

Interpretation of signs in the conception of Ch. S. Peirce via predicabilia and categories of Aristotle

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Abstract. The article is devoted to the hypothesis explaining the order of signs' classes presented in the manuscripts and articles of Ch.S. Peirce via the diagram of relations of Aristotle's categories which was described in the first translation of Aristotle into Latin conducted after Boethius by Julius Pacius. The hypothesis allows explaining not only the order of categories in the Ch.S. Peirce's diagram but also interpreting them via ten categories of Aristotle on the background of scholastic tradition of depicting relations. The conclusion is drawn that the theory of Ch.S. Peirce seems to be the development of Aristotle's doctrine of categories. The article can contribute to the history of philosophy.

1 Introduction

The aim of the study is to demonstrate a hypothesis that Peirce's theory of signs and the Doctrine of predicabilia (universals), which can be traced through Boethius and Porphyry back to Aristotle's ideas, are isomorphic or, at least, correspond to one variant of this doctrine.

Two kinds of arguments are used for proving the hypothesis: 1) personal scientific and cultural interests and views of Ch.S. Peirce as possible prerequisites of the hypothesis; 2) facts of history of science which were known to some degree to Peirce as real conditions of the hypothesis. Synthesis of these arguments as a united conception presents the described hypothesis as a necessary conclusion set forth below. To some extent, it affects the structure of the present research.

2 Origin of Ch. S. Peirce's knowledge of Aristotle's works

Ch.S. Peirce was a professional logician. He owned a large collection of scholastic treatises and editions of classical philologists of antiquity and of the Middle Ages in the USA of that time [1]. There were Aristotle's incunabulum "Omnia opera" (1489), the incunabulum of Johannes Duns Scotus "Quæstiones quolibetales ex quatuor voluminibus scriptæ Oxoniensis" (1477, 1481), as well as early printed books of the same works of 1609 and 1639 editions, the incunabulum of St. Thomas Aquinas (1474), ancient editions of Euclid (1570, 1651, 1752), Peter of Spain (1512), F. Bacon (1665), and Kh. Huygens (1673), as well as "In summulas Petræ Hispani..." by John Eck of 1516 [2], which is scrutinized in this paper separately.

Peirce was well familiar with the history of scholasticism and its representatives. For example, when Ch.S. Peirce described a resurrected notion 'abduction' in logic, he mentioned Julius Pacius, as the first person who had used the term 'abduction': "This is the English form of 'abductio', a word employed by Julius Pacius, as the translation of Ἀπαγωγή, which had been rendered as 'deduction' by Boethius and 'reduction' and even 'induction' by the schoolmen" [3, p.108]. It follows that Peirce is sure to have known about the papers of Julius Pacius. M. Kraus had the similar opinion and believed that Peirce in his quotation from the edition of 1597 appealed to Roman 'abductio' put into practice by Pacius [4, p.247]. Thus we assert that Peirce knew in detail the papers of Julius Pacius. Hence, we assume that Peirce's knowledge of diagram from the edition of Aristotle's "Organon", by Pacius, was profound. The diagram will be discussed further.

It follows that Peirce as a connoisseur of scholasticism and a bibliophile is sure to have known one of the famous editions of Aristotle's "Organon" [5] taken by Julius Pacius and containing Greek and Roman texts of "Porphyrii isagoge" as a foreword [6].

3 Diagrams of predicabilia relations by J. Pacius and J. Eck

3.1. Called "Porphyrii isagoge" (Greek: Εἰσαγωγή) by Porphyry (Greek: Πορφύριος, the real name Μάλχος or Μαλίς; 232/233, Tyre, 304/306, Rome), "Introduction" to Aristotle's "Organon" sometimes called in Latin "De quinque vocibus" and "Isagoge of Porphyry the Phoenician, the Pupil of Plotinus the Lycopolitan" translated into Latin and commented twice by Boethius.

