STUDIA METODOLOGICZNE

ADRES REDAKCJI

Wydział Nauk Społecznych UAM
Instytut Filozofii
ul. Szamarzewskiego 89C
60-568 Poznań
e-mail: studmet@amu.edu.pl; rzepinskit@wp.pl

Strona internetowa czasopisma:

http://www.studiametodologiczne.amu.edu.pl

Wydanie drukowane jest podstawową wersją czasopisma

UNIWERSYTET IM. ADAMA MICKIEWICZA W POZNANIU

STUDIA METODOLOGICZNE

DISSERTATIONES METHODOLOGICAE

Zeszyty poświęcone integracji nauki

37

WYDAWNICTWO NAUKOWE

POZNAŃ 2016

Publikacja jest dofinansowana przez
Benemérita Universidad Autónoma de Puebla (Meksyk)

This publication is co-financed by
Benemérita Universidad Autónoma de Puebla (Mexico)

Komputerowe opracowanie okładki: K. & S. Szurpit

Redaktor techniczny: Elżbieta Rygielska

Łamanie komputerowe: Danuta Kowalska

ISSN 0039-324X

WYDAWNICTWO NAUKOWE UNIWERSYTETU IM. ADAMA MICKIEWICZA W POZNANIU
61-701 POZNAŃ, UL. A. FREDRY 10
www.press.amu.edu.pl
Sekretariat: tel. 61 829 46 46, faks 61 829 46 47, e-mail: wydnauk@amu.edu.pl
Dział sprzedaży: tel. 61 829 46 40, e-mail: press@amu.edu.pl

Ark. wyd. 16,00. Ark. druk. 17,00

DRUK I OPRAWA: EXPOL, WŁOCŁAWEK, UL. BRZESKA 4

Contents

Preface

The present issue of "Studia Metodologiczne" is entirely devoted to the concept of analogy. It contains papers that were presented at *The First World Congress on Analogy* and also other contributions to the theory of analogy and its applications, i.e. case-studies in literature, political science, psychology and zoology.

The First World Congress on Analogy took place in Puebla (Mexico), 4-6 November 2015. It was sponsored and organized by the Meritorious Autonomous University of Puebla (BUAP) in collaboration with the Popular Autonomous University of the State of Puebla (UPAEP, Mexico) and the Adam Mickiewicz University (UAM, Poznań, Poland). *The Second World Congress on Analogy* (www.analogycongress.com) will be held in Poznań (Poland) on 24-26 May 2017. The event will take place every two years.

***

We would like to thank to Vicerrectoría de Investigación y Estudios de Posgrado (Research Project 00568) of the Benemérita Universidad Autónoma de Puebla, BUAP, Mexico, for their financial support of this publication and precious and enduring cooperation that started this delightful and fruitful intellectual adventure.

Katarzyna Gan-Krzywoszyńska
Juan Manuel Campos Benítez
Piotr Leśniewski

STUDIA METODOLOGICZNE
NR 37 • 2016, 9–28
DOI: 10.14746/sm.2016.37.1

JAN WOLEŃSKI

On Analogical Concepts (Transcendentalia)[1]

ABSTRACT. The adjective "transcendental" has two different meanings. In Kant's philosophy, it means "transcending all possible experience". It is an epistemological meaning. The method of transcendental deduction was proposed by Kant to cope with problems of *quid juris* in our concepts. Quite another sense of the adjective "transcendental" was (and still is) associated with scholastic (neo-scholastic) philosophy. The schoolmen say *ens omnia genera transcendit*. It means that the concept of being is transcategorial, where "categorical" refers to categories in Aristotle's understanding. One theory of transcendentalia, developed in the most mature form by Thomas Aquinas, distinguished several transcendental concepts, in particular, the mentioned *ens*, further, *verum* (truth), *bonum* (goodness), *res* (thing), *aliquid* (something), *unum* (unity) and, sometimes, *pulchrum* (beauty).
The theory of *transcendentalia* leads to many interesting logical and ontological problems which can be analyzed by tools derived from logic and set theory. Clearly, *ens* is the most important transcendental concept. Is the collection of beings a set or a proper class? Or perhaps a category in the mathematical sense? Other question pertain to truth. Is it ontological or epistemological concept? How to interpret the idea that the essence of truth consists in a correspondence of truth-bearers and the reality? As far as the issue concern *bonum*, is it really co-extensional with *ens* and *verum*? The paper tries to answer these questions.

KEY WORDS: analogy, transcendetalia, Kant, Aquinas, Scotus

The adjective 'transcendental' has two basically different meanings, both of a very deep philosophical relevance. In Kant's critical philosophy, it means the same as the phrase 'transcending all possible experience'.[2] This sense is almost exclusively associated with epistemological issues. In

[1] I use in this essay some material published in my earlier papers [Woleński, 1992], [Woleński, 1997], [Woleński, 2004, repr. in: Woleński, 2011], [Woleński, 2008, repr. in: Woleński, 2011], [Woleński, 2013].

[2] The meaning of 'analogical' in this context will be explained below.

particular, Kant proposed the method of transcendental deduction in order to cope with the problems of *quid juris* (that is the possibility of the justification of synthetic a priori propositions) in our knowledge, different than empirical *questiones facti*. Quite another sense of the adjective 'transcendental' and more related to ontology than to epistemology is associated with scholastic and neo-scholastic philosophy.[3] The Schoolmen distinguished two kinds of general concepts, namely, universals and transcendental concepts.[4] Roughly speaking, the former express Aristotelian secondary substances. The later are the most general notions. They include *ens* (being), *verum* (truth) and *bonum* (goodness), *unum* (one) and *res* (thing).[5] The concept of being plays a special role among all transcendental concepts, because other transcendentalia are compared to it.

The fundamental principle proposed for transcendentals is captured by the following formula:

(*) If *T* and *T'* are transcendentals, both are mutually convertible.[6]

The following more concrete asertions instantiate (*):

(a) *Ens et verum convertuntur* (being and truth are mutually convertible);

(b) *Ens et bonum convertuntur* (being and goodness are mutually convertible);

(c) *Verum et bonum convertuntur* (truth and goodness are mutually convertible);

---

[3] It is important to note that 'transcendental' and 'transcendent' are sometimes employed as synonyms, like in the sentences 'God is transcendental' and 'God is transcendent'. On the other hand, if we consider the sentence 'The object of knowledge is transcendent with respect to the knowing subject', the word 'transcendent' points out that the object in question exists outside of the subject (is not immanent) and suggests the thesis of metaphysical realism. In order to avoid a confusion, I will avoid the adjective 'transcendent' in my further considerations.

[4] For historical accounts, see [Knittermeyer, 1920; Schulemann, 1929; Wotler, 1946; Bärthlein, 1972; Elders, 1992; Aertsen, 1996, 2012].

[5] Sometimes *pulchrum* (beauty) is posited as a transcendentalium, but I do not follow this view, because it is controversial. In particular, beauty and ugliness are frequently considered as subjective.

[6] The account of transcendentals based on (*) I will label as the (*)-theory.

(d) *Ens et unum convertuntur* (being and unity are mutually convertible);
(e) *Unum et verum convertuntur* (unity and truth are mutually convertible);
(f) *Unum et bonum convertuntur* (unity and goodness are mutually convertible);
(g) *Ens et res convertuntur* (being and thing are mutually convertible);
(h) *Res et verum convertuntur* (thing and truth are mutually convertible);
(i) *Res et bonum convertuntur* (thing and good are mutually convertible).

Using other terminology, we can say that transcendentals are extensionally equivalent, but intensionally different. The second clause means that properties expressed by 'is a being', 'is true' and 'is good' are not the same. Since being plays the special role in the variety of transcendentalia, one can say that others are modes (aspects) of being (*modi entis*).

To anticipate further remarks, I note two circumstances. Firstly, transcendental concepts are predicated not univocally on things (particular beings), but analogically.[7] Secondly, we should expect some logical peculiarities of transcendentalia. One such peculiarity can be easily derived from the fact that transcendental concepts are the most general notions. They cannot be defined by *genus proximum et differentiam specificam*. Assume that *U* is a universal. Thus, we can define *U* as *U'DF*, where *U'* is the nearest more general universal and *DF* is a specific difference. For instance, we define a square as a rectangle having equal sides. Following the traditional account we say that *U* is a specialization of *U'*, but the latter is a generalization of the former. Consequently, being is not a specialization of anything else and, on the other hand, it is not a generalization of universals. Moreover, if *U* (for instance, a square) is a universal, not-*U*

[7] The qualification 'analogically' justifies the title of this paper. Analogical concepts are related to the idea of the analogy of being (*analogia entis*). Roughly speaking, *analogia entis* consists in coexistence with various transcendental aspects of being, which determines its essence. See [Przywara, 2014], for a comprehensive analysis of the problem of the variety of problems associated with the analogy of being.

(a not-square) is universal as well. We say that not-*U* is formed by the *infinitatio* of *U*, the operation performed by adding 'not' before *U*. Clearly, transcendentals do not admit *infinitatio*. In particular, 'not-being' does not refer to anything; it is not even an empty name, because it is not a name at all and functions as a syntacategorem in contradistinction to 'being', a categorematic expression. 'Not-being' has to be distinguished from the phrase 'false (wrong, etc.) being' in which the adjectiveacts as a modifier, that is, changes the meaning of the word 'being'. These peculiarities are well summarized by the formula *ens omnia genera transcendent* (being transcends all genera). The same concerns other transcendentals. In what follows, I will concentrate onbeing and goodness.

The (*)-theory of transcendental concepts was extensively developed by Thomas Aquinas and his later philosophical followers. It is one of the very foundations of the old and present Thomistic philosophy in all of its domains, namely, ontology, epistemology and axiology, particularly the negative theory of *malum* (moral wrongness or moral evil), which will be analyzed in the second part of this paper . Duns Scotus proposed a different theory of transcendental concepts.[8] He distinguished so-called disjunctive transcendentals, such as necessity and possibility/contingency, which do not satisfy (*) and transcendendalia which obey this principle. Necessity and contingency are examples of the disjunctive transcendental. As an important consequence of Scotus' account we have that disjunctive transcendental concepts do not belong to the most general concepts. This is so, because being can be either necessary or possible (contingent). Since being can be necessary (like Platonic forms or God in various religions) or contingent (as the world created by God or things in Plato's ontology), neither necessity nor contingency are co-extensional with the concept of being. If *T'* is a disjunctive transcendental, not-*T''* is a disjunctive transcendental as well. This entails that if *T* is one of the most general transcendental concepts, that is, the notion of being and its extensional equivalents (for instance, truth in Scotus's account) its scope is the sum of *T'* and *T''*.

---

[8] I use the terms 'transcendentalia', 'transcendentals' and 'transcendental concepts' interchangeably.

A particularly good account of the (*)-theory is captured by the following quotation (the author of this passage omits *res*):[9]

> There are some features which belong to every being *qua* being without any exception and, for this reason they are called transcendental. They are also labeled transcendental significations. Actually they refer to that which is defined more closely as the transcendental concept of being and point out some real mode of being which, independently of of our mind, is associated with every being. This mode is logically different from every being and it is not expressed by the concept of being. Finally, we often call these features transcendental properties, at the same time the term "property" (*proprietas*) is taken in a wider meaning. A property in the strict sense is that which necessarily belongs to the essence and makes it distinct from other essences, though it is not comprised by it.. On the other hand, transcendental properties add nothing and even they cannot add anything, because being, as we know comprises everything that can exist in any way, they only formally indicate some perfection which is *implicite* contained in every being. […]. […] these properties associated with every being are predicated about various things similarly as being, that is, analogically. […]. We have three transcendental properties of being: unity, truth and goodness. In other words: every being is one, true and good. […]. [B]eing can be considered either as existing in itself or related to something else. In the first case, we have indivisibility that is unity of being. In the second case, we have either truth or goodness.

It is perhaps interesting to note that the transcendentals *res* and *unum* determine the so-called distributive conception of being on which 'being' is a general term referring to particularia and their properties (secondary substances) as possibly separated ontological items, but this word does not designate the collective (mereological) whole consisting of connected parts.[10]

---

[9] [Wais, 1926, pp. 77-78]. Kazimierz Wais was an important representative of Neo-Scholasticism in Poland in the early 20th century.

[10] There are also attempts to analyze the concept of being as mereological. See [Henry, 1972], for this way of thinking about the concept of being. The difference between the distributive and collective account of the concept of being is substantial, because different formal tools are involved in both conceptions. Whereas the former conception employs predicate logic and set theory, the latter theory is based on mereology as the theory of the parthood relation. It is obvious that the issue how to analyze the concept of being is related to other basic philosophical controversies. For instance, the choice of a formal basis for ontological analysis has obvious affinities with a preference toward nominalism or conceptual realism.

What is the analogical mode of predication? If the transcendentals are the most general properties, you cannot imagine more general ones (it is a consequence of the formula *ens omnia genera transcendit*). Putting this in other words, the concept of being does not arise by a specialization of any other notion (see above). Hence, nothing more general can be predicated about particular beings. The tacit assumption is here that a normal predication (I recall that the transcendentalia are *proprietates* in a wider meaning) adds something to what is predicated about. According to the Schoolmen and their followers, only universals allow increasing their contents by adding new properties. This mode is characterized as univocal. On the other hand, the analogical mode is not ambiguous, that is, it does not produce new meanings via its applications to different particular cases, but it points out that the transcendentals are predicated on everything in the same way. Let me return to the remarks on 'false being'. On the other hand, 'true' in 'true being' (similarly, in the case of other transcendental significations) adds nothing to the meaning of the name 'being'. It is a very instructive feature of analogical predication about beingand other transcendentalia as well.[11] In what follows, some peculiarities of the transcendental concepts will be more closely analyzed by contemporary logical tools.[12] In particular, I will try to clarify the concept of being (as understood in the (*)-theory) by predicate logic and set theory, and to show that goodness should be considered as a disjunctive transcendental, not as one of the transcendentals co-extensive with being.[13]

We can illustrate the (*)-theory by the following scheme (it is the first approximation):

---

[11] Note, however, that Duns Scotus considered all trancendentals as predicated univocally. This view is closely related to the fact that we have not only transcendentals as the most general concepts, but also disjunctive ones.

[12] This kind of analysis directed to ideas proposed by the Schoolmen has a long tradition in Poland. See [Woleński, 2003, repr. in: Woleński, 2013]. In particular, Salamucha considered the transcendental as a systematically ambiguous concept in the sense of logical types. See [Salamucha, 2003, 71-95 (originally published in Polish in 1937)].

[13] The same concerns truth. See [Woleński, 2013] (see note 1) for an analysis of truth as a transcendentalium. Speaking more precisely, this conclusion concerns truth in the epistemological sense.

(S) *Ens qua ens*
Various universals (*ens in alio*)
Individuals (*ens per se*)

First of all, the contexts *ens per se* and *ens per alio* must be properly understood. The phrases *per se* and *in alio* do not express properties of being as being (*ens qua ens*) but rather conveniently characterize individuals as members of a set of beings (primary substances in Aristotle's view) and universals as universals belonging to the set of secondary substances. In fact, we can skip the expressions *ens per se* and *ens in alio* without any loss of content.

Since universals are hierarchically ordered by their generality, we can replace (S) by

(S1) *Ens*

Universals_n
Universals_{n-1}
……
Universals_1

Individuals

The scheme (S1) has two peculiar (or critical) points, namely Individuals and *Ens* (it is symbolized by the line -----). Individuals cannot be defined by *genus proximum et diffrentiam specificam*, because definitions (according to the traditional logic) concern general names (concepts). Thus, individuals are subjected neither to generalization nor to specialization. We should rather say that they instantiate universals of the order 1 (that is, covered by Universals_1) and are collected in sets of items having properties expressed by universals located at the level 1. As we know, *Ens* does not admit generalization. Its specialization is a delicate problem and I will not enter into this question. Perhaps we might say that Individuals and Universals instantiate *Ens* in the way determined by the analogical use

of transcendental concepts. Finally, the hierarchy H = {Individuals, Universals$_1$, Universals$_2$, …, Universals$_{n-1}$, Universals$_n$} is finite.[14]

Now I will pass on to approaches motivated by modern logic and set theory. At first I consider the scheme:

(S2)
$$\frac{F^e(Ens)}{\begin{array}{c}\ldots\ldots\\ F^n(F^{n-1})\\ F^{n-1}(F^{n-2})\\ \ldots\ldots\\ F^1(x)\end{array}}$$
$$a_1, a_2, \ldots, a_{n-1}, a_n, \ldots$$

This scheme present a linguistic hierarchy of formulas (H^{S2}). We have the 0 of individual constants, that is, the individual names of objects.[15] The formulas of the 1st order express properties of the individuals, that is, items denoted by individuals constants. The formulas of the n^{th} order express the properties denoted by the formulas of the n–1 order. Although the hierarchy H^{S2} is infinite, one can also consider its finite fragments.

A special problem pertains to the formulas falling under $F^e(Ens)$. First of all, the expression *Ens* is a constant. Assuming, as it was noted, the distributive conception of being, *Ens* is a collection of all the possible items deserving to be covered by the constant *Ens.* However, it does not

[14] Although I exclude *Ens* from the hierarchy *H*, the opposite standpoint can be adopted. My reason for the exclusion in question will be given soon.

[15] I make some simplifications. I include individual constants into formulas. According to the standard account, the set formulas consists of sentences and sentential open formulas. I consider only monadic formulas. Thus, the letter F^n expresses a property of the *nth* order. Nothing essentially changes if formulas express *n*-termed ($n \leq 2$). I illustrate levels of the hierarchy H^{S2} by open formulas. Thus, sentences obtained by the quantification of open formulas or the substitution of variables by constants in open formulas are skipped. Finally, the expression $F^n(\ldots)$ represents, not a single formula, but a possibly infinite stock of formulas of the *nth* order.

say very much about the character of the formula $F^e(Ens)$. Clearly, if one intends to follow the theory of transcendentals, the predicate F^e cannot express a property of being, unless we assume that it would be a property in a wider sense, more specifically, predicated about *Ens* analogically. The peculiarity of F^e decides that the index e is not a possible value of n in F^n, but rather an indicator that the related predicate is closely related to *Ens*. However, these explanations can be hardly considered as the ultimate clarification of the discussed issues.

If we inspect the description of (S2) and H^{S2}, we immediately realize that several statements about both constructions also appeal to references of individuals constants and predicates. This circumstance motivates the scheme:

(S3) *Ens*

……

$\text{Sets}^n(S^{n-1})$

$\text{Sets}^{n-1}(S^{n-2})$

……

$\text{Sets}^1(\text{individuals})$

Individuals

$i_1, i_2, \ldots, i_{n-1}, i_n, \ldots$

(S3) presents a set-theoretical hierarchy H^{S3}. Its lowest level consists of a possibly infinite stock of individuals. The level marked by 1 covers a set of individuals, the level 2 – sets of sets of individuals and so on.[16] Finally, we can say that (S2) is intensional in its character, but (S3) extensional. It corresponds with the intuition that although transcendentals are mutually convertible from the extensional point of view, they are either being or express various aspects of *Ens*.

[16] (S3) and H^{S3} can be further simplified by adopting the principle that everything (up to the index n) is a set. This move cancels individuals. However, it seems that (S3) is philosophically more plausible than the hierarchy consisting exclusively of sets.

