used to put it. He solved it to his satisfaction only when he had completed the formalization of his protothetic and ontology. By formalization of a deductive system one ought to understand in this context the statement, as precise and unambiguous as possible, of the conditions an expression has to satisfy if it is added to the system as a new thesis. Now, some protothetical theses, and some ontological ones, included in the respective systems, happen to be definitions. In the present essay I employ Lesniewski's method of terminological explanations for the purpose of formalizing Łukasiewicz's system of implicational calculus of propositions, which system, without having recourse to quantification, I first extended some time ago into a functionally complete system. This I achieved by allowing for a rule of 'implicational definition', which enabled me to define any proposition forming functor for any finite number of propositional arguments."
43. Lepage François, "Partial monotonic Protothetics," *Studia Logica* 66: 147-163 (2000).  
"This paper has four parts. In the first part, I present Lesniewski's protothetics and the complete system provided for that logic by Henkin. The second part presents a generalized notion of partial functions in propositional type theory. In the third part, these partial functions are used to define partial interpretations for protothetics. Finally, I present in the fourth part a complete system for partial protothetics. Completeness is proved by Henkin's method using saturated sets instead of maximally saturated sets. This technique provides a canonical representation of a partial semantic space and it is suggested that this space can be interpreted as an epistemic state of a non-omniscient agent."
44. Luschei Eugene. *The logical systems of Lesniewski*. Amsterdam : North-Holland 1962.
45. Miéville Denis. *Un développement des systèmes logiques de Stanislaw Lesniewski: protothétique, ontologie, méréologie*. Berne: Peter Lang 1984.
46. Miéville Denis, "Un aperçu des caractéristiques et de l'esprit des systèmes logiques de Stanislaw Lesniewski," *Dialectica* 39: 166-179 (1985).  
"This article provides an introduction to the deductive theories, which are so little known, of S. Lesniewski. The reasons that led this Polish logician to develop a theory of collective classes as well as the logical theories that underlie it are set forth here, and the main characteristics of Lesniewski's three systems -- mereology, protothetics and ontology -- are presented. Some epistemological considerations are included in this study."
47. Miéville Denis, "Introduction à l'oeuvre de S. Lesniewski. Fascicule I - La Protothétique," *Travaux de Logique (Neuchâtel)* (2001).
48. Miéville Denis, "Introduction à l'oeuvre de S. Lesniewski. Fascicule II - L'Ontologie," *Travaux de Logique (Neuchâtel)* (2004).
49. Miéville Denis, "Introduction à l'oeuvre de S. Lesniewski. Fascicule III - La Méréologie," *Travaux*

*de Logique (Neuchâtel)* (2005).