"Organon", by Pacius, contains Porphyry's paper and presents the following diagram of relations between predicabilia distinguished by Porphyry [6, p. 28]:

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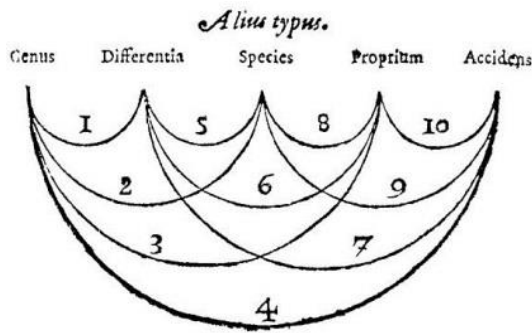


Fig. 1. A diagram of relation between predicabilia by J.Pacius

The diagram depicts ten relations between five predicabilia: genus, differentia, species, proprium, accidens. The numeration is fairly specific: from top downward left to right from 1 to 4, then again from top downward left to right from 5 to 7, and again from top downward 8 and 9, and 10 at the top row of figures.

3.2. Pacius' diagram is a product of applying Ramus' ideas in the education methodology and mnemonics. This method was intended to simplify memorization of relations structure between predicabilia.

The essence of this method is that relations depicted in arcs are numbered from top downward left to right, which makes it easy to reconstruct it from memory. For simplification of using the diagram Pacius supplied Porphyry's "Introduction" by marginalia with number-referenced relations described by Porphyry and its number in the diagram.

3.3. The diagram in the Pacius' edition of "Organon" is similar to a diagram presented in "Dialectique" which was published with John Eck involvement (German: Johann Maier aus Eck; 13 of November 1486; Egg an der Günstz – 13 February 1543, Ingolstadt) in 1517 [7]. This is one more reason for mnemonic and methodological character of the diagram.

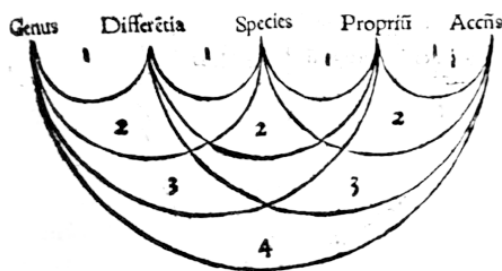


Fig. 2. A diagram of relations between predicabilia by John Eck (1517)

In the diagram given in Figure 2 [7, fol. XXXVI] the figures mean not the numbers of relations between predicabilia, but the reference to the same stages of categorization [7, fol. XXXV rect.]. Thus, Eck's diagram is intended to demonstrate not only the relations between predicabilia (lines), but also reciprocal relations between relations (numbers) as stages.

3.4. It is evident that the diagrams are identical even by arc proportions, but they are distinguished by numbering of relations depicted in arcs. That allows

asserting that Pacius adopted Eck's diagram, but at the same time Pacius revised its numbering system.

The diagram from the edition of John Eck's "Theology of Peter of Spain" [2, fol. XXX, rect.], which Peirce, as it was mentioned above, had owned privately, is an additional argument supporting our hypothesis (see Figure 3). Even a quick glance is enough to be convinced that the thesis about the connection of signs' numbering by Pierce with the theory of Eck developed and interpreted by Pacius is not unreasonable:

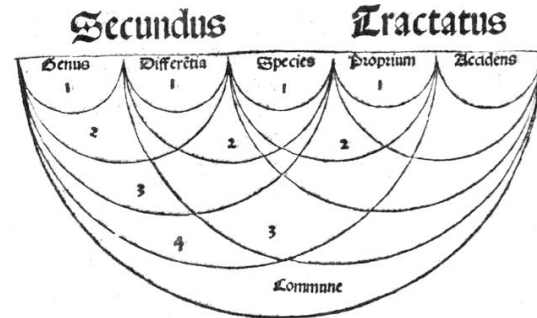


Fig. 3. A diagram of relations between predicabilia and essence by John Eck (1516)

3.5. Eck's numbering is a kind of 'methodological guideline' which depicts the stage of 'unification' of predicabilia: at the first stage neighboring predicabilia are combined, at the second – those separated by one, and so on. This interpretation is confirmed also by the diagram from [2, fol. XXX], presented in Figure 4:

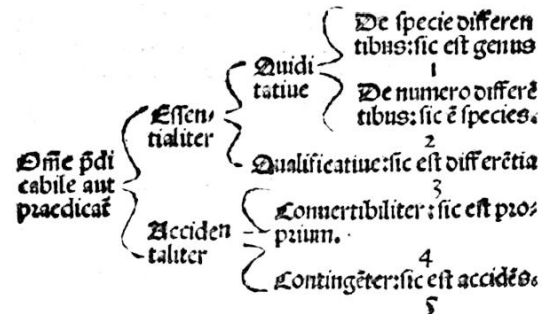


Fig. 4. A diagram of relations between predicabilia and essence by John Eck (1516)

As we see, the fifth relation to essence numbered in Figure 3 is depicted in Figure 4. We believe that Eck's diagrams reflect a realistic view on predicabilia as objectively existing universals.

3.6. At first sight, Pacius' diagram looks nominalistic, especially in contrast to Eck's one. But such conclusion would not be absolutely true.

3.6.1. The dispute between nominalists and realists had already been settled by that time. In general, weakened realism turned into an official doctrine of Catholicism and lost the thrust of its philosophic and scientific pathos. Nominalism gave place to a kind of metaphysical indifference (similar to one that appeared in France in the 16th century) which was presented in M. Montaigne's skepticism as well as in P. Ramus' 'nihilism' [8]. Calvinistic orientation of Pacius' views combining M. Luther's nominalistic orientation, Ph. Melancthon's 'aristotlism' and the newest

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pedagogical ‘ramistic’ trends characterize Pacius’ papers from his Greek-Latin publications of Aristotle with new original translations to law studies. We stress that Pacius made a new translation of Porphyry’s and Aristotle’s works for his editions [9, p. 27].

3.6.2. Pacius’ diagram can be explained as a result of application of ‘ramistic’ philosophical nihilism and methodological and mnemonic ways to Eck’s diagram to simplify memorisation of structure of relations between predicabilia. Essence of the method is that the relations depicted in arcs are numbered from top downward left to right, that is easy to reproduce from memory.

For simplification of using this diagram Pacius supplied his translation of Porphyry’s “Introduction” by marginalia with indication of relations described by Porphyry and its number. Therefore, it is clear that Pacius’ diagram reflects ten relations between predicabilia and points that Porphyry had mentioned them. Pacius identified these relations with Aristotle’s categories.

3.6.3. So both diagrams depict Aristotle’s categories as bilateral relations between five predicabilia, besides, Pacius’ numbering is newer and has ‘category’ semantics.

4 Correlation between Ch.S. Peirce’s signs and Aristotle’s categories

4.1. We could see an order of numbering identical to Pacius’ one in the graph including ten types of signs formulated by Peirce (see Figure 5):

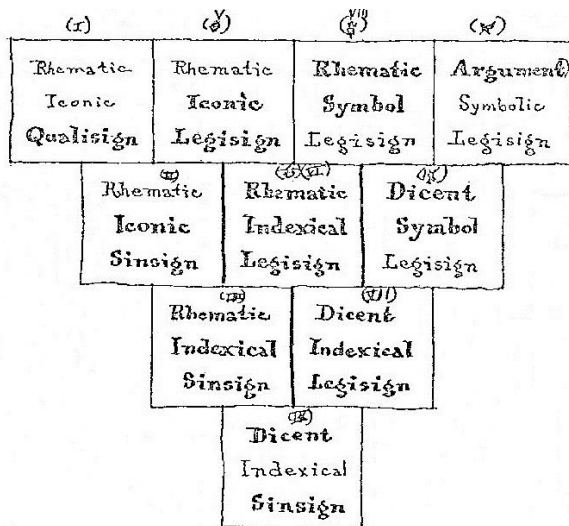


Fig. 5. A fragment of a manuscript of Ch.S. Peirce depicting classes of symbols and their elements

4.2. For historians and Peirce’s publishers the diagram of ten signs organized in the shape of an inverted triangle is a certain puzzle.