One point is, however, not captured by (S3). We do not know whether *Ens* is a set or something else. The negative answer is straightforward. If *Ens* would be a set, the predicate F^e would express a property (in the strict sense) of being. Yet this account contradicts earlier statements on being. Thus, we must look for a different interpretation of *Ens* in the set-theoretical setting. Fortunately, set theory provides a simple account of the status of *Ens* as an object. This solution consists in understanding the entity *Ens* asa proper class, not a set.[17] Intuitively speaking, a proper class is too big in order to be a set. The set of all sets is an example of a proper class. The naïve principle of comprehension states that every property determines a set. Putting this in other words, if *P* is a property, all objects having this property constitute a set. We can also say that if *F* is a predicate, all objects satisfying the formula *Fx* ('*x* is *F*') constitute a set. The axiomatic set theory introduces the restricted comprehension axiom saying that *X* is a set if and only if *X* is a subset of a set. Let *V* be a set of all sets. By Cantor's theorem if *X* is a set, the family of all its subsets is larger than *V*. However, it produces a contradiction, because *V* as the set of all sets is the largest set.[18] A solution is just to consider the universe of all sets as a proper class.

How to apply the concept of the proper class to *Ens*? Since this entity (*Ens*) covers all beings (independently of how being is defined), it can be viewed as a proper class. As we remember, *Ens* cannot be defined by *genus proximum et differentiam specificam.* It constitutes the next analogy. Proper classes also cannot be classically defined. If they were defined by their nearest kind and the specific difference, this way should proceed by

[17] I use ZF (Zermelo-Fraenkel) set theory with individuals, because it provides the simplest solution and, at least in my opinion, this background is sufficient for philosophy. However, any other system in which the distinction between a set and a proper class holds, can be taken as a formal background. See [Fraenkel, Bar-Hillel, 1973], for an extensive presentation of various systems of set theory and their foundational and philosophical problems. Mathematical category theory provides another formal skeleton for an analysis of the concept of being, but I will not discuss this route.

[18] In fact, the motivation for introducing proper classes as different sets came from looking for a solution of set-theoretical paradoxes. Not all proper classes are philosophically interesting. For instance, the Russell class, that is, the class of all classes which are not elements of themselves, important from the point of view of the history of paradox, has no particular philosophical relevance, at least in ontology.

finding a set correlated with the *genus proximum* in question. However, this is impossible, because proper classes cannot be subsets of sets. Furthermore, set-theoretical operations performed on classes must be somehow restricted. This constraint looks similar to the limitations of generalization, specialization and *infinitatio* as applied to *Ens* (and other transcendentalia). Furthermore, we can say that if someone uses the locution 'is a proper class', this way of speaking refers to a property in a wider sense, let's say, a quasi-property. Otherwise speaking, sets correspond to universals, but proper class to transcendentalsI do not say that the above analogies between proper classes as viewed in mathematical set theory and the entity *Ens* solve all, usually very controversial problems concerning the concept of being, in particular, questions raised by the (*)-theory. For instance, it seems that set-theory with proper classes does not provide the resources for a formal analysis of the analogical predication. Eventually, we might say that quasi-properties are those features of proper classes which are established in axiomatic treatments of such entities. For instance, two proper classes are extensionally equivalent if and only if these classes have the same elements. An attempt to construct the axiomatic theory of *Ens* by following some ideas stemming from set-theory with proper classes seems attractive. But even if such a theory is very problematic or even impossible, the idea of proper classes provides an attractive way of treating the concept of being (and other transcendental notions) in formal ontology based on the definite logical and mathematical devices.[19]

I have already mentioned the negative theory of *malum* (**NTM** for brevity). Now I will pass on to its analysis.[20] According to the (*)-theory every being is good and everything what is good is an instance of being. These statements can be rendered more formally as:

---

[19] It does not mean that I accept the outlined picture in all its details. For example, I have some nominalistic scruples against an excessive use set theory in ontology. Moreover, I seriously consider the possibility to interpret the word 'being' as a syncategorematic word (see my first paper quoted in note 1). A more detailed discussion of these issues exceeds the scope of this paper.

[20] This part of the present paper follows ideas expressed in my paper "Malum, Transcendentalia and Logic" (see note 1 for bibliographical details) and verbatim repeats some of its fragments.

(**NTM**1) *X* is good if and only if *X* is being.

Consequently, *malum* has a negative character. By transposition, evil is not being and, thereby, does not exist, eventually inside of the human imagination. I will argue than **NTM** is untenable. Firstly, I shall sketch an argumentation against this theory. Secondly, I shall try to outline various possibilities of the ontology of malum. **NTM** has two aspects, theological and ontological. As far as the issue concerns the former, **NTM** serves as a solution of a very celebrated problem of theodicy concerning the (in)consistency between the reality of evil on the one hand, and God's attributes on the other. MI am interested here only in the second, that is ontological problem.

One of the basic questions concerning **NTM** consists in understanding the qualification expressed by the word 'negative' in the frameworks of **NTM**. Clearly, *malum* is somehow opposite to *bonum*. Now 'the opposite' may be understood either as a negativum (contradictory) or as a privativum (contrary). The Schoolmen favoured the second option. The following example clarifies the issue. What is blindness? It is something that we can ascribe to human beings but not to stones or vegetables. Regarding vision as a positivum human beings have as a naturally occurring equipment, blindness appears as the privativum in this case, and non-vision constitutes the respective negativum. Thus, privativa consists in the lacking of respective positiva. It makes no sense, according to the Schoolmen, to say that stones or vegetables are blind, because they are beyond the scope of vision and blindness. At most, we can correctly say that stones or vegetables have no vision. Logically speaking, if *X* is a positivum and *Y* functions as its negativum, both are contradictories, but, related positiva and privativa are contraries. In consequence, we can state the next main thesis of **NTM**, namely:

(**NTM**2) *Malum* is the privativum with respect to *bonum*.

Both (**NM**1) and (NM2) express how *malum* is metaphysically related to *bonum* as one of transcendentalia.

Thomas Aquinas has also offered another account of what is *bonum* and *malum*. It is based on the idea of proper (right, correct, etc.) desire. The main idea is covered by the following equivalence:

(**) *X is* good if and only if it is an object of a proper desire.

Clearly, (**) refers to the psychology of human actions and their ethical consequences. We can say that (**) defines *bonum ethicum.* By a simple logical transformation, we obtain that *X* is *malum ethicum* if and only if there is lack of proper desire, that is, directed to *bonum.* Are *malum* in the sense of (**NTM**2) and *malum* in the sense of (**) coextensive or not? The affirmative answer seems to be motivated by the following (or a similar) example focusing on some commonsensical aspects of evil. Take the case of death. It certainly raises definite associations with non-being (*malum metaphysicum*), the physical privativum of life (*malum physicum*) and raises unpleasant (undesired) ethical feelings (*malum ethicum*). However, we must examine whether there is a logical passing from metaphysical and physical evil to the ethical one.

In the discussed problem, it is not inessential whether we appeal to the distributive or the collective understanding of being. Consider the following statements:

(1) If ***X*** is *bonum*, then ***X*** is everything (the collective interpretation of being);
(2) If ***X*** is everything, then ***X*** is *bonum* (the collective interpretation of being);
(3) If ***X*** is a *bonum*, then ***X*** is an object (the distributive interpretation of being);
(4) If ***X*** is an object, then ***X*** is a *bonum* (the distributive interpretation of being).

Now if we take being (the being) in the collective interpretation, (1) and (2) trivially imply that *malum* is negative. One can also argue that being is good as a whole, although some of its parts instantiate evil. Thus, the collective theory of being does not help very much in interpreting **NTM.** It is at most a metaphysical construction without particularly inter-

esting consequences. More relevant is the distributive conception of being (*X* is an object, a being) and it is this line I will take. Now (4) is problematic, because we do not know why being *qua* being has an ethical qualification *per se.* On the other hand, (3) expresses an obvious but trivial truth: if something is good, it must be something. However, (1) as I have noted, is not so simple. Returning to (4), which is absolutely crucial for **NTM,** one can argue that:

(5) if ***X*** is an object, then ***X*** is good or wrong.

And (5) seems more intuitive, because people rather agree that some things or actions are wrong. In what follows, I shall argue that there are also other possibilities.

Let me come back to the problem of a logical connection between sentences asserting that something is an object and that it has an ethical qualification. It is clear that:

(6) every object is *bonum metaphysicum*,

does not entails

(7) every object is properly desirable,

unless we stipulate otherwise. In fact, common intuitions seem to support:

(8) if ***X*** is properly desirable, ***X*** is an object.

If we accept (8) and the Hume thesis that assertions on what is do not entail ought-sentences, we are entitled to say that there is no logical connection betweenthe sentences '*X* is an object' and '*X* is desired' because the former does not imply the latter; the reverse connection can be eventually posited (see (8)). So any theory of *bonum* and *malum* based on the convertibility thesis (that is, the (*)-theory) is either axiologically sterile (that is, does not entail any moral consequences) or is committed to the naturalistic fallacy consisting in deriving *bonum ethicum* from *bonum*

metaphysicum.[21] This suffices to say that (*) and (NM2), both reformulated with respect to malum, are not equivalent. This means that '*malum* is the privativum of *bonum*' and '*malum* is what is the lack of proper desire' are not equivalent.

However, **NTM** is not the only solution. Another is provided by the disjunctive theory of transcendentals. It was improved by Tadeusz Czeżowski.[22] He distinguished the transcendentals in the sense of (*) and modal transcendentalia. *Ens* belongs to the first group, but possibility, necessity and ethical values are among modal transcendentals. The nature of modal transcendentals is this. Here is an explanation of modal transcendentalia:

> Necessity, possibility [..] and values are [...] asserted in propositions. They do not belong to descriptions of objects and they do not determine universals describing those objects. They denote, in contradistinction to properties which universals refer to, so-called *modi entis*, i. e. ways of being of objects. These ways of being determine whether objects have properties, because only existing objects have properties, as well as how objects have properties: necessarily, possibly, accidentally or in such a way that they are valuable, good or beautiful [Czeżowski, 1977, p. 55].

Modal transcendentals are asserted in related modal propositions of the type:

(9) (a) it is good that *A*;

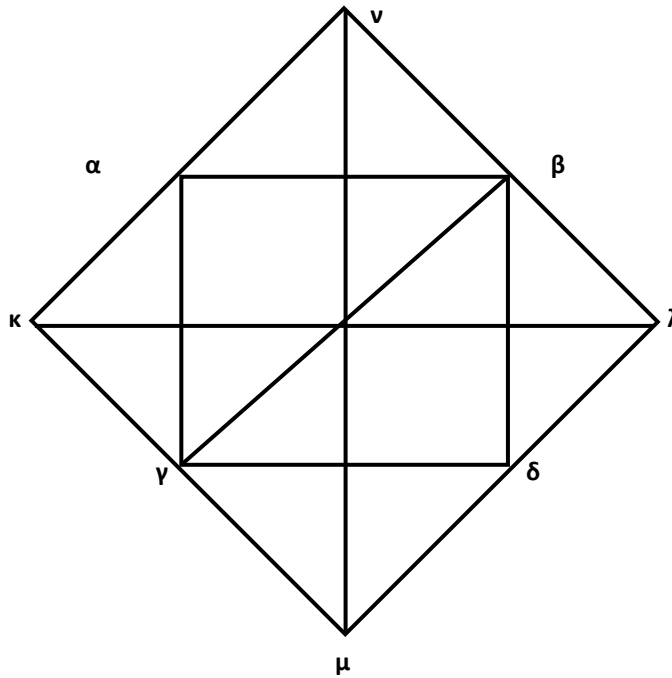
(b) it is wrong that *A*.

The modal character of *bonum* and *malum* transformed into operators 'it is good that' and 'it is wrong that' suggests the following logical diagram (D):

---

[21] *Bonum metaphysicum* is only a label for *ens* and has no ethical connotations unless one decides that *ensqua ens* has an intristic ethical qualification. Moreover, there is no passing from desire to proper desire.

[22] [Czeżowski, 1977].



This diagram covers logical relations between the sentences: α – it is good that *A*, β – it is wrong that *A*, γ – it is not wrong that *A*, δ – it is not good that not-*A*), ν – is it is good or wrong that *A*, μ – it is not good that *A* and it is not wrong that *A* (it is neither good nor wrong that *A*; it is indifferent that *A*), κ – *A*, λ – not-*A*. not good that *A*). Good and wrong are considered here as axiological modalities, which have an analogical logic to deontic logic. In particular, we have the following dependencies (I neglect here reductions via interdefinability, for example 'it is wrong that *A*' is equivalent to 'it is not good that not-*A*').

(10) $\neg(\alpha\wedge\beta)$;
(11) $(\alpha\Rightarrow\gamma)$;
(12) $(\beta\Rightarrow\delta)$;

(13) $\neg(\kappa\Rightarrow\alpha)$ (the Hume thesis for goodness);
(14) $\neg(\lambda\Rightarrow\beta)$ (the Hume thesis for evil);
(15) $\neg(\alpha\Rightarrow\kappa)$ (the converse of the Hume thesis for goodness);
(16) $\neg(\beta\Rightarrow\lambda)$ (the converse of the Hume thesis for evil);
(17) $(\alpha\Leftrightarrow\neg\delta)$;
(18) $(\beta\Leftrightarrow\neg\gamma)$;
(19) $(\nu\Leftrightarrow\neg\mu)$;
(20) $(\mu\Rightarrow\gamma)$;
(21) $(\mu\Rightarrow\delta)$;
(22) $(\alpha\vee\beta\vee\gamma)$.

The formulas (10)–(22) have the following informal translations: no object is simultaneously good and wrong (10); if an object is good, it is not wrong (11); if an object is wrong, it is not good (12); it is not the case, that if an object is, it is good (13); it is not the case, that if an object is, it is wrong (14); it is not the case, that if an object is good, it is (15); it is not the case, that if an object is wrong, it is not (16); an object is good if and only if it is not wrong (17); an object is wrong if and only if it is not good (18); an object is indifferent if and only if it is neither good nor wrong (19); if an object is indifferent, it is not good (20); if an object is indifferent, it is not wrong (21); every object is good or wrong or indifferent (22).

Assuming (D) all the formulas (10)–(22) express logical truths. On the other hand, it is not true about the statements (I slightly change the notation):

(23) every object is good; $\forall x\alpha(x)$;
(24) every object is wrong;$\forall x\beta(x)$;
(25) every object is good or wrong: $\forall x(\alpha(x)\vee\beta(x))$;
(26) every object is indifferent; $\forall x\mu(x)$;
(27) some objects are good, some wrong, some indifferent; $\exists x\alpha(x)\wedge\exists x\beta(x)\wedge\exists x\mu(x)$.

The formulas (23)-(27) express some possibilities of how *bonum* and *malum* are distributed over being in the distributive understanding. Any

theory which adopts (11)–(22) can be regarded as a formal ontology of *bonum* and *malum*. If someone chooses one of (23)–(27) as the thesis about the world, one offers a material (or metaphysical) theory of values.

We have the following possible material distributions of *bonum* and *malum*:

(I) radical ontological ethism (ontological pantethism) with three special instances:
  (a) monism of *bonum* – the thesis (23);
  (b) monism of *malum* – the thesis (24);
  (c) dualism of *bonum* and *malum* – the thesis (25);

(II) ethical ontological indifferentism – the thesis (26);

(III) moderate ontological ethism – the thesis (27).

Pantheism says that every object is ethically valuable. More specifically, (Ia) asserts that only goodness can exist (this is simply a version of **NTM**), (Ib) – that only evil can exist (Schopenhauer's view), and (Ic) – that both goodness and evil can exist together (the manicheism of *bonum* and *malum*). Moderate ontological ethism says that there are valuable (good or wrong) as well as ethically indifferent objects. This view seems to be closely related to the ordinary account concerning the distribution of ethical values over objects. Finally, ethical ontological indifferentism considers being as ethically indifferent. This entails that *bonum* and *malum* are ontologically indistinguishable (this is a typical positivistic view) without recurring to human evaluations. Now we can see that **NTM** is committed to the naturalistic fallacy in the sense of G. E. Moore. The next weak point of this theory consists in confusing formal ontology and metaphysics (or material ontology), because it considers (Ia) as a necessary statement. I tried to show that this elevating of a pure ontological possibility to the rank of the only material necessity is illegitimate. Finally, **NTM** expresses an ethical optimism, Schopenhaurianism provides an example of ethical pessimism, and moderate ontological ethism is, as I already noted, close to common sense. However, **NTM** and Schopenhauer's view on human nature are based on very general and strong metaphysical assumptions, but not on real human experiences.

The modal theory of transcendentals leaves open the status of values. It can be combined with the view that they are actual properties of objects as well as with the position that *bonum* and *malum* rather are the results of valuations stemming from human special (for example, emotive) experiences. Speaking more specifically, the modal theory of ethical transcendentals can be developed into naturalism, intuitionism, emotivism, subjectivism, objectivism, cognitivism, non-cognitivism, etc. This generality of the account based on (D) provides an additional evidence that we should distinguish not only the level of formal ontology and the level of metaphysics in the analysis of values, but also accommodate in our general scheme various proposals belonging to so called philosophy of value. This way of thinking about axiological matters, originated with Hume and continued by Kant, replaced the older purely ontological approach. The proposal based on (D) discussed in this paper partially comes back to ontologism, but tries to embed it in a broader perspective, which is free of various *a priori* prejudices.

Bibliography

Aertsen J. A., (1996), *Medieval Philosophy & the Transcendentals. The Case of Thomas Aquinas*, Leiden, Brill.

Aertsen J. A., (2012), *Medieval Philosophy as Transcendental Thought. From Philip the Chancellor (ca. 1225) to Francisco Suárez*, Leiden, Brill.

Bärthlein K., (1972), *Die Transzendentalienlehre in der alten Ontologie*, Berlin, De Gruyter.

Czeżowski T., (1977), "Transcendentalia – przyczynek do ontologii" (Transcendentals – a Contribution to Ontology), *Ruch Filozoficzny* XXXV, pp. 54–56.

Elders L. J., (1992), *The Metaphysics of Being of St. Thomas Aquinas in a Historical Perspective*, Leiden, Brill.

Fraenkel A., Bar-Hillel Y., (1973), *Foundations of Set Theory*, Amsterdam, North-Holland Publishing Company.

Henry D., (1972), *Medieval Logic and Metaphysics*, London, Hutchinson.

Knittermeyer H., (1920), *Der Terminus "transzendental" in seiner historischen Entwicklung bis zu Kant*, Marburg, Hamel Verlag.

Przywara E., (2014), *Analogia Entis. Metaphysics: Original Structure and Universal Rhythm*, Grand Rapids/Cambridge, Eerdmans.

Salamucha J., (2003), "On the Possibilies of of a Strict Formalization of the Domain of Analogical Notions", [in:] J. Salamucha, *Knowledge and Faith*, Amsterdam-Atlanta, Rodopi, pp. 71–95 (Originally published in Polish in 1937).

Schulemann G., (1929), *Die Lehre von den Transzendentalien in der scholastischen Philosophie*, Leipzig, Meiner Verlag.