50. Miéville Denis, "Introduction à l'oeuvre de S. Lesniewski. Fascicule IV - L'oeuvre de jeunesse," *Travaux de Logique (Neuchâtel)* (2006).
51. Poli Roberto and Libardi Massimo, "Logic, theory of science, and metaphysics according to Stanislaw Lesniewski," *Grazer Philosophische Studien* 57: 183-219 (1999).  
"Due to the current availability of the English translation of almost all of Lesniewski's works it is now possible to give a clear and detailed picture of his ideas. Lesniewski's system of the foundation of mathematics is discussed. In a brief outline of his three systems Mereology, Ontology and Protothetics his positions concerning the problems of the forms of expression, proper names, synonymity, analytic and synthetic propositions, existential propositions, the concept of logic, and his views of theory of science and metaphysics are sketched. The influence of Mill, Łukasiewicz, Austrian philosophy and especially Petrazycki on his thinking is evaluated and an interpretation is suggested setting him squarely in a tradition of classical Aristotelian logic."
52. Praker Judith, "A Lesniewskian re-examination of Goodman's nominalistic rejection of classes," *Topoi* 2: 87-98 (1983).
53. Prior Arthur Norman. Existence in Lesniewski and in Russell. In *Formal systems and recursive functions*. Edited by Crossley John N. and Dummett Michael. Amsterdam: North Holland Publishing Company 1965. pp. 149-155  
Proceedings of the Eighth Logic Colloquium. Oxford, July 1963
54. Rickey Frederick V., "A survey of Lesniewski's logic," *Studia Logica* 36: 407-426 (1977).
55. Rickey Frederick V., "Interpretations of Lesniewski's Ontology," *Dialectica* 39: 181-192 (1985).  
"This article proposes to clarify the problem of interpreting Lesniewski's ontology. A distinction is made between two kinds of interpretation: substitutional and "natural". Substitutional interpretation is shown to involve difficulties and limitations. A "natural" ontology, the major principles of which are presented here, is shown to be of considerable interest."
56. Sanders John T., "Stanislaw Lesniewski's logical systems," *Axiomathes* 3: 407-415 (1996).
57. Simons Peter, "On understanding Lesniewski," *History and Philosophy of Logic* 3: 165-191 (1982).  
Reprinted in: Peter Simons - *Philosophy and logic in Central Europe from Bolzano to Tarski. Selected essays* - Dordrecht, Kluwer 1992 pp. 227-258
58. Simons Peter, "A Lesniewskian language for the nominalistic theory of substance and accident," *Topoi* 2: 99-110 (1983).
59. Simons Peter, "A Brentanian basis for Lesniewskian logic," *Logique et Analyse* 27: 297-398 (1984).  
Reprinted in: Peter Simons - *Philosophy and logic in Central Europe from Bolzano to Tarski. Selected essays* - Dordrecht, Kluwer 1992 pp. 259-269
60. Simons Peter. Lesniewski's logic and its relation to classical and free logics. In *Foundations of logic and linguistic. Problems and their solutions: a selection of contributed papers from the VIIth International congress of logic, methodology, and philosophy of science, held in Salzburg from the 11th-16th July, 1983*. Edited by Dorn Georg and Weingartner Paul. New York: Plenum Press 1985. pp. 369-402  
Reprinted in: Peter Simons - *Philosophy and logic in Central Europe from Bolzano to Tarski. Selected essays* - Dordrecht, Kluwer 1992 pp. 271-293
61. Simons Peter, "A semantics for Ontology," *Dialectica* 39: 193-216 (1985).  
"This article proposes to clarify the problem of interpreting Lesniewski's Ontology. A distinction is made between the two kinds of interpretation: substitutional and "natural". Substitutional interpretation is shown to involve difficulties and limitations. A "natural" Ontology, the major principles of which are presented here, is shown to be of considerable interest."
62. Simons Peter. *Parts*. Oxford: Clarendons Press 1987.
63. Simons Peter, "Lesniewskian term logic," *Lingua e Stile* 27: 25-45 (1992).  
"Students of traditional logic, by which I mean the central core of categorical syllogistic with whatever further forms were studied at the time, were drilled in putting the sentences occurring in arguments into «correct logical form», and present-day students do no different when replacing their natural language sentences by the formulas or semiformulas of predicate logic. Both procedures involve doing some violence to natural modes of expression. A sentence like *Whoever flies saves time* must be replaced by something like *Every flier is a time-saver* by traditional logicians and by

*For all x: if x flies then x saves time* by modern logicians. As this makes clear, different logical systems may compete in offering prepared forms proximate to a natural specimen, so there may be a real choice as to which system is preferable for a given purpose. This is familiar to observers of modern logic since there are competing logics of definite descriptions, modality, and so on. Of course, if we confine attention just to the opposition between categorical syllogistic and predicate logic, there seems to be no contest. Predicate logic is expressively much the more powerful system, and as these two are the only two logical systems to have enjoyed widespread acceptance as tools for analysing validity of natural arguments, it might seem that only predicate logic remains as a general vehicle for workaday argument assessment. But the large number of introductory logic textbooks which still contain material on categorical syllogistic bears witness to the fact that, within its more limited sphere, the traditional logic of terms is widely felt to be a more natural and useful alternative to monadic predicate logic. Historical interest alone could not compensate for the inconveniences of introducing two quite different systems, with their different sentential analyses, laws, and terminology, to cover the same ground.