Joseph Ransdell (1931–2010), one of the researchers and publishers of Ch.S. Peirce, published the photo of the manuscript of the semiotics’ founder in his correspondence (Figure 5) where the signs’ names were written by Peirce himself, whereas the numbers of signs were added by editors Hartshorne and Weiss [10].

Therefore some scientists assume that numbering is wrong and we can or should refuse it.

We can’t agree with this view. Firstly, it questions the competence of the editor while structure of the diagram was created by Peirce himself and, secondly, it matches the numbering given by Peirce in the manuscript “Nomenclature and Divisions of Triadic Relations as Far as They Are Determined”, which contains the diagram presented above: “First, a Qualisign is ... Second, an Iconic Sinsign ... Third, a Rhematic Indexical Sinsign ... Fourth, a Dicent Sinsign ... Fifth, an Iconic Legisign ... Sixth, a Rhematic Indexical Legisign ... Seventh, a Dicent Indexical Legisign ... Tenth, an Argument...” [11, p. 294-296]. This numbering from the manuscript corresponds to editors’ marks in the diagram. Actually, there can be no doubt that the numbering is correct as Peirce gave it himself *verbally*. The problem is that these are *Peirce’s researchers* who find no sense and can not understand the basis of sign numbering applied by the scientist.

4.3. Ch.S. Peirce as a brilliant logician, mathematician, chemist, and scholasticism expert could not lose sight of similarity between his signs numbering and relations between predicabilia in Pacius’ edition. Concurrence like that could not be accidental because Peirce developed his sign system rather late, already after he had sold his library of incunabula and early printed books.

We expound this concurrence in structure of the diagrams as a straight reference to relations between predicabilia described by Porphyry and depicted graphically by Pacius.

4.4. The fact that Peirce accepted Pacius’ numbering system with the mention of Pacius’ term ‘*abduction*’ as a translation of Aristotelian ‘*ἀπαγωγή*’ excludes a possibility that the found coincidence has a random nature. On the contrary, we think Peirce definitely realized it and it corresponded to his idea.

In this case the choice of order does become significant. One would expect that Peirce as a realist would adhere to realistic Eck’s diagram. However, Peirce chose Pacius’ diagram. The important question for solution of our problem could be formulated like that: Why did Peirce prefer Pacius’ method of numbering to Eck’s one? But in the 16th century the opposition of nominalism and realism was not so significant for those philosophers and did not worry them a lot. Therefore, according to paragraph 3.3 of this paper one can say that Eck’s numbering could better describe processes and stages of cognition while according to paragraph 3.6.2 Pacius’ numbering pointed at Aristotle’s categories. We think that a link with Aristotle was expressed in Peirce’ works, that even corresponds to his slightly arrogant character.

4.5. So from the comparison of the diagrams taking into account the scientific interests (logic and its history, relationships between nominalists and realists), collection of books in Peirce’s private library (incunabula and early printed books), existence of similar diagrams in the books well known to Peirce, analysis of these diagrams, as well as personal features of Peirce caused by his intellectual biography and

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scientific interests, we insist on Ch.S. Peirce’s presenting his sign system in connection with the system of relations between predicabilia in Porphyry’s description in “Introduction” which was a standard commentary to Aristotle’s “Categories” from the Boethius times for all the European Middle Ages. In his diagram Peirce correlated his ten signs with Aristotle’s categories, but ‘the firsts’ – (rhemes, dicents and argument) and ‘the seconds’ (icons, indexes and symbols) – with essential and existential forms of predicabilia.

Peirce probably thought that the categories distinguished by Aristotle have sign character. Moreover, he meant that ten classes of signs singled out by him were categories and, on the contrary, Aristotle’s ten categories were signs. We presented this as a table that compares Pacius’ and Peirce’s diagram (Roman numerals) with Aristotle’s categories (italics) and Peirce’s system of signs (Roman font):

Table 1. Seeming correlation between Aristotle’s categories and Ch.S. Peirce’s signs