Wais K., (1926), *Ontologia czyli metafizyka ogólna* (Ontology that is General Metaphysics), Lwów, Biblioteka Religijna.

Woleński J., (2008), "Applications of Squares of Oppositions and Their Generalizations", *Logical Universalis* 2(1), pp.13–29, [repr. in:] Woleński J., (2011), *Essays on Logic and Its Applications in Philosophy*, Frankfurt am Main, Peter Lang, pp. 255–279.

Woleński J., (1992), "Being as a Syncatetegorematic Word: a Completion (?) of Twardowski's Analysis of Nothing", [in:] *Theories of Objects*, [ed.] J. Paśniczek, Lublin, Wydawnictwo Uniwersytetu Marii Curie-Skłodowskiej, pp. 76–85.

Woleński J., (2013), "Ens et Verum Concvertuntur (Are Being and Truth Convertible)"? A Contermporary Perspective", [in:] *Truth*, [eds.] M. Dumitriu, G. Sandu, Bucureşsti, Editura Universitãtii din Bucureşti, pp. 75–83.

Woleński J., (2004), "Malum, Transcendentalia and Logic", [in:] *Phenomenology and Analysis*. *Essays on Central European Philosophy*, [eds.] A. Chrudzimski, W. Huemer, Frankfurt, Ontos Verlag, pp. 358–370, [repr. in:] Woleński J., (2011) *Essays on Logic and Its Applications in Philosophy*, Frankfurt am Main, Peter Lang, pp. 43–50.

Woleński J., (2003), "Polish Attempts to Modernize Thomism by Logic (Bocheński and Salamucha)", *Studies in East European Thought* 55, pp. 299–313, [repr. in:] Woleński J., (2013), *Historico-Logical Essays*, v. 1, Kraków, Copernicus Center Press, pp. 51-66.

Woleński J., (1997), "Two Theories of Transcendentals", *Axiomathes* 1–3, pp. 367–380.

Wotler A. B., (1946), *The Transcendentals and Their Function in the Metaphysics of Duns Scotus*, Washington, The Catholic University of America Press.

Jan Woleński
University of Information, Technology and Menagement, Rzeszów, Poland
wolenski@if.uj.edu.pl

STUDIA METODOLOGICZNE
NR 37 • 2016, 29–45
DOI: 10.14746/sm.2016.37.2

WALTER REDMOND

Edith Stein and Thomas Aquinas on the Analogy of Being

[...] *nicht nur Herr des Seins, sondern auch des Sinnes*

Edith Stein

[...] πάντα ἐστὶν ὡς πάντων αἴτιος

Dionysius the Areopagite[1]

ABSTRACT. The purpose of my reflection is to explain Edith Stein's phenomenological interpretation of the *analogia entis* (the analogy of being). Her work on analogy is an example of the dual purpose of her philosophical endeavor to "search for the meaning of being" and to "fuse Medieval thought with the lively thought of today", whereby she was referring to her two "masters" Thomas Aquinas and Edmund Husserl.[2] She received her early training from Husserl, the founder of phenomenology, and later immersed herself in the thought of St. Thomas. She set out her views on analogy in her major work, *Finite and Eternal Being*, written in the mid 1930s, engaging the studies of Neo-Thomists Erich Przywara and Joseph Gredt. I believe that Stein's original insights, deeply rooted in theological and philosophical traditions, have a contribution to make to recent "lively" discussions of the analogy (of which *The First World Congress on Analogy* is an example).

KEY WORDS: analogy, *analogia entis*, proportionality, Edith Stein, Thomas Aquinas, phenomenology

---

[1] Stein: God is "lord not only of being but of meaning", [*Endliches und ewiges Sein* (hereafter "EES"), p. 100]. Dionysius: God "as cause is everything", *De divinis nominibus* 5, quoted by St. Thomas in the *Summa theologica* (afterwards "ST") 1:14:2. All English translations are by W. Redmond (*Sein* and *esse* are rendered by "being"; *Seiendes* by "be-ing"); references are to German pagination.

[2] "[...] weil Beides – das Suchen nach dem Sinn des Seins und das Bemühen um eine Verschmelzung von mittelalterlichem Denken mit dem lebendigen Denken der Gegenwart – [...] ihr persönliches Anliegen ist", [EES, p. 3].

Analogy

Analogy has been discussed throughout the history of philosophy and explained and applied in a number of ways. It received its classical statement in the Middle Ages from Thomas Aquinas and from John Duns Scotus, and was later "commented on" by Cajetan (Thomas de Vio) and others in Renaissance Scholasticism and more recently by Neo-Scholastics like Przywara, Gredt – and Edith Stein herself.[3]

The basic question is how – or whether – we may validly use the same names of both God and creatures. The approach is then linguistic (about *words*), but also noetic (about *concepts*) and ontological (about the analogy of *being*). The traditional phrase "analogy of being" (which, incidentally, St. Thomas does not use) is somewhat misleading, since God, besides "being", has many "divine names" or "perfections" such as aliveness and wisdom. Both Thomas and Stein wish to focus on *meaning* (*Sinn*, *ratio*).

Traditionally, a term is said to be *univocal* when used of several things in the same sense. A term not so used, is either *equivocal* (where the ambiguity is *a casu*, "by chance", like the Latin "*gallus*" which refers either to a rooster or a Frenchman) or *analogous* (where the ambiguity is *a consilio*, "by choice"). The philosophical problem is that if we reject univocal and equivocal statements about God (intending perhaps to avoid pantheism and agnosticism) we must define analogy very carefully indeed, since it seems that it must fit between the horns of an exclusive disjunction.

Edith Stein

Edith Stein was born in 1891 in Breslau, now in Poland but then a part of Germany. She was brought up in a religious Jewish home but lost her faith as a young girl. She majored in psychology in the University of Breslau, but soon gave up in frustration at what she saw as a lack of clear basic

[3] Husserl said of Stein: "I do not believe that the church has any Neo-Scholastic of Edith Stein's caliber"; [Posselt, 2005, p. 154].

principles. She then found in Husserl's *Logical Investigations* (1900-1901) – and in his intention to "go back to things (*Sachen*)" – the "clarification of concepts" that she was seeking. She began her doctoral studies under Husserl in 1913 at the University of Göttingen, where she became a member of the circle of "early phenomenologists" with Adolf Reinach, Max Scheler, Dietrich von Hildebrand, Theodor and Hedwig Conrad-Martius.

Stein accompanied Husserl to the University of Freiburg when he accepted a position there; after receiving her doctorate (1916) she worked for a while as his assistant. In the meantime she and other disciples of Husserl had become disappointed by the apparent "transcendental idealism" they found in his work *Ideas* (1913). Husserl, it seemed to her, had not, in fact, "gone back to things", and she later wrote a careful critique of Husserl's position in her post-doctoral dissertation *Potency and Act* (1931).[4]

Stein's search for "things" – "objectivity" (*Sachlichkeit*) – was allied with her search for God. In 1921, while staying with friends at a country house, she was profoundly moved reading the autobiography of St. Teresa of Avila. After she finished the book she said: "this is truth", and decided at once to enter the Catholic church.

She then taught for ten years at a college for young women in Speir, where she was able to absorb Catholic culture: its liturgical, spiritual and intellectual traditions. She was mentored by the prominent Jesuit philosopher Erich Przywara, who commissioned her to translate St. Thomas's *Quaestiones disputatae de veritate* into German as well as the letters and journals of the English convert Cardinal Newman.[5] From 1928 to 1932 she lectured widely, especially on education and women's issues, in Germany, Austria, France, Czechoslovakia, and Switzerland.

In 1932 Stein accepted a teaching position in the German Institute of Scientific Pedagogy in Münster, but after only two semesters she had to leave when a Nazi law excluded Jews from teaching. The following year she entered the Discalced Carmelite monastery (the order founded by St.

---

[4] [*Potenz und Akt* (hereafter "PA"), pp. 246-259].
[5] [Stein, 1931-2 and 1928].

Teresa) in Cologne. There she continued her work in philosophy and wrote her major work, *Finite and Eternal Being* between 1935 and 1937). The printing of this book was stopped after a Nazi law forbade the publication of works by Jews; it appeared posthumously in 1951.

To escape persecution Stein went to live in the Carmelite convent in Echt in the Netherlands. But after the Nazi invasion of that country, she was arrested and taken to the concentration camp of Auschwitz-Birkenau, where on August 9, 1942, she was murdered in a gas chamber. In 1998 she was canonized by Pope John Paul II.

Recent controversies over analogy

The last century saw two of the most remarkable debates on analogy since the time of the Renaissance. The first arose within German Christendom in the early 1930s shortly before Edith Stein entered the Carmelite convent. The second developed after the "theological turn" in French phenomenology in the latter part of the last century. Both arose when certain philosophers accused others of debasing God by capturing Him within a univocal notion of being.

Fr. Przywara's book on analogy, *Analogia entis*, touched off the first debate. Edith Stein was associated with him during the time he was writing this work; she mentioned in the foreword of *Finite and Eternal Being* that both her previous dissertation, *Potency and Act*,

> and the final version of his *Analogia entis* were written about the same time, but she was able to look over his earlier drafts. She also carried on a lively exchange of ideas with him between 1925 and 1931, and these conversations likely had a deciding influence on both their approaches to the issues [...] [EES, pp. 4-5].

Przywara's theory of analogy – which he took to be the basic paradigm of Catholic theology – was angrily repudiated by Swiss Protestant theologian Karl Barth, as "the invention of the Antichrist", and Barth countered it with his own "analogy of faith" (1932). [Barth, 1932, 1:1, p. xiii]. The

debate spawned many versions of analogy and the controversy continues today.[6]

The second controversy over analogy emerged later within postmodern phenomenology. A book by French philosopher Jean-Luc Marion with the provocative title *Dieu sans l'être* (God without being), caused an uproar in the early 1980s. For, just as Barth had said Przywara's analogy was invented by the Antichrist, Marion called St. Thomas Aquinas an "idolater" for his doctrine of analogy which he, Marion, felt was an example of the "onto-theo-logy" criticized by Martin Heidegger.

Under attack by Thomists, Marion soon recanted his criticism and developed a more accurate and interesting way of understanding Thomistic analogy.[7] Marion also acquitted Thomas of the charges of onto-theo-logy, pointing out that for the saint *esse commune* (common being) does not include *esse divinum* (divine being). Thomas's analogy, he said, is "apophatic"; instead of "building a bridge" between creation and God, it "digs a gulf" (*goufre*) between them.[8]

Analogy for Stein

Edith Stein, for her part, points out that Joseph Gredt's "transcendental" concept of being as being (*ens ut ens*, ὂν ᾗ ὄν) is general enough to include both created and uncreated be-ings", but, she adds,

> this is precisely the key question: is it possible – and how is it possible – to form such a concept (that is, to justify it objectively) – a concept that would include both what is created and uncreated? [EES, p. 246; Gredt, 1929, vol. 2, pp. 1ff].

---

[6] For a description see [Palakeel, 1995]; for continued discussions see [Johnson, 2010]. There appeared a number of kinds of analogies-of: of relation, *nominum* (Barth), *fidei*, *caritatis* (Hans Urs von Balthasar), of advent (B. Jüngel), of knowing, of having being, of being symbol (K. Rahner).

[7] [Marion, 2002]. Marion's work became available to an English-speaking public after the translation of this material (1991) as well as of the overview by [Janicaud, 2000].

[8] ["Saint Thomas d'Aquin et l'onto-théo-logie", p. 43], and [Marion, 2002, p. 297; ST 1:13:7].

And she promises soon to return to this "crucial question". But as we might expect, her answer is complex, as were those of Barth and Marion.

Stein firmly rejects univocity; analogy she describes as an "infinite gulf" (*Kluft*) between creature and God. [EES, p. 244]. She sums up St. Thomas's doctrine in *Finite and Eternal Being* with almost the same words that she used in her previous work, *Potency and Act*:

> Thomas's entire system of basic concepts is bisected by a radical dividing line that splits each, beginning with being, into two faces, one turned here below and the other pointing beyond: nothing can be said in the same sense of God and creatures. And we may use the same expressions for both only because these terms have neither a single sense (univocal) nor two different senses (equivocal) but stand in a relation of *agreement* (analogous). We could, then, call the dividing line itself the "analogia entis" to designate the relation of God and creature.[9]

Stein, then, is working within the Thomistic tradition of analogy. On the other hand, Duns Scotus held a version of the univocal theory. When we say that both Socrates and God are wise, he explained, "wisdom" has the same sense; however it is true of God in an infinite way and of Socrates in a finite way. In *Finite and Eternal Being* Stein follows Scotus on a number of points rather than Aristotle or Aquinas, but she does not mention him when speaking of analogy.[10] She does, however, use the notion of finiteness in her description of analogy.

Proportionalitas **in Aquinas and Stein**

Aquinas, in his early work, *De veritate* (which Stein translated into German), spoke of two kinds of analogy, of "agreement according to

---

[9] [PA, pp. 9-10 (English 7-8), EES, pp. 9-10]. Stein discusses analogy in [EES, pp. 10, 268, 288-302] and in [PA, pp. 90, 151, 278ff (English 128, 218, 406ff)].

[10] [EES, pp. 96, 346ff; see quote on the page 3].

a proportion",[11] which have been explained in many ways in the history of scholasticsm. One kind, the analogy of proportionality (*proportionalitas*), involves a proportion (a:b = c:d); the other kind, which does not, is often called the "analogy of attribution" [*De veritate*, 2:11].

Stein argued against Gredt's interpretation of the analogy of proportionality:

> God's being is the act of His essence as the creature's being is the act of its essence.

Her basic reason for rejecting this statement is that since "essence" and "being" have different senses in God and creature, there is no "equality of relations".[12] Gredt's interpretation has become a common way of stating Thomas's idea of analogy, but Thomas himself seems to have abandoned the analogy of proportionality in his later works.[13]

Stein does however, admit Gredt's proportion

> *esse* is to *essentia* (being is to essence) as act is to potency,

and suggests, speaking of Seneca's distaste for the Latin word "*essentia*", that the relation of *esse* to *essentia* would go better in Middle High German, where the verb "*wesen*" (like "*sîn*") meant *to be* and the noun *Wesen* (like modern German) means *essence*; so we would have:

> *esse* is to *essentia* as *wesen* is to *Wesen*".

More importantly, Stein applies the notion of proportion to her theory of "essentialities", key element in Stein's ontology (see below).

Principle and cause

St. Thomas stresses that to say God is wise conveys more than that He is not unwise or that He causes Socrates's wisdom, for Thomas, like Edith

---

[11] *Convenientia secundum proportionem*; *Übereinstimmung gemäss einem Verhältnis* in Stein's translation, [EES, p. 289].

[12] *Verhältnisgleichheit*, [EES, p. 290].

[13] Cf. [Copleston, 1962, vol. 2, part 2, pp. 74-75].

Stein, wishes to focus on the *meaning* itself. But God cannot be called wise if the meaning is exactly the same as Socrates being wise or if it is totally different. Thomas quickly disposes of "equivocity", for to use words of God and creatures in different senses, he says, is the "fallacy of equivocation", tantamount to agnosticism.

Then in his rejection of univocity (that we cannot use words in the same sense of God and creatures), he notes that when an effect falls short of its cause (as when God causes Socrates to be wise in some sense) there will be no alikeness "according to the same reckoning (*ratio*) but in a deficient way". Wisdom said of God and of the wise person differ because in God wisdom is one with His essence and being, but the Socrates's wisdom is so to speak "shrunk to size" (*circumscriptum* and *comprehensum*) and differs from his essence and being as well as from his varied ability to function [ST, 1:13:4, 1:13:5].

Analogy for Thomas means essentially that perfections *exist beforehand* ("pre-exist") in God, that God *has them beforehand* ("pre-has" them): has them (timelessly) "before" creatures have them (timefully). All perfections are found in God

> since the effect pre-exists virtually in the cause effecting it, [ST, 1:4:2]

and so

> whatever goodness we claim to be in creatures pre-exists in God, indeed in a higher way [ST,1:13:2].

Thomas also said that things are "true" as they are "pre-conceived" by the divine intellect and

> attain the likeness of their species, which are in the divine mind.[14]

Thomas is borrowing terms here (*praeexistere* and *praehaberi* = προεῖναι and προέχεσθαι) from Dionysius the Areopagite's treatise on the divine names; whom he quotes several times in this context, as for example:

---

[14] So-called "ontological truth", cf. [EES, p. 256, ST, 1:16:1].

> God also has all existing things beforehand in one.[15]

Therefore, since we can speak of God only starting from creatures,

> all we say of God and creatures is based upon a relation of creatures to God as to the source and cause (*principium*, *causa*) wherein all the perfections of things pre-exist in a higher way.[16]

For Thomas, "God is good" does not *mean* "God causes goodness" but "what we call goodness in creatures pre-exists in God", but also "since He is good, He spreads goodness to creatures" [ST, 1:13:2].

There is indeed a strong apophatic element in Thomas's theory, for when we say that God is alive, we do not mean

> that life comes from Him; we are rather signifying the very source of things inasmuch as life pre-exists in Him, but in a higher way than we understand or signify [ST 1:13: 2 ad 2].

We do not know what living is in God any more than we know what He is or how He is – His essence and being, with which His living is identified. A thread of meaning, a relation whose term is unknown to us, extends from creature to God. St. Thomas, then, borrows from each horn of the dilemma: "living" is alike in God and creature but not in the *same* reckoning since it is "higher" in God, and so unknown to us, but "deficient" in creatures.

Two traditions

Analogy in a wide sense, for Thomas, involves two asymmetric relations from creature to God as the *source* of the meaningfulness that *exists* in the creature and *pre-exists* in God, and to God as the *cause* that brings the creature about in its meaningfulness and keeps it about. There are two "causal" traditions here – "Platonic" and "Aristotelian" –: God is both the *causa exemplaris* of the creature, the *source* of its meaningfulness, and its *causa efficiens*, its *cause* (*tout court*) of its entire actuality. The source

---

[15] "ἐν ἑνὶ γάρ [...] τὰ ὄντα πάντα καὶ προέχει", *De divinis nominibus*, c. 5; "Deus in uno existentia omnia praehabet", [ST, 1:4:2 sed contra].

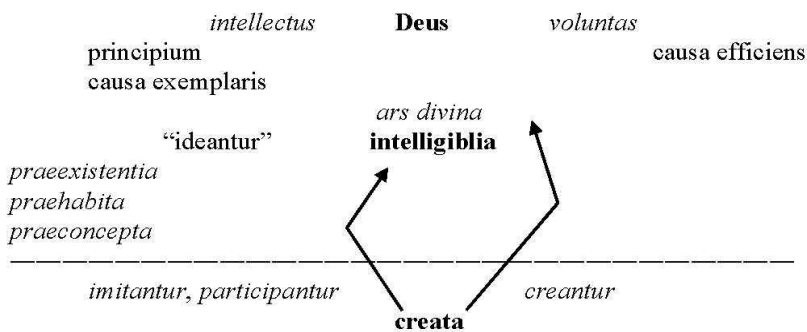
[16] [ST, 1:13:5, see ST, 1:13:1].

relation, found in the Church Fathers, is the Platonic μίμησις and μέθεξις, *imitari* and *participari*: being-a-likeness-of and having-a-share-in.