It is apparent that one disadvantage of predicate logic for these purposes is its use of bound individual variables, which natural languages do not have, and which they can simulate and match only by rather tortuous use of pronouns and pronominal phrases. Of course this helps to account for the greater perspicuity of predicate logic once we leave the simplest sentences behind, but at the most elementary level it is a hindrance. The singular term/predicate analysis of simple predications compels common noun phrases and adjectives used attributively to appear as syntactically inseparable parts of predicates, which correspond most closely to verb phrases in natural language. Again, this is not a huge sacrifice, but it is pervasive, is felt to be unnatural, and contributes to beginners' difficulties in learning logic.

So it is worth considering from a practical and pedagogical point of view whether, in order to gain the considerable benefits conferred by predicate logic - quantification, multiple generality, relational predicates - it is necessary to put up with the disagreeable features of standard predicate logic. I shall argue that it is not, and that a more natural and flexible medium for which to prepare natural language sentences and arguments is provided by the term logic invented around 1920 by Stanislaw Lesniewski (1886-1939) and usually known as Ontology. (\*)"

(\*) The possible confusion of the system of logic with the branch of metaphysics of the same name is not a danger in this context, and in any case I will write the name of the system with a capital letter. Sometimes Ontology is called the Calculus of Names, but this is misleading, since much more than names are involved. It would be nice to have a better name for Ontology.

64. Simons Peter, "Discovering Lesniewski: *Collected Works*," *History and Philosophy of Logic* 15: 227-235 (1994).  
"This discussion review examines the English edition of Lesniewski's collected works. Points emphasized include: the early (pre-symbolic) period, the quality of translation and typesettings, and the scandalously outdated bibliography."
65. Simons Peter, "Reasoning on a tight budget: Lesniewski's nominalistic metalogic," *Erkenntnis* 56: 99-122 (2002).
66. Simons Peter. Things and truths: Brentano and Lesniewski, ontology and logic. In *Actions, products, and things: Brentano and Polish philosophy*. Edited by Chrudzimski Arkadiusz and Łukasiewicz Dariusz. Frankfurt: Ontos Verlag 2006. pp. 83-106
67. Sinisi Vito, "Nominalism and common names," *Philosophical Review* 71: 230-235 (1961).  
"Edwin Allaire, Gustav Bergmann and Reinhardt Grossmann have objected to the nominalistic analysis of "this is red and that is red" which treats "red" as a common name. Such an analysis, they argued, must assimilate the copula in this sentence to the "is" of identity. Sinisi claims that this objection is mistaken. Using a logical system developed by Stanislaw Lesniewski, he shows that it is possible to construe "red" as a common name without taking the copula as the "is" of identity."
68. Sinisi Vito, "Lesniewski's analysis of Whitehead's theory of events," *Notre Dame Journal of Formal Logic* 7: 323-327 (1966).
69. Sinisi Vito, "Lesniewski and Frege on collective classes," *Notre Dame Journal of Formal Logic* 10: 239-246 (1969).

"Between 1927 and 1931 Lesniewski published a series of articles on the foundations of mathematics in the Polish journal *Przegląd Filozoficzny*.

65% of the work is devoted to various axiomatizations of Lesniewski's mereology (a theory of collective classes) while the remainder takes up various related issues. In the third part of this series Lesniewski informally sets forth his notion of a collective class, criticizes certain descriptions of distributive classes, and argues that there is no justification in Frege's statement that the conception of a class as consisting of individuals, so that the individual thing coincides with the unit class, cannot in any case be supported.

Lesniewski's refutation of Frege's statement appears to be unknown to western logicians and philosophers. None of the recent books on Frege (e.g., Angelelli, Egidi, Sternfeld, Thiel, Walker) mentions it. Luschei, in his *The Logical Systems of Lesniewski*, mentions it but does not present it. My purpose here is to state and explain Lesniewski's refutation in the hope that it will help stimulate interest in his work."