(I) Rhetic Iconic Qualisign Substance <i>οὐσία – ‘essence’</i>	(V) Rhetic Iconic Legisign Place <i>ποῦ – ‘where’</i>	(VIII) Rhetic Symbol Legisign <i>Having</i> <i>ἔχειν – ‘to have’</i>	(X) Argument Symbolic Legisign <i>Being acted upon</i> <i>Πάσχειν – ‘to suffer’</i>
(II) Rhetic Iconic Sinsign Quantity <i>Τὸ πόσον – ‘how much’</i>	(VI) Rhetic Indexical Legisign Time <i>πότε – ‘when’</i>	(IX) Dicent Symbol Legisign <i>Action</i> <i>Τὸ ποιεῖν – ‘to make, to do’</i>	
(III) Rhetic Indexical Sinsign Quality <i>τὸ πόιον – ‘of what kind’</i>	(VII) Dicent Indexical Legisign Position <i>κεῖσθαι – ‘to lie’</i>		
(IV) Dicent Indexical Sinsign Relation <i>Τὸ πρὸς τί – ‘toward something’</i>			

Nevertheless, we can’t be satisfied with the obtained results as the correlation between Peirce’s classes of signs and Aristotle’s categories presented above is purely mechanical and absolutely doesn’t correspond to the content. The solution to this would be, as it seems to us, to correlate the first category of Aristotle to the tenth class of signs by Peirce, and the tenth category to the first class, respectively. The order of other categories-to-class correlations can be inferred in the same way and is presented in the table below (see Table 2) which we consider to be the final point in the current discussion:

Table 2. Refined correlation between Aristotle’s categories and Ch.S. Peirce’s signs

(I) Rhetic Iconic Qualisign 10. <i>Being acted upon</i> <i>Πάσχειν – ‘to suffer’</i>	(V) Rhetic Iconic Legisign 8. <i>Having</i> <i>ἔχειν – ‘to have’</i>	(VIII) Rhetic Symbol Legisign 5. <i>Place</i> <i>ποῦ – ‘where’</i>	(X) Argument Symbolic Legisign 1. <i>Substance</i> <i>οὐσία – ‘essence’</i>
(II) Rhetic Iconic Sinsign 9. <i>Action</i> <i>Τὸ ποιεῖν – ‘to make, to do’</i>	(VI) Rhetic Indexical Legisign 6. <i>Time</i> <i>πότε – ‘when’</i>	(IX) Dicent Symbol Legisign 2. <i>Quantity</i> <i>Τὸ πόσον – ‘how much’</i>	
(III) Rhetic Indexical Sinsign 7. <i>Position</i> <i>κεῖσθαι – ‘to lie’</i>	(VII) Dicent Indexical Legisign 3. <i>Quality</i> <i>τὸ πόιον – ‘of what kind’</i>		
	(IV) Dicent Indexical Sinsign 4. <i>Relation</i> <i>Τὸ πρὸς τί – ‘toward something’</i>		

Certainly the idea put forward is still hypothetical. Reasons in support of the claim are given above and are based on the following facts: philological (structure of Peirce’s library, consistency of diagrams’ structure in different editions of different publishers), cultural-scientific (prevalence of particular Pacius’ editions in Europe in Modern Times), philosophy system of world outlook (Peirce’s interest to problems of categorization and categories, realism in philosophy).

5 Conclusion

To sum up we present some considerations about consequences of the proposed hypothesis that can confirm or refute it.

First, one is to establish and verify a relation between ‘the firsts’ and ‘the seconds’ in Peirce’ signs as an invariant content plane (substance) and relevant expression plane (accident) of sign. ‘The thirds’, apparently, should be presented as a product of logical summing up of invariant of ‘the firsts’ and the invariant of the relevant ‘seconds’, which assumes an implicit mechanism of transition from the relevant ‘seconds’ to their invariant.

In case of confirmation of these assumptions, one could assert that Peirce’s ten signs are not signs as invariant and potential units of the language or even metalinguistic universals but ten universal symbolic situations, ten classes of realizing signs’ ability in experience.

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The hypothesis, which we put forward, asks for thorough verification by not only inductive philological means, but also by deductive philosophical and methodological discourse. For example, there is a problem of predicabilia (universals) comparison with units of sign by Peirce. The correct solution of this problem can prove or refute the conformity, which we have found, and its interpretation.

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