This twofold relation recalls the scholastic discussion of *ideatio* and *creatio*. The former belongs to the "exemplarist" tradition of Augustine, Bonaventure and of Thomas himself. *Ideatio* is God conscious of Himself, knowing Himself as *imitabilis ad extra*, as it were "copiable outside" Himself in a created world. It is Thomas's *ars divina*, divine craft, which Stein translates as "the divine plan of creation" (Bonaventure calls it "the ageless craft" (*ars aeterna*).[17]

The relation to source – imitating and sharing – goes from creatures to God's self-awareness, to His mind. The relation to cause, *creari*, being-made-to-be at God's choosing, goes from creatures to God's freedom to His will.

For Thomas, when I say "Socrates is good" this is "all I mean", but I can only say "God is good" with respect to good creatures like Socrates, for creatures are the starting point for all I say of God [ST, 1:13:6, 3]. "God is good" with respect, say, to Socrates being good, entails that Socrates's goodness is already had, already conceived, by God, already exists in God timelessly as *source* (*causa exemplaris*), which I cannot know in my present life. It also connotes that God, as the *cause* (*causa efficiens*), actualizes Socrates timefully in his, Socrates's goodness. An illustration:



[17] [EES, p. 107; quoting *De Veritate*, 2:5. Bonavenuture, 3:3].

Stein on analogy

Stein's view of analogy reflects these Thomistic elements. Analogy for her, as for Thomas, involves an "agreement" (*Übereinstimmung – convenientia*) of a creature with God, a *relation* (*Verhältnis*, *Beziehung – ordo*, *proportio*, *relatio*, *habitudo*). Stein stresses the relation between an image, likeness, "copy" (*Abbild*) and its archetype, "original" (*Urbild*), where the creature "imitates" the archetype and "shares" in it (*nachbilden – teilhaben*). She quotes the Fourth Lateran Council: though the image is "like" its archetype, it is much more "unlike" it.

Stein's view of analogy is also "apophatic"; she cautions that we have no insight into something whose being is its essence. All we can say is that "everything finite – both *what* it is and its being – must be "already-patterned-after", "pre-figured-in", God, "already-sketched-out-in" Him (*vorbilden*, *vorzeichnen*), since both derive from Him" – this position recalls Thomas's Dionysian notion of "*praeexistere*" and "*praehaberi*".

One of Stein's descriptions of analogy seems puzzling at first: that analogy is the infinite gulf between a be-ing that is "something but not everything" (a created thing) and "the be-ing that is everything" (God) [EES 244]. "Finite" (*endlich*) for Stein means *limited* in two senses: in time and as an object. What is finite in time ends; what is eternal does not; a finite object, since it changes over time, is, *objectively*, now some-this and now some-that; the changeless eternal is everything all at once.[18]

Her view recalls Thomas's distinction between a perfection in God identified with His being and the perfection in a creature that differs from its being, essence and functioning. The distinction also goes back to Dionysius, whose words Thomas quotes in support of his own view that every perfection must pre-exist in the Pre-existent (ὁ προών) Who

> is neither this nor that [...]; but rather, as the cause of everything, he is everything.[19]

[18] [PA, p. 282]; pure being is all it can be, it is pure act, measureless, pure light having nothing closed, unfolded; see also [EES, p. 62].

[19] [*De divinis nominibus* 5, ST, 1:14:2]. Marion has recently developed a concept somewhat allied with this "everything" concept: the "saturated phenomenon" that swamps its concept.

Essentialities and proportionality

Stein uses the notion of *essentialities* (*Wesenheiten*), the middleground between creation and the Creator, to interpret analogical relations of image to archetype or of "only-something" to "everything". Essentialities are "meanings", like Plato's "ideas" (οὐσίαι), but Stein prefers

> the phenomenological term "essentiality" to the much disputed and ambiguous "idea".[20]

Now, for plain folks, says Stein, essentialities are weird, and

> only a wistful thinker, treading paths far from daily life, will discover that there are things like essentialities at all, and then he will have a hard time getting others to understand what he is talking about [EES, p. 77].

Essentialities also parallel the Scholastic *intelligibilia* (the "understandables"), the *possibilia* ("possible essences or natures"), *quidditates*, "*Washeiten*" (whatnesses), involving the notion of *ideatio*.[21] She uses the example of *joy* to show what she means by "essentiality". The unit of meaning that is *my* joy, the joy that arises, changes over time, and fades, is finite both objectively and temporally. But *joy as such* is timeless [EES, pp. 113, 63, 99].

Interestingly, Stein uses the notion of analogy of *proportionality* to describe essentialities:

> as God's being belongs to Him, so the *what* [of essentialities] belongs to them,

and she adds that

> this is the meaning of the *analogia entis* as proportionality.

That is to say, existence is to God as essence is to an essentiality. She explains that although it is

> quite clear that *actual* being belongs to God's essence just as necessarily as essential being belongs to limited essentialities, [EES, pp. 113, 296]

---

[20] [EES, pp. 63-64; see EES, p. 113].

[21] [EES, p. 245]. Stein says a study is needed to show how *intelligibilia* are related to the Platonic ideas; [EES, p. 81 note; see pp. 165ff].

essence cannot be reduced to being nor being to essence. Essence and being are rather contained inseparably in God as in the "I am"; essence and being, the kinds of be-ings and their ways of being, first appear separate in the created world. This analogy of proportionality does not, of itself, include created things, and so is not an *analogia entis*, an analogy of "all" being; however, the analogues, God and essentiality, are indeed "one side" of – the basis of – the analogy of all being.

Essentialities, Stein says, have two kinds of being: those understood as "simple ultimate meanings" and essences or "whatnesses" that are incorporated into them – a realm of the Platonic ideas, of the Scholastic intelligibles, structured from the universal down to the particular.[22] Essentialities are not "actual", they have "not come about" (*ungeworden*); they rather "abide", timelessly, "at rest".[23] Something corresponding to essentialities becomes actual in timeful things, whose essential features "imitate them" [EES, pp. 68, 81]. The being of essentialities then parallels St. Thomas's *source*, but not *cause*. For essentialities, by themselves, are not "effective", they do not "cause" anything; the finite things related to them are actualized in another way [EES, p. 92].

Stein claims Thomas's support for these reflections on essential being. He says the whatness (*essentia*) is in the mind of God not as a creature but as a "*creatrix essentia*", as "creative essentiality" in Stein's translation.[24] She also quotes Thomas on another point touching on the theory of truth: whatnesses, he says, have two *ways* of being: in finite things and in our minds,

> for what the intellect knows must be the same in the thing, yet not in the same way.[25]

An essentiality for Stein is a timeless meaning, indifferent to being "actualized" and "mentalized" [EES, p. 98].

Stein's views may be illustrated in this way:

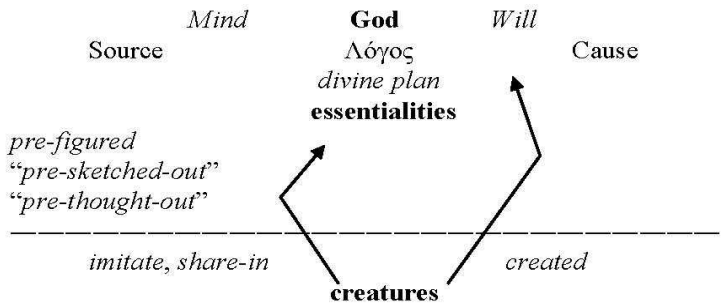
---

[22] [EES, pp. 90-91, 77, 78 and 81 n229].

[23] [EES, pp. 107-108, 100, 92, 81]. Here "abide" renders the same Middle High German verb "*wesen*".

[24] [*Schöpferische Wesenheit*, EES, p. 89].

[25] [*Commentary on the Metaphysics*, 1:10, EES, p. 95].



Meaning in the beginning

When we make statements like "God is His divinity, ... His being, ... His living", Stein says, we are separating what in God is inseparable. It is better to say "God is – God" and be done with it. She means that we cannot characterize His essence as something other than Himself.

Stein calls upon the Scriptures to clarify her view of analogy [EES, p. 293]. When Moses asks God what he should tell the people if they ask His name, God answers "tell them that I-am sent you".[26] God does not say "tell them that I am being" or "I am the be-ing", but simply "I am who am". "I-am" means "I am living", "I know", "I will", "I love", all in one. Stein thinks that a language that has a single word for "I am" – like the Latin "*sum*"– can better express this oneness; she could also have said "*ʔehyeh*" (אֶהְיֶה), for this is what God said in Hebrew: "ʔehyeh sent me to you".

In beginning of St. John's Gospel "ἐν ἀρχῇ ἦν ὁ λόγος" is ordinarily rendered "in the beginning was the Word", but Stein likes Faust's translation:

im Anfang war der Sinn,

"in the beginning was Meaning".[27] Analogy for her ultimately means that

[26] [Exodus 3:14]; Stein refers to St. Augustine see [EES, pp. 46 and 61].
[27] [EES, p. 100; John 1:1; Goethe, *Faust*, 1:1178ff].

> created things have their being – indeed their actual being – in the divine Logos,

combining *source* of meaning and *cause* of all its being.

"Perfections" are the "analogues" of God in creation. She traces them in the seventh chapter of *Finite and Eternal Being*, beginning with personhood, for God's very name, "I-am", conveys that He is being-in-Person. She explains that

> our search for the meaning of being has led us to the being that is the originator and archetype of all finite being,

where *Urheber* and *Urbild* recall Thomas's *causa* and *principium* [EES, p. 302].

Coherence and constancy

Stein borrows a word from an early Christian hymn, "συνέστηκεν", which she translates as "having coherence and constancy".[28] "Coherence" (*Zusammenhang*) means that each thing stands in an array of causal relations to all other things, and its relatedness is determined by its own "private" character. All be-ings are "pre-patterned", "pre-sketched-out" as a great work of art, Thomas's "divine craft" – which for any of us is but

> a few forlorn notes of a symphony played far away, borne to me on the wind [EES, p. 107].

"Constancy" (*Bestand*) means that all things abide, are *alive*, in the Λόγος, in their being as essentialities. Their meaningfulness, "not come to be", is "at home" in the Λόγος [EES, p. 107]. But the essentialities, "resting" in themselves, become, through the Λόγος, "effective", actual, "creative" (as Thomas says) – source and cause, *causa exemplaris* and *causa efficiens*. God "forethinks" (*vorausdenken*) actual being, His mind spans all things possible, whether or not they will ever have become actual; such are

[28] Quoted in [Colossians 1:17; EES, p. 101, note].

the Scholastic *possibilia*. "The finite is in the eternal", Stein says: all meaningfulness is encompassed by the divine mind and every be-ing has its archetypical and causal ground in the divine essence.

> The Logos [...] has a dual countenence: one mirrors the one simple divine essence, the other the manifold of finite be-ing [EES, p. 111].

God then, is

> *Nicht nur Herr des Seins, sondern auch des Sinnes*,

"Lord not only of being but also Lord of meaning" [EES, p. 100].

Commenting on Heidegger's work, *Kant und das Problem der Metaphysik*, Stein asks whether, as he claims, we must renounce the "arrogance" of wishing to speak of the "being-in-itself" [EES, p. 492]. By recognizing our very "being-but-something", she answers, we break through to the "everything" – "analogically": as

> *magis ignotum quam notum*

more unknown than known. And here she quotes John of the Cross:

Qué bien sé yo la fonte	Oh, I know Source,
que mana y corre,	welling, running;
aunque es de noche.	although by night.[29]

Bibliography

Aquinas, Th., *Summa theologiae*.
Aquinas Th., *De veritate*.
Aquinas Th., Commentary on Aristotle's *Metaphysics*.
Barth K., (1932), *Church Dogmatics* (*Kirchliche Dogmatik*), 14 volumes.
Bonaventure, *Itinerarium mentis in Deum*.
Copleston F., (1962), *A History of Philosophy*, Garden City, New York, Image), 9 volumes.

[29] [EES, p. 35; "Cantar de la alma que se huelga de conoscer a Dios por fe". *Obras* 1982, pp. 11-13].

Dionysius the Areopagite, *De divinis nominibus*.
Goethe J.W. von., *Faust*.
Gredt J., (1929), *Elementa philosophiae aristotelicae-thomisticae,* Freiburg i. Brg., Herder, two volumes.
Gredt J., (1935), *Die aristotelisch-thomistische Philosophie*, Freiburg i. Brg., Herder, two volumes.
Janicaud D., et al., (2000), *Phenomenology and the "Theological Turn": The French Debate*, New York, Fordham University Press.
John of the Cross, (1982), *Obras completes*, Madrid, BAC.
Johnson K., (2010), *Karl Barth and the Analogia Entis*, New York, T&T Clark.
Marion, J.-L., (2002), *Dieu sans l'être. Hors texte*, Paris, Arthème Fayard, 2nd revised edition; first edition 1982. The "retraction" appeared in "Saint Thomas d'Aquin et l'onto-théo-logie," *Revue thomiste*, no. 1 (January–March 1995): pp. 31–66; reprinted and revised in *Dieu sans l'être*, 2002 (chap. 8). English translation by B. Gendreau, R. Rethy, and M. Sweeney, "Thomas Aquinas and Onto-Theo-logy," (2003) [in:] M. Kessler and Ch. Sheppard, [eds.], *Mystics: Presence and Aporia*, Chicago, Univ. of Chicago Press, pp. 38–74.
Palakeel J., (1982), *The Use of Analogy in Theological Discourse/ An Investigation in Ecumentical Perspective*, Rome, Editrice Ponificia, Università Gregoriana.
Posselt T.R., (2005), *Edith Stein/The Life of a Philosopher and Carmelite*, [eds.] S.M. Batzdorff, J. Koeppel, and J. Sullivan, Washington, ICS Publications.
Stein E., (1951), *Endliches und ewiges Sein*, Freiburg, Basel, ESGA; Vienna, Herder, (2006). English translation by K.F. Reinhardt, *Finite and Eternal Being*, Washington, ICS Publications, 2002. Quotations here are taken from a new translation of this work by W. Redmond.
Stein E., (1998, postuhumous), *Potenz und Akt* (Freiburg, Basel, Vienna: Herder); English translation by W. Redmond, (2009), *Potency and Act*, Washington, ICS Publications.
Stein E., (1931-2), *Des HI. Thomas von Aquino Untersuchungen über die Wahrheit*; two volumes, (Breslau, 1931 and 1932; indexes 1934; Freiburg, ESGA, 1952 and 1955).
Stein E., (1928), *John H. Kardinal Newman/Briefe und Tagebücher 1801–1845*, Munich, Theatinererlag.

Walter Redmond
Austin, Texas, USA
wbredmond.wr@gmail.com

STUDIA METODOLOGICZNE
NR 37 • 2016, 47–56
DOI: 10.14746/sm.2016.37.3

RICARDO GIBU

Analogy or Katalogy? Methodological Requirements for the Knowledge of the Person

ABSTRACT. From the distinction made by Theology between Nature and Person we can understand human realization as starting from a dynamism with goes beyond potency and act. This is about that potentiality to grow into being in virtue of an *energeia* which comes from the divine reality that transforms the person raising up her to an unprecedented state and disproportionate to her nature. The knowledge of this new reality requires methodological criterion that allows the person, through a leap (as Kierkegaard pointed out), be separated from a certain qualitative sphere to enter a new one. This way, which we might call "katalogical", assumes that the truth of the person is accessible in a movement which goes from top to bottom.
Despite the importance of the katalogical way to recognize the qualitative difference and irreducibleness of different ontological orders, the one-sidedness of this approach could prevent recognition of their possible relationships, marginalizing them to the realm of the irrational and nonsense. To the extent that reality is a unit and polar configured, it should be thought in such a way that its various areas be integrated into the unit. Thus emerges as a methodological requirement to apply the katalogical *via* alongside with the analogical way.

KEY WORDS: analogy, katalogy, Romano Guardini, philosophical and theological anthropology, Kierkegaard

The origin of Christian theology coincides with the efforts of the first Christians to assimilate and redefine the Greek categorial framework, in order to rationally explicate the novelty of revelation. The Christian *novum* grew from the basis of Jewish revelation, the first Christian theologian appropriated the efforts of some Jewish thinkers, like Philo of Alexandria, who understood the content of their faith through Greek Philosophical elements. In the book of Genesis, God shows himself as a being who is transcendent to the world, and who acts through a freedom which cannot

be explicated from within the created. Man, on his part, is invited to participate in this transcendence when God creates him "in his image and likeness", that is, capable of a personal and dialogical experience with his Creator. There is something in man which is not explicated through any intramundane principle, but through God himself, through that principle which the Bible calls divine "breath" (*ruah*). Man is not defined through his highest natural virtue, but through a personal calling which proceeds from God. The conceptual revolution effected by Christianism takes place in that fact, scandalous the eyes of a Greek Philosopher, that a God assumes human nature in order to redeem it. In this way, the doctrine of the *imago dei* reaches a new radicality in the fact that Christ, man and God at the time, is the true image of God Father. Through incarnation Christian Theology introduces the decisive distinction between nature and person. The Son of God, the second Person in the Trinity, decides freely to assume human nature. The anthropological consequences of this fact are radical: every man is a person. In other terms, a person is such not in that it possesses a spiritual nature, psychic or somatic, but in that it is capable of assuming its nature, in order to make it participate from a plenitude revealed in Incarnation.

Speaking about man means, for Christian Theology, speaking of a person as a subject called for a "divinization" in the person of Christ. From this distinction between nature and person, it is possible to understand human realization from a dynamism which goes beyond the couple potency-act. It is that possibility of growing within being, through an *energeia* proceeding from divine reality, which transforms the person, elevating it to an unprecedented condition and one which is disproportional to its nature. If the person can only be understood through the ultimate possibilities of its essence, which are actualized through a supernatural principle, then the method which allowed to speak about the truth of the person, would have to justify a point of departure which would be alien and disproportional to all natural fact. The knowledge of the person, therefore, calls for a methodological criteria which allow through a leap (as Kierkegaard stated), to separate oneself from a given qualitative sphere, in order to insert oneself in a new one. This way, which we may call "katalogical",

assumes that the truth of the person is accessible in a movement which goes upwards and downwards. The present paper intends to present this katalogical way as an ideal way for a discourse on the persona, from the works of the Italian-German theologian Romano Guardini.

1. Excess and disproportionality

The person is a mystery which it is not possible to know in a definitive way; there is no concept or definition which comprehends it completely. This is because the person does not possesses existence as something which corresponds to it necessarily, and, on the other side, it is not a thing, or something finished or static whose end can be predicted with mechanical exactitude. In personal life an initiative is instantiated, which far from answering to cause-effect logic, refers to a subject's call for acting freely, to someone which is not ordered according to the dynamics of the species, and who constantly experiences the risk and unpredictability of what may happen. If there is any possibility of knowing the person, such a possibility is actualized through a non objectifying-way which takes into account the singularity of this "point of departure". That means appealing to a living subject capable of experiencing the here and now in which the own existence occurs, leaving behind the traditional image of a subject placed in front of or before something else. The decisive fact of the person can only be reached through an internal event which coincides creatively with the emerging of existence. In this last case, Guardini says "I can think my own beginning only when I have begun to be, from being-there. I can do it to the extent in which I realize the beginning" [Guardini, 1976, p. 238]. There arises here a circularity which, discarded in the logical-argumentative sphere, may be accepted in the existential plane, there where the act of thinking coincides in time with the novelty and indeductibility of that beginning through which someone begins to exist. It is not, therefore, a circularity in which the person would be melted or integrated into a totality which transcends it, but one which, inaugurating the singular life of the I, fosters the rupture or cleft of the person in regard to the environment, ex-

pressed through questions on the origin, the sense and the end or goal or its existence.