70. Sinisi Vito, "Lesniewski's analysis of Russell's antinomy," *Notre Dame Journal of Formal Logic* 17: 19-34 (1976).
71. Sinisi Vito, "The development of Ontology," *Topoi* 2: 53-62 (1983).
72. Slupecki Jerzy, "St Lesniewski's Protothetics," *Studia Logica* 1: 44-111 (1953).
73. Slupecki Jerzy, "Lesniewski's Calculus of Names," *Studia Logica* 3: 7-70 (1955).
74. Slupecki Jerzy, "Towards a generalized mereology of Lesniewski.," *Studia Logica* 8: 131-154 (1958).
75. Sobocinski Boleslaw, "L'analyse de l'antinomie russellienne par Lesniewski," *Methodos* (1949).  
Published in four parts: I - II - III: vol. 1. (1949) pp. 94-107; 220-228; 308-316; IV: vol. 2 (1950) pp. 237-257.
76. Sobocinski Boleslaw, "On the single axioms of protothetic, I," *Notre Dame Journal of Formal Logic* 1: 52-73 (1960).
77. Sobocinski Boleslaw, "On the single axioms of protothetic, II," *Notre Dame Journal of Formal Logic* 2: 111-126 (1961).
78. Sobocinski Boleslaw, "On the single axioms of protothetic, III," *Notre Dame Journal of Formal Logic* 2: 129-148 (1961).
79. Sobocinski Boleslaw. Successive simplifications of the axiom-system of Lesniewski's Ontology. In *Polish logic 1920-1939*. Edited by McCall Storrs. Oxford: Clarendon Press 1967. pp. 188-200
80. Stachniak Zbigniew. *Introduction to model theory for Lesniewski's Ontology*. Wroclaw: Wydawnictwo Uniwersytetu Wroclaskiego 1981.
81. Strawson Peter Frederick and Lejewski Czeslaw, "Symposium: proper names," *Proceedings of the Aristotelian Society* Supplementary vol. 31: 191-236 (1957).
82. Surma Stanislaw. On the work and influence of Stanislaw Lesniewski. In *Logic Colloquium 76*. Edited by Gandy Robin and Hyland John Martin. Amsterdam: North-Holland 1977. pp. 191-220
83. Takano Mitio, "A semantical investigation into Lesniewski's axiom of his ontology," *Studia Logica* 44: 71-77 (1985).
84. Trentman John, "Lesniewski's Ontology and some medieval logicians," *Notre Dame Journal of Formal Logic* 7: 361-364 (1966).
85. Vasyukov Vladimir, "A Lesniewskian guide to Husserl's and Meinong's jungles," *Axiomathes* 4 (1): 59-74 (1993).
86. Wojciechowski Eugeniusz, "Zwischen der Syllogistik und den Systemen von Lesniewski: Eine Rekonstruktion der Idee der Quantifizierung der Prädikate," *Grazer Philosophische Studien* 48: 165-200 (1994).
87. Wolenski Jan, "Reism and Lesniewski's Ontology," *History and Philosophy of Logic* 7: 167-176 (1986).
88. Wolenski Jan. *Logic and philosophy in the Lvov-Warsaw school*. Dordrecht: Kluwer 1989.
89. Wolenski Jan, "Lesniewski's logic and the concept of Being," *Recherches sur la Philosophie et le Langage*: 93-101 (1995).

This paper applies Lesniewski's logical ideas to an analysis of the concept of being. The analysis follows the classical ontology which is based on a distinction of two concepts of being : being in the distributive sense and being in the collective sense. Now it is argued that Lesniewski's ontology

(calculus of names) is a much better device for analyzing being in the distributive sense than the standard first-order predicate logic. Moreover, basic intuition connected with the being in the collective sense are nicely captured by mereology.

90. Zanasi Fausto, "Su alcuni aspetti della teoria della definizione nei sistemi logici di S. Lesniewski," *Annali dell'Istituto di Discipline Filosofiche dell'Università di Bologna*: 219-232 (1980).

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