Even though human nature possesses a series of elements in common with other living beings, that which distinguishes it is that interior principle from which the person may elevate itself from the given and returning above it, appropriating it, in the here and now of its existence. That's the reason why one may say that the person exists two times: the first, as given nature, and the second as reality capable of transcending this nature and to integrate it from the interiority of the person (humanized nature). This second mode of existing, says Guardini "makes that man not only exists, but that it lives spiritually; that he has himself interiorly, among the things that exists separately; he may awake in itself this existence; he may make present in this instant that which is extended temporarily, and in each instant, that temporarily past" [Guardini, 1989, p. 30]. The contemporariness of this two moments constitutes the singular experience of the I which integrates existence, not as a necessity, but as a fact, as a gift which points to an instance which transcends it, and which, as every gift, refers to the realm of freedom. The experience of the world as a gift, as "something in becoming which is originating constantly" [Guardini, 1988, p. 87], questions that modern idea of nature – in its voluntarist or rationalist modes – as a powerful and autonomous totality in which there can be no limit with the transcendent nor the acceptance of a site where the supernatural may enter. For Guardini, nature understood this way is a limited concept, and as such, merely abstract. In effect, if the potency of the world is such as to subjugate the subject; if nature is understood as totality which breaches all limit – think about Romanticism and Nietzsche –, there is no possibility at all of an experience of the world. On the other side, if the world is understood as a reality, which carries an autoexplicative principle which accounts for all the facts through a criterion of necessity, as that reality exposed to the differentiating and calculating activity of reason – think about positivism and naturalism – the world loses its spontaneous and autonomous character, and the experience of that world becomes an experience without a subject.

It is possible, from the person, to redefine nature as a reality which carries an essence, and a significance which go beyond itself. In such a sense, nature is something already formed, is "creation", it points to a reality configures by a logos or an idea oriented to someone capable of taking it up, understanding it, and orientating it to its plenitude through a transformative action. Human action, therefore, calls for its understanding, for a person which "exists above the own nature" [Guardini, 1976, p. 435], which is independent from the capacities, dispositions, impulses, motivations in the natural plane, and which becomes the ultimate reason of the decision which precedes it. In virtue of this openness, it becomes impossible to find nature in a pure state. Even in its condition of given reality, she shows herself as permeated by the action of past generations, which turn into substrate, sediment, "flesh and blood", of man's life. Now, to define the nature of the person is not to define the person as person. The person as such appears precisely in the moment in which its "being oriented towards" (*auf hin*), peculiar to its nature, points not towards something, but towards someone. When the person understands itself as someone who exists in dialogue, in language, when the only and unrepeatable of the person shows itself linked originarily and essentially with a "you". In this sense, Guardini affirms:

> God is the bare You of man. In this consists the created person. Man would cease to be a person, if it could step out of the relationship of a You with God, that is, not only if he were to apostatize from God, but if he were not to be find himself ontologically in the relationship of You with God […] In creating man, God has constituted himself in his You, and it is so, whether man wants it or not [Guardini, 1988, p. 144].

2. Person and divine revelation

In a way similar to Kierkegaard's Guardini affirms that this relational condition of the person becomes fully clear from the fact of creation. In effect, man lives in the condition of a calling, that which God made for him in the moment he created him. "The person of man is, in its most profound sense, the answer to the calling which God makes to him as a you"

[Guardini, 1976, p. 467]. The created, however, is only to be discovered through the act through which God himself reveals himself as creator. Man discovers the truth of his being through an initiative which is not his own, but from an alterity which transcends the order of the created; a truth which reveals itself in the moment in which that alterity produces a response from the person. It is at this point in which the difference between the Judeo-Christian religion and others shows itself. The Judeo-Christian God does not identify itself with any reality of the natural order, but with an alien reality, other to the mundane order, which decides to come out from its mystery in order to reveal itself to its creation. That God reveals itself means fundamentally that He acts making himself present in the life of man. This action characterizes itself by the fact that God speaks to man in first person and invites him to call him by his name. Guardini says: "For God there is no generic concept […] god is not a concept but a name." [Guardini, 1994, p. 825]. But it is also nor a name among others, it is the Name above all names. That means that in the context of Revelation, the notion of singularity does not fall into the ambiguity of the mythological divinities. God is only and at the same time one.

But revelation says yet more: God is not the absolute Other, but He in whom the I, the You, the We, subsists. That means, that the more I am in God, the more I can be in myself. To pronounce the divine name implies, therefore, to enter into a relational dynamic, in the vertical (with God) plane, and in the horizontal (man with himself and other men) plane. In the New Testament this factum deepens through the revelation of the trinitary nature of God. Relationality is not a human fact, but a fundamentally divine one. Relationality becomes human through a special participation of man in the divine life which is explicated from God and not from man. She becomes human through a special participation of man into divine life which is explicated from God and not from man. If in the doctrine of the *imago Dei* there is present this "up-and-down" movement, in the Incarnation of Christ, this movement is radicalized because it is the divine Person who assumes human nature, and makes it participate from a condition which human nature could never reach in virtue of itself: divine filiation.

3. Katalogy or analogy?

From the distinction between nature and person it is possible to distinguish with more clarity the dynamism by which the person, from its interiority, is capable not only of transforming nature, but of elevating it to an unprecedented and novel dimension. Such a dimension is derived not only from nature, but also from the excess or disproportionality intrinsic to the person. Here a decisive methodological criterion in the thought of Guardini is established: in order to know a reality configured from a specific ontological quality "it is needed to make a leap" [Guardini, 1998, p. 149], which allows to separate from the present qualitative sphere in order to accede in a reverent way to the other. We could call this way – using an expression from Massimo Serretti – "katalogical way". The need for the leap, expressed also by Karl Barth in the last century, responds to the idea that the singularity of the person can only be apprehended through a free act capable of situating the subject in the sphere of the You, and not through the means of metaphysic, historical or psychological categories. Man "does not exist like the other living beings, but in another way. A plant, an animal are a closed space; they live imprisoned in the own essence; their existence is not determined by the necessity of an essential form which imposes itself, but is determined by freedom, which can, on the one side, complete him, and on the other, mislay him and ruin him." [Guardini, 1948, p. 119]. It would be impossible, therefore, to know the person going in a linear and continuous way from the vegetal to the animal, and from the animal to the human. We could say the same concerning the knowledge of God: "Every statement – affirms Guardini – as it is refered to the Absolute, acquires a distinct qualitative character; a same statement about God and the creatures cannot be made univocally with the same significant amplitude" [Guardini, 1998, p. 131]. In this case also, it is about making a leap – proper of faith – which would allow to think a God from God and not from the created order.

In spite of the importance of the "katalogic" way to recognize the qualitative difference and the irreductibility of the distinct ontological orders, the unilaterality of this perspective could impede the recognition of

its possible relationships, relegating them to the sphere of the irrational and meaningless. As reality is a unity, polarly configured, it is precise to conceive of it in such a way that its distinct spheres are integrating into that unity. Then arises as a methodological requirement, to follow the katalogic way along the analogic one. This means, speaking about the unity of the person, that the inferior quality can be categorized from an influence proceeding from the superior quality ("from above"), and that it can be understood from the logic of this new quality. So, for example, the chemical and mechanical elements which form part of the life of an organism, receive a new character which they would not have of themselves: vitality. But this new condition is predicated in a non-univocal way, but analogically in virtue of the affinity and real similarity which now they conserve regarding the living. On the other side, speaking about the relationship of the person to God, it is not necessary to affirm that faith is an irrational act with the purpose of saving the difference and disproportion between both: it is also possible to think that the leap of faith is the trusted and loving *fiat* of the person, towards Someone who loved him first, that created him out of love and considered him so great as to redeem him at the price of His blood; therefore, a meaningful act, or more precisely, an act with an excess of meaning. Even though the divine reality which is revealed is heterogenous, disproportionate, unprecedented, and in some sense, unknown, "the natural which is related, awaits it, remains open to welcome it. *Gratia supponit naturam et perficit*. [This fact] founds the essential ordering of nature regarding supernature; the orientation of the natural created being to grace: the character of homeland (*Heimatcharakter*), which grace has towards nature" [Guardini, 1994b, p. 180]. In this way, speaking about the relationship between the supernatural and the natural does not mean placing both orders in a same level, it means rather recognizing a mutual interaction confirmed, not in the theoretical plane, but in the historic-existential one: the divine revelation gives to the person the virtue which makes possible the receiving of it, it inaugurates a new existential beginning through which the person lives in a relationship of meeting with God, covering it, thanks to that fact, with an unprecedented possibility concerning his strength; it is a relationship of becoming itself by becoming similar to God.

> If revelation means the selfopening of a non naturally given reality, this cannot be understood with the means of our purely natural being. Revelation, as an objective opening of God, must be in relationship with the possibility of being born again in the participation in the life of God. In this way, that supernatural reality of God is introduced within the natural, which now participates from it […] This means "grace", as a new donated quality from a God who reveals himself [Guardini, 1994b, p. 192][1].

The methodological consequences of this perspective are decisive: it is not possible to realize a "natural anthropology" separated from a

> "theological anthropology". To think the person implies from a consideration from a "nature" which is totally inserted "from its essence and in necessary mode, in the project of God in the world, and therefore orientated towards grace [Guardini, 2009, p. 77].

In this sense, a reflection on the human person, which intends to cover the totality of its being, cannot be identified with a phenomenology of human finitude, but must open, from the existential novelty inaugurated by faith, to the total truth of the person: that being created from love and for love, wounded by sin and redeemed in Christ through a new beginning. Nevertheless, the importance of the "katalogical" way to recognize the qualitative difference and irreductibility of the distinct ontological orders, the unilaterality of this perspective, could impede the recognition of its possible relationships, relegating them to the sphere of the irrational and meaninglessness. As reality is a unity polarly configured, it is precise conceiving of it in such a way, as distinct spheres are integrating into a unity. There arises then, as a methodological requirement, to follow the katalogical way, as well as the analogical one.

Bibliography

Guardini R., (1948), *Freiheit – Gnade – Schicksal: drei Kapitel zur Deutung des Daseins*, München, Kösel.

Guardini R., (1976), *Die Existenz des Christen*, Mainz, Grünewald /Paderborn, Schöningh.

[1] All translations of Romano Guardini are ours.

Guardini R., (1988), *Welt und Person. Versuche zur christlichen Lehre vom Menschen*, Mainz, Grünewald /Paderborn, Schöningh.
Guardini R., (1989), *Die Bekehrung des Aurelius Augustinus*, Mainz, Grünewald/ Paderborn, Schöningh.
Guardini R., (1994a), *Ethik. Vorlesungen an der Universität München(1950-1962)*, Mainz, Grünewald /Paderborn, Schöningh.
Guardini R., (1994b), "Gedanken über das Verhältnis von Christentum und Kultur", [in:] Unterscheidung des Christlichen. Gesammelte Studien 1923-1963. Band 1, Mainz, Grünewald /Paderborn, Schöningh.
Guardini R., (1998), *Der Gegensatz. Versuche zu einer Philosophie des Lebendig-Konkreten*, Mainz, Grünewald /Paderborn, Schöningh.
Guardini R., (2009), *L'uomo. Fondamenti di una antropologia cristiana*, Brecia, Morcelliana.
Serretti M., (2009), *L'uomo è persona*, Roma, Lateran University Press.

Ricardo Gibu
Benemérita Universidad Autónoma de Puebla, Mexico
ricardogbu@gmail.com

STUDIA METODOLOGICZNE
NR 37 • 2016, 57–72
DOI: 10.14746/sm.2016.37.4

JUAN MANUEL CAMPOS BENÍTEZ

Analogy and the Square of Opposition

ABSTRACT. In this paper I propose a way to express analogy by means of the traditional square of opposition. Medieval thinkers expressed contingency as a conjunction of subcontraries (possible to be and possible not to be), which suggests a new corner in the lower part of the square. Its contradictory gives us the sixth corner to form a hexagon. We begin with the traditional modal square and its expansion into a hexagon following a proposal of Jean-Yves Béziau, who presents a hexagon for similarity, difference, opposition and identity. Then I propose a hexagon for terms proper to analogy and finally I show a hexagon that quantifies over similarity.

KEY WORDS: traditional square, hexagon, analogy, quantification

> Analogy is the kingdom of the word as a verbal bridge that, without suppressing differences and oppositions, reconciles them.[1]
>
> Octavio Paz, *Los hijos del limo*

1. Introduction

Analogy is everywhere, so to speak; it is difficult to exaggerate its significance. I do not remember who said that it is the mark of the wise man to find resemblances where nobody else sees them. Actually, there are many resemblances in the world. Analogy is basic in several kinds of discourse, such as in philosophy and the anthropology of religion. When Thales of Miletus said that the world is full of gods he spoke analogically. In translating, there is always at least one difference, either syntactic or

[1] *La analogía es el reino de la palabra como, ese puente verbal que, sin suprimirlas, reconcilia las diferencias y las oposiciones* [Paz, 1985, p. 102].

semantic, between the source text and the target text, which aims at full similarity, at least at the level of meaning. In hermeneutics, comprehension and interpretation often resort to analogical processes. In everyday language, resemblances have much to do with context and with the speakers' intentions, as pragmatics has shown.

In this paper I want to propose a way of using logic to understand analogy.[2] The logical treatment of analogy is difficult; it has been done by some philosophers like J.M. Bocheński, James Ross, Walter Redmond and others.[3] My treatment is modest. I wish to establish some points relating analogy to the square of opposition, or rather, to schemata that result in an expansion of the traditional square. We begin with the Medieval Modal Square presented by several thirteenth-century logicians.

The relationship between modality and analogy is not obvious since analogy is predicated of terms – according to the Aristotelian classification of univocal, analogous and equivocal terms as they appear in sentences. Modality refers to modes of being (possible, necessary, contingent and their negations) and also to modes of truth, the so-called "alethic modality", where the modes are predicated of propositions. We will try to find a relationship between modality and analogy. Once the relationship is established, we will examine some hexagons applied to terms and relations proper to analogy. I begin with a modal square using the expressions of thirteenth-century authors who do not use propositions properly speaking, since analogy has been understood as an analogy of being. Of course, to express alethic propositions we use a square with modal operators and a propositional metavariable.

2. The Modal Square and the Modal Hexagon

The Modal Square is shown in (Fig. 1) below where the corners are expressions indicating modes of being, each one with its equivalent forms

[2] This paper reflects and amends some mistakes of "Analogía y el cuadrado de oposición", in *Analogía filosófica*, vol. 28, (2014), pp. 99-111.

[3] [Bocheński, 1948; Ross, 1971; Redmond, 2014].

("it is necessary to be" is equivalent to "it is impossible not to be," "it is necessary not to be" is equivalent to "it is not possible to be," "it is possible to be" is equivalent to "it is not necessary not to be," "it is possible not to be" is equivalent to "it is not necessary to be"). The usual relationships are maintained. The upper corners (A and E) are contraries, the lower corners (I and O) are subcontraries, and the lower corners are subalterns of the upper corners. Contraries cannot both be true, the upper corners imply the lower corners, diagonal corners contradict each other and inferior corners can be both true.

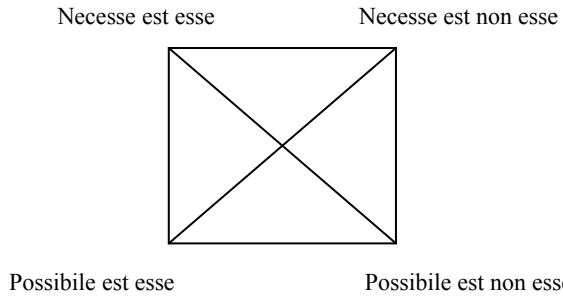


Fig.1.

We notice that contingency ("it is possible to be" and "it is possible not to be") is not explicitly stated but can be expressed at the subcontrary level, as the conjunction of the lower corners of the square. Now, if something is contingent, its contradictory would be either necessary or impossible; this can be expressed as the disjunction of the upper corners, which results in the following Modal Hexagon[4] where the arrows express implication and the line joining the new corners express contradiction:

[4] For more information on the Modal and other Hexagons, see [Béziau, 2012]. He uses Y for the new lower corner (the conjunction of subcontraries) and U for the new upper corner (the disjunction of contraries). Béziau has organized international congresses on the Square of Opposition which shed much light on this subject and its developments.

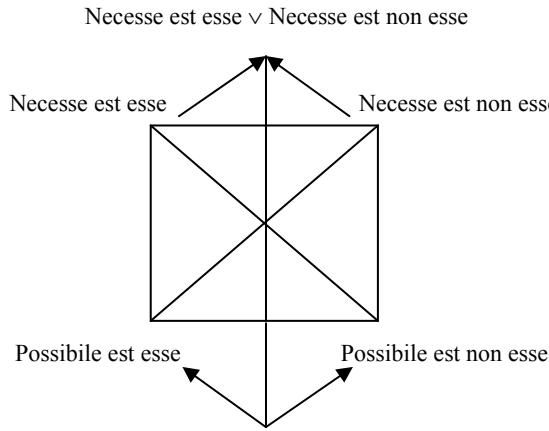


Fig. 2.

At first sight, we may call this square "ontological" since it is about being and its modes.[5] Analogy is the analogy of being, but the classification of terms (analogous, equivocal and univocal) is linguistic. Speaking about the analogy of being requires a language to express the analogy, and that language may contain rules to express the analogical relationships.[6] Some features of analogy can be captured by means of logic, especially through the Square of Opposition and its expansions.

[5] "At first sight" because the corners may also be regarded as schemes to be filled either using a sentence letter ("it is necessary that p" for instance) or a singular term and a property ("Peter necessarily runs" for instance); these are the *de dicto* and the *de re* interpretation of modal operators. Talking about beings may admit further qualification, since a quantifier cannot be same when referring to a finite being as when referred to an infinite being [Redmond, 2014, p. 78].

[6] James F. Ross proposed the same thing: "St. Thomas Aquinas actually formulated four distinct but complementary analogy rules. In this essay I am concerned to analyze the two most important of these, although the other two rules are stated in the list of definitions given below". See [Ross, 1971, p. 36].

Here is the hexagon with the usual alethic modal symbolism (□: necessary, ◊: possible):

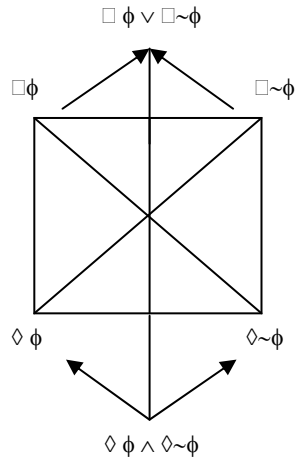


Fig. 3.

3. Analogy

Béziau proposes this Identity Hexagon (Fig. 4) for identity and difference and says:

> This hexagon is constructed by considering that opposition implies difference, which seems quite natural. Similarity is defined as the contradictory of opposition and things can be at the same time similar and different, that's what we have called *analogous*, the label for the Y-corner.[7]

[7] [Béziau, 2012, pp. 27]. I have traded places, Béziau puts Opposition at the A corner, Identity at the E corner and their respective subalterns below. Opposition suggests some kind of negation, and this is the reason why I have placed it at the E corner.

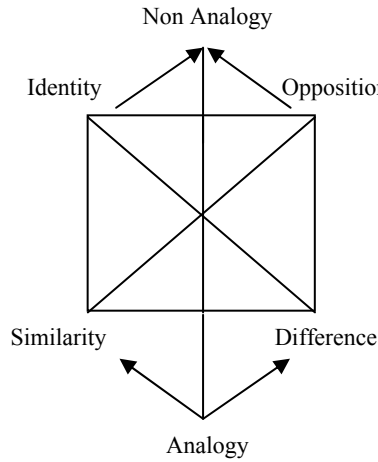


Fig. 4.

We find the basic elements of analogy in this figure precisely forming a Square of Opposition: Identity, Difference, Opposition, and Similarity. Analogy and contingency naturally admit expression at the new Y corner, since both of them express the conjunction of subcontraries. I think, however, that this is too general and that we could get closer to analogy. We can ask what items the corners of the hexagon apply to: What do they qualify?

Put in other words: which sentences could we use to fill the schemata of the square.[8] We could first note that we are talking about relationships, since each corner admits two elements and sentences may be formed. Identity: α is identical to β; Difference: α is different from β; Opposition: α is opposed to β; Similarity: α is similar to β. But there are also properties involved which are asserted of two or more things by a term. This is a famous example: healthy may be predicated of such things as different as an

[8] I would like to thank here Colin James III and Walter Redmond for their valuable suggestions on this point during *The First World Congress on Analogy*.

animal, its urine, its food, its bark (or whinny).[9] Based on this we can come closer to analogy by introducing the traditional terms: equivocal and univocal, and analogy as an intermediary between the two.

We now have the elements we require, but first we should add that by introducing these terms we introduce a linguistic distinction, since we are speaking of terms, i.e. words. But our starting point is the analogy of being, not of language.[10]

4. A Square for terms

We can form a hexagon for analogy with univocal, equivocal and analogous terms.

Univocal terms imply similarity, either in meaning or in definition of the thing named by the term. Equivocal terms have no likeness, and could be homonyms, i.e. the same name for different things, something that is common in natural languages and which is a perhaps inevitable "accident" of language, given the economy of words; we usually understand each other from the context. Analogy is in the "middle", so to speak. It shares some similarity and some difference, though its "location" may be not easy to state, as we shall see.

Let us consider some implications: if there is identity in the application of a term, then there is similarity (this leads to the hexagon´s A and I corners). If there is a distinction in its application, then there is a difference (corners E and O). There is no analogy if there is either identity or distinction: i.e. the corners A and E involve no analogy (the U corner), but if there is analogy (the Y corner), then there is similarity and there is difference. If the application of a term corresponds to univocal terms and distinction to

---

[9] For instance, Ross comments on this sentence "My dog´s bark is healthy" in this way: "My dog´s bark has those qualities which are signs to me that the dog is ´healthy', that is, has the organic state characterized by a, b, c,…n." [Ross, 1971, p. 50].

[10] [Bocheński, 1948, p. 427] captures this relationship between being and language in his analysis of analogy as an eight argument relationship between terms, language, properties and things. But in [1967, p. 159] he simplifies them into six.

equivocal terms, we can now establish another hexagon. Corners U and Y are expressions linked by disjunction and conjunction respectively. We can establish that if a term is univocal, then it is univocal or it is equivocal, in other words it is not analogous. If there is analogy, then there is similarity and there is difference, i.e. the corner Y includes the subcontraries I and O.

(A digression)

This may not be the right place for this comment, but it may have some pragmatic relevance since analogy is closely related to the uses of terms by speakers. The inference from Y to I, on one hand, and from Y to O on the other, shows some loss of information, because we started with two conjuncts and we obtain a single one by eliminating the connective (this corresponds to the Logical Rule of Simplification where we move from a molecular component toward an atomic one) The inference from A to U (or from E to U), i.e. if A is true so is A v E, also shows some loss of information because when we state A v E we know that at least one of them is true, but we do not know which one, even though we added one connective (this corresponds to the Logical Rule of Disjunctive Addition). The passage from universal to particular sentences (A to I and E to O) also suggests some loss of information, because if I know that an A-sentence is true, but I state an I-sentence, I am not telling the whole truth. Note a certain symmetry: if Y implies I, we "lose" one connective and information is reduced, and if A implies U, information is also reduced, although we "gain" one connective.

I propose these examples: if someone, let us call him Peter, knows that both John Doe and Jane Doe committed the crime, and based on this, when asked, he states "John Doe committed the crime", he speaks the truth but he is hiding something else, that Jane Doe also committed the crime. But if Peter knows that Jane Doe did not commit the crime but John did, and when asked says "John Doe committed the crime or Jane Doe committed the crime", that which he is saying follows from what he knows, but he is not reporting anything, because the listener will not know who committed

the crime, although the speaker does. If someone knows that all swans are white and based on this says "Some swans are white", what he says is true, and is implied by "All swans are white", but it seems as if he is not telling the whole truth. The same occurs when someone knows that α is identical to β, then he says that they are similar; besides we need rules to validate this inference. These cases suggest that logical rules do not always jibe with the verbal behaviour of the speakers. This may have some relevance to our understanding of analogy.

Let us go back to our hexagon, where the corner U (Not-analogy) can also be (Equivocal $\vee$ Univocal), and Y (Analogy) can also be (Similarity $\wedge$ Difference):

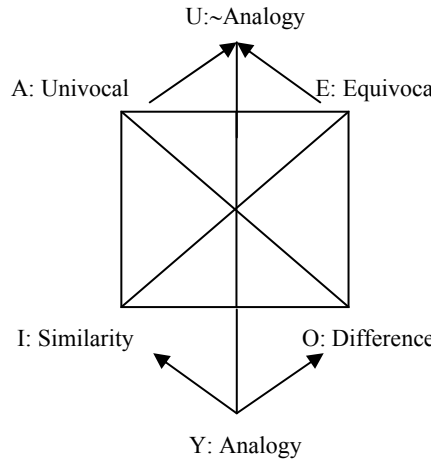


Fig. 5.

Before continuing, we should note that we have already found a similarity, an analogy with modality. The logical structure of contingency, in the context of the Square of Opposition, is formally the same; it can be expressed by means of the same hexagon. Contingency and analogy are at the same corner (Y) and produce the same implications and oppositions. To keep this analogy we have resorted to the Hexagon of Opposition, although it introduces something that is not in the other corners, namely,

conjunctive and disjunctive connectives when we consider the implications of Y and those of A and E respectively.

Moreover, the application of univocal and equivocal terms involves total similarity and the absence of similarity respectively; analogy implies some similarity and some non-similarity, at the subcontraries level. Denying that a term is equivocal is to assert some similarity. Indeed, to deny the E-corner of the Square of Opposition is to affirm the I-corner. To deny that a term is univocal is to assert that there is some difference in its application; the negation of the A-corner implies the affirmation of the O-corner.

5. Quantifying the Corners

We have spoken of "some similarity" and "some non-similarity". This tells us that we can express these things in terms of quantification. The application of univocal terms indicates total similarity, i.e. *all* similarity and the application of equivocal terms indicates total difference, i.e. *no* similarity. The application of analogous terms implies a partial similarity, i.e. *some* similarity and a partial difference i.e., *some non*-similarity. We can express this in the following figure.

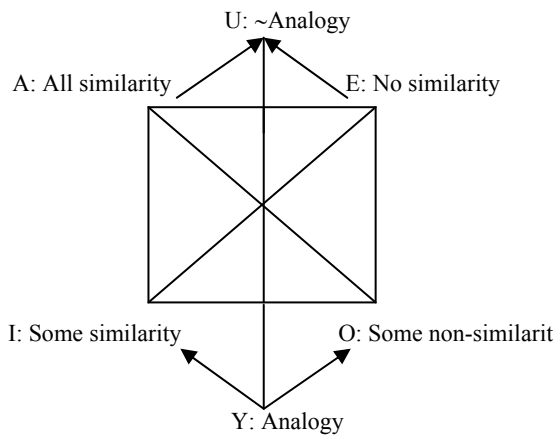


Fig. 6.

This brings us closer to quantification and to the ordinary square. It seems to have also an advantage, that modal operators and quantifiers are definable in terms of each other with the help of negation. Saying that something is necessary, amounts to denying the possibility of its negation; for example, if is not possible for something to be, then it is necessary for it not to be. To say that everything is F, is equal to saying that it is not the case that there is something which is not F. But it is not easy to find the equivalents of the corners A and E in (Fig. 5). Indeed, what does it mean to say that univocal is equivalent to a "non-similarity to no" or equivocal amounts to "no difference from no".[11] These "sentences" do not make sense. A clear statement of all this may exist, or perhaps the Figure was ill conceived. It combines different kind of things, for A and E corners refer to terms although I and O corners refer to things, not terms. Nevertheless, the implications listed make some sense. In (Fig. 6) we can say that "all similarity" is equivalent to "there is no non-similarity" and even "it is not the case that there is some dissimilarity". If there is analogy then there is some similarity and there is some dissimilarity, so we could change the word "analogy" for the conjunction of subcontraries and the same holds for the upper extreme U.

A square of terms would be something like this

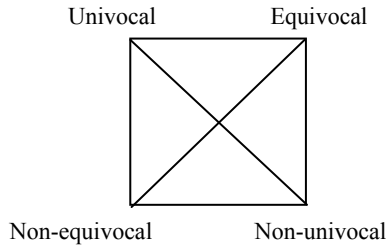


Fig. 7.

[11] Take a modal operator, "Necessary" f.i., its subaltern is "Possible". Adding negations makes them equivalent: "necessary is equivalent to not possible no". Take "every", it is equivalent to "not every no". These moves cannot be applied to "similarity" and "difference".

Which can be extended into a hexagon, as we have seen. Analogy is out of the square, at the bottom, and implies the "particular" corners; its contradictory is to be placed at the upper place, as a disjunction of the univocal and equivocal corners. Universal corners imply the contradictory of analogy, at the top of the square.

Notice that we have two term-negations in these squares, "non-equivocal" and "non-univocal" (and one in (Fig. 6), the O-corner, non-similarity) and this could bring about some problems, for we could have two negative corners where there should be only one negative corner and two affirmative corners where there should be only one affirmative corner at the A and E corners.

6. Some considerations

Two things may be totally or partially similar to each other regarding *some* property, which means we need another quantifier for this property. Let us take the sentence "A and B are completely similar regarding to C", and explain it in a very informal way like, for instance: "Men and Women are completely similar to each other regarding to their being a Human". "Human being" here is a term applied to men and women "by the same reason", in the same way and constitutes a univocal term. "Similar to each other" constitutes a symmetrical relationship. The sentence "A and B are completely different" may be understood as "There is no similarity between A and B", in which case we need no further properties. For instance the word "well" in this compounded sentence "Something is well and something is a well" is equivocal since it shows no similarity, it refers to completely different things in each case.

It should be noted that quantification over similarities requires a more complex logical apparatus, for similarity, when quantified, will probably lead us to establish different degrees of truth values. We may need to say that the similarity tends to zero, but there will always be a degree, however minimal, for there to be analogy. It would be a problem to express this in

a square where analogy would be “in the middle” but graphically be farthest from similarity, when approaching zero.

There is another possibility. In (Fig. 6) we have contrary extremes, A and E, and they do not touch each other because they cannot both be true, but we may also have squares where there is some connection. Suppose that the contrary extremes are the colours white and black.[12] We would have these corners: A: White, E: Black, I: Non-black, O: Non-white, since the subcontrary corners are the contradictory of the upper corners, the contraries. The corner that corresponds to the analogy, the corner Y, would be Non-white and Non-black, which involves the subcontraries; the corner corresponding to U, the non-analogy would be White or Black, which is implied by the contrary extremes. This gives us (Fig. 8).

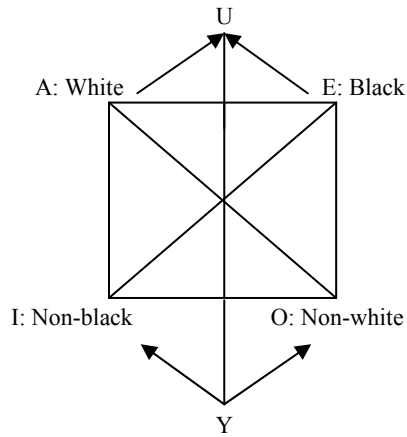


Fig. 8.

In this case the contrary extremes “touch each other" in some way, since it is possible to establish a spectrum of colours where gradation can be seen and passes (through the gradations) from one to another. Here we

[12] Learned of this in some talks at the meetings on the Square of Opposition.

can see that truth values can be multiplied, requiring a more evident application of a multi-valued logic.

We could even have a case where the corners were theories or philosophical doctrines. Indeed, Mauricio Beuchot [2009, p. 35] has pointed out that univocism (which could be our A extreme) in hermeneutics can be exemplified with positivist doctrines, and equivocism (our E extreme) with romantic hermeneutics. Now although these theories are incompatible, some of the consequences (which would be exemplified at the level of the weak operators, the subcontraries) may be consistent, and in this sense shared by both theories, this makes philosophical dialogue fruitful, something which Beuchot has stressed.

Beuchot also noted something about equivocism, which tends to relativism. Relativism obviously must be "relative" [Beuchot, 2009, p. 38]. The same is true of analogy: analogy is analogical. Bocheński understands this considering the level of language, where analogy in the object-language is isomorphic with the analogy expressed in the meta-language [Bocheński, 1948, p. 434]. We can also understand this in relation to logic (which interestingly shares this etymology): analogy makes modal logics, with its many variations, possible.

I do not exaggerate when I say that the analogy of proportionality gains importance in the isomorphism that produces the variety of logics. I have tried to express some of this isomorphism by using the Square of Opposition and its expansion into hexagons.

Bibliografy

Beuchot M., (2009), *Tratado de hermenéutica analógica*, México, UNAM-Itaca.

Béziau J.-Y., (2012), "The Power of the Hexagon", in *Logica Universalis*, Vol. 6, No. 1-2, Springer Basel, pp. 1-43.

Bocheński I.M., (1948), "On analogy", *The Thomist*, Vol. XI, 1948, pp. 424-447.

Bocheński I.M., (1967), *Lógica de la religión*, translated by Saad Chedid, Buenos Aires, Paidos.

Paz O., (1985), *Los hijos del limo*, Barcelona, Planeta-Agostini.

Redmond W., (2014), *Deus et logica. Logica theologiae philosophicae insita*, Puebla, Porrúa.

Ross J. F., (1971), "Analogy as a rule of meaning for religious language", [in:] James F. Ross [ed.] *Inquiries into Medieval Philosophy*, Westport, Connecticut, Greenwood Pub. Co., 1971, pp. 35-74.

Juan Manuel Campos Benítez
Benemérita Universidad Autónoma de Puebla, Mexico
juancamposb@hotmail.com

STUDIA METODOLOGICZNE
NR 37 • 2016, 73–96
DOI: 10.14746/sm.2016.37.5

JOSÉ DAVID GARCÍA-CRUZ

$\mathfrak{L}_{\alpha}$: A Modal Logic to Reason about Analogical Proportion

ABSTRACT. In [Prade and Richard, 2009] a restricted study of analogy was developed through the notion of analogical proportions, i.e. sequences of the form "*a is to b as c is to d*". They define three kinds of *analogical proportions*: analogy, reverse analogy, and paralogy. In [Prade and Richard, 2013] and [Prade and Richard, 2014] many kinds of analogy are defined but we highlight four: analogy, reverse analogy, paralogy, and inverse paralogy. In all of these works analogy is analyzed in a Boolean sense taking an account of analogy in a logical terms.
Our hypothesis is that if we take a restricted notion of analogy in the sense of the mentioned works, analogy could be seen as a modal operator. We proceed as follows. In the first section we present a background of the notion of analogical proportion, we take the main thesis of Henri Prade and Gilles Richard in the mentioned works. Later, in the second part of the paper we present the basic system of analogical proportions: the logic $\mathfrak{L}_{\alpha}$. We define a modal propositional language with four basic modal operators, then, we present a model based on a relational structure with two types of relations defined as two kinds of accessibility relations between states. Our technique is to interpret analogical proportions as dyadic relations between pairs of objects holding an inclusion relation. In this sense, the formulas related by the analogical modal operators are truth in states that hold some analogical proportion.

KEY WORDS: modal logic, analogical proportion, homogeneous analogy, classical propositional logic.

Introduction

In [Prade and Richard, 2009] a restricted study of analogy was developed through the notion of analogical proportions, i.e. sequences of the form "*a is to b as c is to d*". They define three kinds of *analogical proportions*: analogy, reverse analogy, and paralogy. In [Prade and Richard,

2013] and [Prade and Richard, 2014] many kinds of analogy are defined but we highlight four: analogy, reverse analogy, paralogy, and inverse paralogy. In all of these works analogy is analyzed in a Boolean sense taking an account of analogy in a logical terms.

Our hypothesis is that if we take a restricted notion of analogy in the sense of the mentioned works, analogy could be seen as a modal operator. We proceed as follows. In the first section we present a background of the notion of analogical proportion, we take the main thesis of Henri Prade and Gilles Richard in the mentioned works. Later, in the second part of the paper we present the basic system of analogical proportions: the logic $\mathfrak{L}_{\alpha}$. We define a modal propositional language with four basic modal operators, then, we present a model based on a relational structure with two types of relations defined as two kinds of accessibility relations between states. Our technique is to interpret analogical proportions as dyadic relations between pairs of objects holding an inclusion relation. In this sense, the formulas related by the analogical modal operators are truth in states that hold some analogical proportion.

One of the main results of our approach is that we could dualize the analogical proportions and define strong notions of analogy, paralogy, reverse analogy, and inverse paralogy, respectively. That means that there could be not only four modal operators of analogical proportions but eight. Related to the previous issue, we can consider what are the advantages of a semantics based on the notion of analogical proportion, and also how we can construct a logical calculus adequate to the remaining semantics. Another result is given by the properties of the four analogical proportion, i.e. reverse reflexivity, odd permutation, symmetry, bi-reflexivity, even permutation, etc. These properties define some characteristic theorems of the logic of analogical proportions, we analyze these issues in the final section.

Background on Analogy

My aim in this part is to offer a restricted notion of analogical proportions. I follow Henri Prade and Gilles Richard in three of theirs works:

"Analogy, Paralogy and Reverse Analogy: Postulates and Inferences"; "From Analogical Proportion to Logical Proportions"; and "From Analogical Proportion to Logical Proportions: A Survey". I only focus on the intuitive notion of analogical proportion and its Boolean interpretation, and only in four kinds of analogical proportions, namely *homogeneous analogies*. For this reason, I only take in account the definition of the four analogical proportions.

The first paper ("Analogy, Paralogy and Reverse Analogy: Postulates and Inferences") develops a three-sided view of analogy, in the author's words:

> (...) we investigate constitutive notions of analogy and we highlight the existence of two relations beside standard analogical proportion, namely paralogical proportion and reverse analogical proportion (...) [Prade and Richard, 2009, p. 307]

Their starting idea is that "analogy is a matter of *similarity* and *difference*" [Idem.], this idea is the core of a definition of three types of analogy with its respective "postulates". The basic definition of analogical proportion given by them is "statements of the form a is to b as c is to d, usually denoted $a:b::c:d$" [Idem.]; for example ‘"numeral" is to "two" as "solid" is to "cube"’; the words "numeral" and "two" are similar in the same sense as "solid" and "cube" are, the first and the third refers to a conceptual entity (a notion of numeral and a notion of solid) in this reference lies the similarity, but the difference lies in the fact that one notion refers to an arithmetical concept and the other refers to a geometrical concept.

In this sense analogy is a binary relation between pairs of objects that hold at the same time relations of similarity and dissimilarity, Prade and Richard say that we may have to put two situations in parallel and compare these situations by establishing a correspondence between them. We may extend this correspondence to take a general intuitive definition of analogy: "the way a and b differ is the same as the way c and d differ". This definition of analogy is the base of the remaining definitions of paralogy and reverse analogy, we put them together and get:

a) *Analogy* between $abcd$: the way a and b differ is the same as the way c and d differ,

b) *Paralogy* between $abcd$: what a and b have in common, c and d have it also,

c) *Reverse analogy* between $abcd$: the way a and b differ is the same as the way d and c differ.

This three kinds of operations are studied in the first paper and Prade and Richard give an interesting analysis of them, but in a later paper they introduce many kinds of analogical proportions (in specific 120). In the second citied paper Prade and Richard [2013, p. 445] resort to the notion of "indicator" to define a group of four kinds of analogical proportions. An indicator is a conjunction of two Boolean literals, holding some combination of negation and conjunction in its definition, giving rise to four different combinations of which we have two types: *similarity* and *dissimilarity* indicators. The four combinations are the following:

1) $a \wedge b$ and $\tilde{a} \wedge \bar{b}$ are similarity indicators,
2) $\bar{a} \wedge b$ and $a \wedge \bar{b}$ are dissimilarity indicators.

Prade and Richard take in account the properties and restrictions of this indicators, but we only focus on the notions of similarity and dissimilarity. Later in the paper they introduce the *homogeneous analogies*, proportions that "do not mix different types of indicators" [Ibid.], these are: analogy, reverse analogy, paralogy and inverse paralogy. The new element of the group is the inverse paralogy. To the previous recapitulation of the analogical proportions we introduce the new definition of inverse paralogy as follows:

d) *Inverse paralogy* between $abcd$: what a and b have in common, c and d miss it.

With this fourth type of analogical proportion we complete the framework used to analyze the notion of analogy in modal terms. We continue in the next section with the definition of the logic of analogical proportions.

The Logic $\mathfrak{L}_\alpha$

This section presents the basic ingredients of the logic of analogical proportions. This logic can be defined in an abstract sense by the structure $\mathfrak{L}_\alpha = \langle L_\alpha, Cn\rangle$ where L_α is a structure and Cn an operation $Cn: P(L_\alpha) \mapsto P(L_\alpha)$. The structure $\mathfrak{L}_\alpha = \langle L_\alpha, Cn\rangle$ is called sometimes a consequence system [Carneli, Coniglio, Gabbay, Goubeia & Sernadas, 2008, p. 4]. We present an alternative characterization of this logic focused on the semantic elements of a relation of logical consequence, but we show later how the relation of logical consequence induces the operation of consequence and vice versa. Later we see how we may construct a logical calculus based on the semantics defined here. Fist we present some basic definitions of the language and some comments to the notation.

Definition 2.1 (*Relational structure*) A *relational structure* is a tuple $\mathfrak{F}$ whose first component is a non-empty set W called *the universe* of $\mathfrak{F}$, and whose remaining components are relations on W.

Definition 2.2 A modal similarity type is a pair $\tau = (O, \rho)$ where O is a non-empty set and ρ is a function $\rho: O \mapsto \mathbb{N}$. The elements of O are called *operators*. The function ρ assigns to each operator $\Delta \in O$ a finite *arity*, indicating the number or arguments Δ can be applied to.

Definition 2.3 (*The language* L_α) Let $\tau = (\langle:\rangle, \langle;\rangle, \langle!\rangle, \langle ¡\rangle, \rho)$ a modal similarity type (wiht $\rho(\langle:\rangle) = \rho(\langle;\rangle) = \rho(\langle!\rangle) = \rho(\langle ¡\rangle) = 4$), $C = \{\neg, \wedge, \vee, \rightarrow, \bot\}$ a set of logical connectives, and A a non-empty set of proposition atoms. An alphabet is a set $\Sigma = \tau \cup C \cup A$ of symbols. A formula φ is a sequence of symbols of the alphabet Σ closed by the following production rule:

$$\varphi := \neg\varphi \mid \bot \mid \varphi \vee \psi \mid \varphi \rightarrow \psi \mid \varphi \wedge \psi \left| \binom{\alpha}{\beta} \langle:\rangle \binom{\varphi}{\psi} \right| \binom{\alpha}{\beta} \langle;\rangle \binom{\varphi}{\psi} \left| \binom{\alpha}{\beta} \langle!\rangle \binom{\varphi}{\psi} \right| \binom{\alpha}{\beta} \langle ¡\rangle \binom{\varphi}{\psi}$$

The language L_α is the set of all formulas.

Let's remark on some aspects of the language starting with the alphabet. The novelty of the language is the introduction of a set of operators of analogical proportions: analogy $\langle : \rangle$, paralogy $\langle ; \rangle$, reverse analogy $\langle ! \rangle$, and inverse paralogy $\langle ¡ \rangle$. A formula like "$\binom{\alpha}{\beta} \langle : \rangle \binom{\varphi}{\psi}$" could be read as "$\alpha$ and β are analogous to φ and ψ", the remaining formulas are read in an "analogous" way: "$\binom{\alpha}{\beta} \langle ; \rangle \binom{\varphi}{\psi}$" may be read as "$\alpha$ and β are paralogous to φ and ψ", $\binom{\alpha}{\beta} \langle ! \rangle \binom{\varphi}{\psi}$ may be read as "α and β are reverse analogous to φ and ψ", and "$\binom{\alpha}{\beta} \langle ¡ \rangle \binom{\varphi}{\psi}$" may be read as "$\alpha$ and β are inverse paralogous to φ and ψ". The main difference with another modal operators is that their *arity* is equal to four, that is, they range over four arguments. In this sense they are applied to four formulas. We could write $\langle ¡ \rangle(\alpha, \beta, \varphi, \psi)$ instead of $\binom{\alpha}{\beta} \langle ¡ \rangle \binom{\varphi}{\psi}$, and in fact we must write so if we want to be strict with the concatenation notation of the modal operators, but we think that it is more convenient to take our "binomial" notation at least for two simple reasons. First, as we want to represent relations of pairs of elements, we think that the binomial notation represents perfectly the visual interaction between the elements in relation, i.e. two items related. Second, we may exploit this *two-sided* representation to manipulate pairs of formulas in a context of binary relations. Despite this, we must not forget that we are facing a quaternary relation.

Definition 2.4 (τ-*frame*) Let be $\mathfrak{F}$ a relational structure, we call $\mathfrak{F}$ a τ-*frame* where $\mathfrak{F}$ be a tuple consisting of the following:

a) A non-empty set S,

b) A relation $\leq \subseteq S^2$,

c) A relation $\approx \subseteq (\mathfrak{S} \times S)^2$.

We write $\mathfrak{F} = (S, \leq, \approx)$ to denote a τ -frame.

The set $\mathfrak{S}$ is called the set of *meta-states* and is defined as $\mathfrak{S} = \{x \in P(S): if\ y \in x\ and\ z \in x, then\ y \leq z\ or\ z \leq y\}$, that is, the meta-states are subsets of S in which its elements hold the contention relation $\leq$. The elements of $\mathfrak{S}$ are called meta-states (m-states in the following). The relation $\approx \subseteq (\mathfrak{S} \times S)^2$ is a relation between m-states, but is hold by pairs

which first element is a m-state and its second element is a state belonging to the m-state in question. In symbols $\langle \mathfrak{b}, s\rangle \approx \langle \mathfrak{b}_n, s\rangle$, where $\mathfrak{b}$ and $\mathfrak{b}_n$ are m-states belonging to $\mathfrak{S}$, and s is some states present in both $\mathfrak{b}$ and $\mathfrak{b}_n$. We consider also another kind of states that we will call *complement* states. We define a complement state as follows. Let be $s \in S$ some state, its complement state is the set $\bar{s} = S - s$. Intuitively we may understand a complement state $\bar{s}$ as the set formed by all the states without s.

Definition 2.5 A τ-*model* for L_α is a pair $\mathfrak{M} = (\mathfrak{F}, V)$ where $\mathfrak{F}$ is a τ-frame and V is a valuation $V: A \longmapsto P(S)$.

Definition 2.6 Let be $\mathfrak{M} = (\mathfrak{F}, V)$ a model for L_α, we define a formula φ *satisfied* at a m-state $\mathfrak{b} \in \mathfrak{S}$ and at a state $s \in S$ in a model $\mathfrak{M} = (\mathfrak{F}, V)$ as follows:

a) $\mathfrak{M}, \mathfrak{b}, s \Vdash p$ iff $s \in V(p)$

b) $\mathfrak{M}, \mathfrak{b}, s \Vdash \bot$ never

c) $\mathfrak{M}, \mathfrak{b}, s \Vdash \neg p$ iff not $\mathfrak{M}, \mathfrak{b}, w \Vdash p$

d) $\mathfrak{M}, \mathfrak{b}, s \Vdash p \vee \psi$ iff $\mathfrak{M}, \mathfrak{b}, s \Vdash \varphi$ or $\mathfrak{M}, \mathfrak{b}, s \Vdash \varphi$

e) $\mathfrak{M}, \mathfrak{b}, s \Vdash \varphi \to \psi$ iff not $\mathfrak{M}, \mathfrak{b}, s \Vdash \varphi$ or $\mathfrak{M}, \mathfrak{b}, s \Vdash \varphi$

f) $\mathfrak{M}, \mathfrak{b}, s \Vdash \varphi \wedge \psi$ iff $\mathfrak{M}, \mathfrak{b}, s \Vdash \varphi$ and $\mathfrak{M}, \mathfrak{b}, s \Vdash \varphi$

g) $\mathfrak{M}, \mathfrak{b}, s \Vdash \binom{\alpha}{\beta} \langle : \rangle \binom{\varphi}{\psi}$ iff $\exists \mathfrak{b}_n \in \mathfrak{S}$ with $\langle \mathfrak{b}, s\rangle \approx \langle \mathfrak{b}_n, s\rangle$ and,

$$\exists s_1 s_2 \in \mathfrak{b}, \exists s_1 s_2 \in \mathfrak{b}_n \text{ with } \begin{cases} s \leq s_1 \leq \overline{s_2} \\ s \leq s_1 \leq \overline{s_2} \end{cases} \text{; such that } \begin{cases} \mathfrak{M}, \mathfrak{b}, s_1 \Vdash \alpha \\ \mathfrak{M}, \mathfrak{b}, s_2 \Vdash \beta \\ \mathfrak{M}, \mathfrak{b}_n, s_1 \Vdash \varphi \\ \mathfrak{M}, \mathfrak{b}_n, s_2 \Vdash \psi \end{cases}$$

h) $\mathfrak{M}, \mathfrak{b}, s \Vdash \binom{\alpha}{\beta} \langle ; \rangle \binom{\varphi}{\psi}$ iff $\exists \mathfrak{b}_n \in \mathfrak{S}$ with $\langle \mathfrak{b}, s\rangle \approx \langle \mathfrak{b}_n, s\rangle$ and,

$$\exists s_1 s_2 \in \mathfrak{b}, \exists s_1 s_2 \in \mathfrak{b}_n \text{ with } \begin{cases} s \leq s_1 \leq s_2 \\ s \leq s_1 \leq s_2 \end{cases} \text{; such that } \begin{cases} \mathfrak{M}, \mathfrak{b}, s_1 \Vdash \alpha \\ \mathfrak{M}, \mathfrak{b}, s_2 \Vdash \beta \\ \mathfrak{M}, \mathfrak{b}_n, s_1 \Vdash \varphi \\ \mathfrak{M}, \mathfrak{b}_n, s_2 \Vdash \psi \end{cases}$$

i) $\mathfrak{M}, \mathfrak{b}, s \Vdash \binom{\alpha}{\beta} \langle ! \rangle \binom{\varphi}{\psi}$ iff $\exists \mathfrak{b}_n \in \mathfrak{S}$ with $\langle \mathfrak{b}, s \rangle \approx \langle \mathfrak{b}_n, s \rangle$ and,

$$\exists s_1 s_2 \in \mathfrak{b}, \exists s_1 s_2 \in \mathfrak{b}_n \text{ with } \begin{cases} s \leq s_1 \leq \overline{s_2} \\ s \leq \overline{s_1} \leq s_2 \end{cases}; \text{ such that } \begin{cases} \mathfrak{M}, \mathfrak{b}, s_1 \Vdash \alpha \\ \mathfrak{M}, \mathfrak{b}, s_2 \Vdash \beta \\ \mathfrak{M}, \mathfrak{b}_n, s_1 \Vdash \varphi \\ \mathfrak{M}, \mathfrak{b}_n, s_2 \Vdash \psi \end{cases}$$

j) $\mathfrak{M}, \mathfrak{b}, s \Vdash \binom{\alpha}{\beta} \langle ¡ \rangle \binom{\varphi}{\psi}$ iff $\exists \mathfrak{b}_n \in \mathfrak{S}$ with $\langle \mathfrak{b}, s \rangle \approx \langle \mathfrak{b}_n, s \rangle$ and,

$$\exists s_1 s_2 \in \mathfrak{b}, \exists s_1 s_2 \in \mathfrak{b}_n \text{with } \begin{cases} s \leq s_1 \leq s_2 \\ s \leq \overline{s_1} \leq \overline{s_2} \end{cases}; \text{ such that } \begin{cases} \mathfrak{M}, \mathfrak{b}, s_1 \Vdash \alpha \\ \mathfrak{M}, \mathfrak{b}, s_2 \Vdash \beta \\ \mathfrak{M}, \mathfrak{b}_n, s_1 \Vdash \varphi \\ \mathfrak{M}, \mathfrak{b}_n, s_2 \Vdash \psi \end{cases}$$

Definition 2.7 A formula φ is global satisfied (or global true) in a model $\mathfrak{M}$ (notation $\mathfrak{M} \Vdash \varphi$) if it is satisfied in all states of all m-states in $\mathfrak{M}$ (that is $\forall \mathfrak{b} \in \mathfrak{S}$ and $\forall s \in S$ we have $\mathfrak{M}, \mathfrak{b}, s \Vdash \varphi$). A formula φ is satisfied in a model $\mathfrak{M}$ if it is satisfied in some state in a m-state in $\mathfrak{M}$, it is refuted in a model if its negation is satisfied. A set of formulas Γ is global satisfied in a model $\mathfrak{M}$ if $\mathfrak{M}, \mathfrak{b}, s \Vdash \Gamma$ for all m-states and all states in $\mathfrak{M}$.

Definition 2.8 (*Logical consequence*) Let τ be a modal similarity type and $\mathbb{M}$ a class of τ-models $\mathfrak{M}$. Let be Γ a set of formulas and φ a formula of L_α, we say that φ is a logical consequence of Γ over $\mathbb{M}$ (in notation $\Gamma \Vdash_{\mathbb{M}} \varphi$) if $\forall \mathfrak{M} \in \mathbb{M}$, $\forall \mathfrak{b} \in \mathfrak{S}$ and $\forall s \in S$ if $\mathfrak{M}, \mathfrak{b}, s \Vdash \Gamma$ then $\mathfrak{M}, \mathfrak{b}, s \Vdash \varphi$.

A logic may be defined as a pair $\mathfrak{L}_\alpha = \langle L_\alpha, \Vdash \rangle$ where L_α is a structure and $\Vdash$ is a relation $\Vdash \subseteq P(L_\alpha) \times L_\alpha$. We show that this relation induces a consequence operation on the same universe and vice versa. Consider a logical consequence relation $\Vdash_{\mathbb{M}}$ defined as above and a consequence operation $Cn: P(L_\alpha) \longmapsto P(L_\alpha)$, we say that a consequence relation Cn *induces* a logical consequence relation $\Vdash_{\mathbb{M}}$ such that for every $\Gamma \subseteq L_\alpha$ and every $\varphi \in L_\alpha$:

$$\Gamma \Vdash \varphi \text{ iff } \varphi \in Cn(\Gamma)$$

On the other side, we say that a logical consequence relation $\Vdash$ induces a consequence operation Cn such that for every $\Gamma \subseteq L_\alpha$ and every $\varphi \in L_\alpha$:

$$Cn(\Gamma) = \{\varphi \in L_\alpha : \Gamma \Vdash \varphi\}$$

In this sense a logic may be defined also as a pair $\mathfrak{L}_\alpha = \langle L_\alpha, Cn \rangle$. Let´s turn to the meaning of the operators of analogical proportion defined here, in the next section we analyze this questions in detail.

Some questions about the Logic $\mathfrak{L}_\alpha$

In this section we analyze some issues concerning the meaning of the operations defined in the previous part. In the first place, what does it mean that some formulas hold an analogical proportion relation? Specifically, how does the semantics works. In the second place, we consider the option to *dualize* the four operators to get the "strong" operations of analogical proportions.

A similarity type is a tuple with a number of operations and a function that assigns to all operators its arity. When we want to define an operator semantically we use the arity of the operator to assign a relation with a $n + 1$ arity, when the arity of the operator is n. In our case the relational structure (τ-*frame*) has two dyadic relations although the modal operators are tetradic. Strictly speaking we must assign a pentadic relation to an operator with tetradic arity, but the application of the operators does not meet a pentadic relation.

We believe that the best image representing the behavior of operators is two dyadic relations interacting. The main reason is related with the meaning of the notion of “analogical proportion”. This operation is executed by pairs of objects which in turn are pairs of other objects, this operation is not carried out by four objects related simultaneously with a fifth object, thus a pentadic relation do not represent this operator. Instead, we

believe that the best image of an analogical proportion relation in a modal semantics is given by a two dyadic relations of different level.

The first relation ($\leq$) ranges over objects of the universe S (states), the second relation ranges over sets of states $\mathfrak{b}_n \in \mathfrak{S}$ (m-states). We consider the first relation as a "partial contention" or "preservation of information" between states, that is, a state x is partially contained in a state y, or a state y preserve all the information that preserve the state x (in symbols $x \leq y$). The second relation "$\approx$" is similar to the first but it satisfies some restrictions. It is a relation of partial order but the objects over the relation applies to are neither states nor meta-states, but pairs composed by one meta-state and a state, in this order. Intuitively we say that two m-states are related (in symbols $\langle \mathfrak{b}, s\rangle \approx \langle \mathfrak{b}_n, s\rangle$) if and only if they contain the same information "until" s, where s is some state. As the states and meta-states satisfy a partial order, a state may serve as "separator"[1] of identical m-states generating disjoint (forked) meta-states. In this sense, we consider the relation between m-states as a connection, that is, we say that the m-states are connected by a state. Let $\mathfrak{b}$ and $\mathfrak{b}_n$ be two meta-states, we say that $\mathfrak{b}$ and $\mathfrak{b}_n$ are connected if and only if they have the same information until s "is given" and "beyond" s they differ at least in one portion of information (a state).

The next issue is connected with the following section; I refer to the dualization of the operators. As we can see in the definition we have two quantified parts, and the question is in which quantifier we apply the dualization? Our thesis is that we must apply the dualization to the quantifier that operates on the part of the definition that describes the behavior of the m-states. We have three main reasons to maintain this idea and we explain each one in detail.

In the first place, as we say we interpret analogy as a dyadic relation between pairs, in this sense analogy must be, in our interpretation, a relation (let say "(dis)similarity") between m-states composed by states related by another relation (let say "contention"). The main relation in this ap-

[1] Or an "identifier" of non-identical m-states, as we will see in the final example of Central Permutation Theorem.

proach is (dis)similarity and the objects related are m-states, therefore we conclude that we must change the quantifier that operates on the m-states in the dualization process. In the second place, when quantifying universally on m-states we include states as elements of the objects in which quantifiers operate (m-states). The opposite does not hold, if we operate only in states, we not obey m-states. Finally, in the operator's definition we use two dyadic relations chained with a link. This link indicates that the relation of the first pair of items (the states) define the other relation between pairs of states (in the binomial notation the link between relations is clear). In this two relational link we have a dominant relation and a derivate relation. The dominant relation is referred to the link between pairs of states (or in the definition between pairs of m-states/states), and the derivate relation is a basic order relation between states. In this sense is natural to think that the quantifier affected by the dualization is that represent the dominant relation. On the contrary, if we take the quantifier that represents the derivate relations we do not have a very important property of duality i.e. transposition; therefore, we must change the quantifier that ranges over m-states. In the next section we follow with this argument considering how to define a tableaux calculus for the logic $\mathfrak{L}_\alpha$.

A Calculus for the Logic $\mathfrak{L}_\alpha$

The basic rules are the usual rules for classical propositional logic. We extend the calculus of classical propositional logic adding sixteen rules of tableaux, two for each operator, one for the affirmative operator and one for the negative version of the operator. In the explication of the rules we proceed as follows. We present the two rules of weak and strong analogy operator and based on this presentation we explain the restrictions of the rules of the other analogical proportion operators, which in fact are "analogous" to these two first rules.

$$1.\ \begin{pmatrix}\alpha\\ \beta\end{pmatrix}\langle:\rangle\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\quad (hip.), \mathfrak{b}_0, s_0$$

$$\downarrow$$

$$\langle \mathfrak{b}_0, s_0\rangle \quad \approx \quad \langle \mathfrak{b}_1, s_0\rangle$$

$$s_0 \leq s_1 \leq \bar{s_2}$$

$$\swarrow \quad \searrow$$

$$2.\ \alpha\ (1), \mathfrak{b}_0, s_1 \quad \varphi\ (1), \mathfrak{b}_1, s_1$$

$$3.\ \beta\ (1), \mathfrak{b}_0, s_2 \quad \psi\ (1), \mathfrak{b}_1, s_2$$

Fig. 1

The first two rules are of the weak operator of analogy, the first is the rule of the affirmative analogy operator (Fig. 1). The rule has three components as it is common in the tableaux: the numeration of the sequences of formulas, the sequences of formulas properly said, and the justification of the sequences of formulas. In this case the novelty of our rules lies in the justification. As in the case of basic modal logic we add to the justification the "possible world" in which the justified formula is true. In our rules we have states (s_0) and m-states ($\mathfrak{b}_0$) instead of "worlds", and by this reason we add also the m-state in which the formula and the state belongs. For example, the first formula is true at a state s_0 in the m-state $\mathfrak{b}_0$.

Our rules are divided in two groups, the rules that separate the component formulas and the rules that send the external negation of the main formula to the component formulas without separating. This example is of the kind of rules that separate the formula to which we apply the rule in its component formulas, and as in the case of basic modal logic (again) this separation generates an interaction between the entities in which the formula is true, "possible worlds" in the case of basic modal logic and states and m-states in this case.

When we remove the operator of the formula the first thing to do is to relate the m-states, as we see in the rule ($\langle \mathfrak{b}_0, s_0\rangle \quad \approx \quad \langle \mathfrak{b}_1, s_0\rangle$). This link

is stated by the relation "≈" between pairs composed by a m-state and a state (in this order). When this link has been stated we need a relation between states, but we need some restrictions to the states related. First we need that all the states related include the state by which the m-state is related, that is the state until the two m-states coincide, we will call this state "the actual state". In our example the actual state is s_0. In the second place the states must be related by the relation of inclusion. The states are divided in pairs, belonging to each m-states as in the example see with $s_1 \leq \overline{s_2}$ in both sides, the former belongs to $\mathfrak{b}_0$ and the latter belongs to $\mathfrak{b}_1$. The first specification of this rule, which establishes the variation between conditions stated by each rule, is that the two states related must be a state that includes the actual state and a complement state that is equal or include the actual state. In other words, in this rule the relation between states is satisfied by pairs "state/complement state" in this order, as we can see in the example with s_1 and $\overline{s_2}$. Finally, the formulas are "sent" to the corresponding states when we disjoin the formula.

In this rule also we restrict the use of states (and m-states). In the case of the weak operators the restriction consists in using a new m-state to relate them with the actual m-state, and therefore we use new states belonging to the new m-state to generate the inclusion relations. That is, the m-states and states related in the proof should not appear previously. Now let's move on to the second rule (Fig. 2).

$$1.\ \neg\left(\begin{pmatrix}\alpha\\ \beta\end{pmatrix}\langle:\rangle\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\right) \quad (hip.), \mathfrak{b}_0, s_0$$

$$\downarrow$$

$$2.\ \begin{pmatrix}\neg\alpha\\ \neg\beta\end{pmatrix}[:]\begin{pmatrix}\neg\varphi\\ \neg\psi\end{pmatrix} \quad (1), \mathfrak{b}_0, s_0$$

Fig. 2

This rule takes the same operations as the basic modal logic rules of equivalence between the diamond and the box (for example$\neg\Box p \equiv \Diamond \neg p$), the external negation becomes internal and the operator changes by its dual. In our rule the external negation is transferred to the component formulas, the negation should be transferred to each one of the four formulas related by the operator because the operator is tetradic and no dyadic as we mistakenly may assume. As we say in the presentation of the syntax of our system the interpretation of the formulas with binomial notation is only a symbolic resource, and we do not forget that we are facing with a quaternary relation. The last feature of the rule is the change of the operator by his dual. As this rule has no interaction between m-states and states, the resulting formula of the application of the rule does not change from state to state (and the same with m-states). Now we present the strong versions.

The two rules are very similar to the previous one but only satisfy the next restrictions. In the case of the rule for the positive version of strong analogy operator the interaction states' and m-states' interaction must be previously generated, and the states used in the previous part of the proof may be present in the application of this rule. As we may have seen in the Fig 3, the vertical arrow states that the nexus between m-states and states has been made and only we sent the formulas to the states in question.

$$1.\ \begin{pmatrix}\alpha\\ \beta\end{pmatrix}[:]\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\quad (hip.), \mathfrak{b}_0, s_0$$

$$\langle \mathfrak{b}_0, s_0\rangle \quad \approx \quad \langle \mathfrak{b}_1, s_0\rangle$$

$$s_0 \leq s_1 \leq \overline{s_2}$$

$$\downarrow$$

$$\swarrow \quad \searrow$$

$$2.\ \alpha\ (1), \mathfrak{b}_0, s_1 \quad \varphi\ (1), \mathfrak{b}_1, s_1$$

$$3.\ \beta\ (1), \mathfrak{b}_0, s_2 \quad \psi\ (1), \mathfrak{b}_1, s_2$$

Fig. 3

On the other side, in the rule of the operator with external negation the application of the rule has the same properties as in the case of the weak version as we see in the (Fig. 4). The external negation is sent to the component formulas and the operator is changed by its dual, and again there is no interaction between states. We finalize this section with a presentation of the remaining twelve rules pointing out the pattern followed by the interaction between states in each rule and the behavior of the branches, inasmuch as, this is the main differences between all the rules.

$$1.\ \neg\left(\begin{pmatrix}\alpha\\ \beta\end{pmatrix}[:]\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\right) \quad (hip.), \mathfrak{b}_0, s_0$$

$$\downarrow$$

$$2.\ \begin{pmatrix}\neg\alpha\\ \neg\beta\end{pmatrix}\langle:\rangle\begin{pmatrix}\neg\varphi\\ \neg\psi\end{pmatrix} \quad (1), \mathfrak{b}_0, s_0$$

Fig. 4

As we see, the rules can be divided in two groups: rules of weak and rules of strong operators. In the previous example we take the two types of rule. Now we use another division, the rules that branch the proof when the main formula is disjoined and rules that do not branch the proof. The previous examples were of the first type, i.e. these rules branch the proof. In the following we see that we have rules that do not ramify either. The main difference between the rules is the way in which the states are related and the way in which we separate the component formulas. The way in which the states are related follow some patterns showed in (Fig. 5). In the picture we can see the operator, then down we can see the pattern of the relation between states followed by the rule, and in the bottom we se some arrows that represent if the rule branch or if not.

$$\underset{s_0 \leq s_1 \leq \overline{s_2}}{\langle : \rangle} \qquad \underset{s_0 \leq s_1 \leq s_2}{\langle ; \rangle} \qquad \underset{\substack{s_0 \leq s_1 \leq \overline{s_2} \\ s_0 \leq \overline{s_1} \leq s_2}}{\langle ! \rangle} \qquad \underset{\substack{s_0 \leq s_1 \leq s_2 \\ s_0 \leq \overline{s_1} \leq \overline{s_2}}}{\langle ¡ \rangle}$$

Fig. 5

We conclude with the rules and some main theorems of this logic. In the appendix we present a proof as example of the use of the rules and we explain some properties of the theorems.

$$1.\ \binom{\alpha}{\beta}\langle ; \rangle\binom{\varphi}{\psi} \quad (hip.), \mathfrak{b}_0, s_0$$

$$\downarrow$$

$$\langle \mathfrak{b}_0, s_0 \rangle \approx \langle \mathfrak{b}_1, s_0 \rangle$$

$$s_0 \leq s_1 \leq s_2$$

$$2.\ \alpha\ (1), \mathfrak{b}_0, s_1$$

$$3.\ \beta\ (1), \mathfrak{b}_0, s_2$$

$$4.\ \varphi\ (1), \mathfrak{b}_1, s_1$$

$$5.\ \psi\ (1), \mathfrak{b}_1, s_2$$

Fig. 6

$$1.\ \neg\left(\binom{\alpha}{\beta}\langle ; \rangle\binom{\varphi}{\psi}\right) \quad (hip.), \mathfrak{b}_0, s_0$$

$$\downarrow$$

$$2.\ \binom{\neg\alpha}{\neg\beta}[;]\binom{\neg\varphi}{\neg\psi} \quad (1), \mathfrak{b}_0, s_0$$

Fig. 7

$$1.\ \begin{pmatrix}\alpha\\ \beta\end{pmatrix}[;]\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\quad (hip.), \mathfrak{b}_0, s_0$$
$$\langle \mathfrak{b}_0, s_0\rangle \quad \approx \quad \langle \mathfrak{b}_1, s_0\rangle$$
$$s_0 \leq s_1 \leq s_2$$
$$\downarrow$$
$$2.\ \alpha\ (1), \mathfrak{b}_0, s_1$$
$$3.\ \beta\ (1), \mathfrak{b}_0, s_2$$
$$4.\ \varphi\ (1), \mathfrak{b}_1, s_1$$
$$5.\ \psi\ (1), \mathfrak{b}_1, s_2$$

Fig. 8

$$1.\ \neg\left(\begin{pmatrix}\alpha\\ \beta\end{pmatrix}[;]\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\right)\quad (hip.), \mathfrak{b}_0, s_0$$
$$\downarrow$$
$$2.\ \begin{pmatrix}\neg\alpha\\ \neg\beta\end{pmatrix}\langle;\rangle\begin{pmatrix}\neg\varphi\\ \neg\psi\end{pmatrix}\quad (1), \mathfrak{b}_0, s_0$$

Fig. 9

$$1.\ \begin{pmatrix}\alpha\\ \beta\end{pmatrix}\langle\mathrm{i}\rangle\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\quad (hip.), \mathfrak{b}_0, s_0$$
$$\downarrow$$
$$\langle \mathfrak{b}_0, s_0\rangle \quad \approx \quad \langle \mathfrak{b}_1, s_0\rangle$$
$$s_0 \leq s_1 \leq s_2$$
$$s_0 \leq \overline{s_1} \leq \overline{s_2}$$
$$2.\ \alpha\ (1), \mathfrak{b}_0, s_1$$
$$3.\ \beta\ (1), \mathfrak{b}_0, s_2$$
$$4.\ \varphi\ (1), \mathfrak{b}_1, s_1$$
$$5.\ \psi\ (1), \mathfrak{b}_1, s_2$$

Fig. 10

$$1.\ \neg\left(\begin{pmatrix}\alpha\\ \beta\end{pmatrix}\langle \mathfrak{i} \rangle \begin{pmatrix}\varphi\\ \psi\end{pmatrix}\right) \quad (hip.), \mathfrak{b}_0, s_0$$

$$\downarrow$$

$$2.\ \begin{pmatrix}\neg\alpha\\ \neg\beta\end{pmatrix}[\mathfrak{i}]\begin{pmatrix}\neg\varphi\\ \neg\psi\end{pmatrix} \quad (1), \mathfrak{b}_0, s_0$$

Fig. 11

$$1.\ \begin{pmatrix}\alpha\\ \beta\end{pmatrix}[\mathfrak{i}]\begin{pmatrix}\varphi\\ \psi\end{pmatrix} \quad (hip.), \mathfrak{b}_0, s_0$$

$$\downarrow$$

$$\langle \mathfrak{b}_0, s_0 \rangle \quad \approx \quad \langle \mathfrak{b}_1, s_0 \rangle$$

$$s_0 \leq s_1 \leq s_2$$

$$s_0 \leq \overline{s_1} \leq \overline{s_2}$$

$$2.\ \alpha\ (1), \mathfrak{b}_0, s_1$$

$$3.\ \beta\ (1), \mathfrak{b}_0, s_2$$

$$4.\ \varphi\ (1), \mathfrak{b}_1, s_1$$

$$5.\ \psi\ (1), \mathfrak{b}_1, s_2$$

Fig. 12

$$1.\ \neg\left(\begin{pmatrix}\alpha\\ \beta\end{pmatrix}[\mathfrak{i}]\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\right) \quad (hip.), \mathfrak{b}_0, s_0$$

$$\downarrow$$

$$2.\ \begin{pmatrix}\neg\alpha\\ \neg\beta\end{pmatrix}\langle \mathfrak{i} \rangle\begin{pmatrix}\neg\varphi\\ \neg\psi\end{pmatrix} \quad (1), \mathfrak{b}_0, s_0$$

Fig. 13

$$1.\ \begin{pmatrix}\alpha\\ \beta\end{pmatrix}\langle!\rangle\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\quad (hip.), \mathfrak{b}_0, s_0$$
$$\downarrow$$
$$\langle \mathfrak{b}_0, s_0\rangle \quad \approx \quad \langle \mathfrak{b}_1, s_0\rangle$$
$$s_0 \leq s_1 \leq \overline{s_2}$$
$$s_0 \leq \overline{s_1} \leq s_2$$
$$\swarrow \quad \searrow$$
$$2.\ \alpha\ (1), \mathfrak{b}_0, s_1 \quad \varphi\ (1), \mathfrak{b}_1, s_1$$
$$3.\ \beta\ (1), \mathfrak{b}_0, s_2 \quad \psi\ (1), \mathfrak{b}_1, s_2$$

Fig. 14

$$1.\ \neg\left(\begin{pmatrix}\alpha\\ \beta\end{pmatrix}\langle!\rangle\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\right)\quad (hip.), \mathfrak{b}_0, s_0$$
$$\downarrow$$
$$2.\ \begin{pmatrix}\neg\alpha\\ \neg\beta\end{pmatrix}[!]\begin{pmatrix}\neg\varphi\\ \neg\psi\end{pmatrix}\quad (1), \mathfrak{b}_0, s_0$$

Fig. 15

$$1.\ \begin{pmatrix}\alpha\\ \beta\end{pmatrix}[!]\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\quad (hip.), \mathfrak{b}_0, s_0$$
$$\downarrow$$
$$\langle \mathfrak{b}_0, s_0\rangle \quad \approx \quad \langle \mathfrak{b}_1, s_0\rangle$$
$$s_0 \leq s_1 \leq \overline{s_2}$$
$$s_0 \leq \overline{s_1} \leq s_2$$
$$\swarrow \quad \searrow$$
$$2.\ \alpha\ (1), \mathfrak{b}_0, s_1 \quad \varphi\ (1), \mathfrak{b}_1, s_1$$
$$3.\ \beta\ (1), \mathfrak{b}_0, s_2 \quad \psi\ (1), \mathfrak{b}_1, s_2$$

Fig. 16

$$1.\ \neg\left(\begin{pmatrix}\alpha\\ \beta\end{pmatrix}[!]\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\right) \quad (hip.), \mathfrak{b}_0, s_0$$

$$\downarrow$$

$$2.\ \begin{pmatrix}\neg\alpha\\ \neg\beta\end{pmatrix}\langle!\rangle\begin{pmatrix}\neg\varphi\\ \neg\psi\end{pmatrix} \quad (1), \mathfrak{b}_0, s_0$$

Fig. 17

Theorems

1. $\begin{pmatrix}\alpha\\ \beta\end{pmatrix}\langle:\rangle\begin{pmatrix}\alpha\\ \beta\end{pmatrix}$ Reflexivity
2. $\begin{pmatrix}\alpha\\ \alpha\end{pmatrix}\langle:\rangle\begin{pmatrix}\beta\\ \beta\end{pmatrix}$ Reflexivity
3. $\left(\begin{pmatrix}\alpha\\ \beta\end{pmatrix}\langle:\rangle\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\right)\longrightarrow\left(\begin{pmatrix}\alpha\\ \varphi\end{pmatrix}\langle:\rangle\begin{pmatrix}\beta\\ \psi\end{pmatrix}\right)$ Central permutation
4. $\left(\begin{pmatrix}\alpha\\ \beta\end{pmatrix}\langle:\rangle\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\right)\longrightarrow\left(\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\langle:\rangle\begin{pmatrix}\alpha\\ \beta\end{pmatrix}\right)$ Symmetry
5. $\begin{pmatrix}\alpha\\ \beta\end{pmatrix}\langle!\rangle\begin{pmatrix}\beta\\ \alpha\end{pmatrix}$ Reverse reflexivity
6. $\begin{pmatrix}\alpha\\ \alpha\end{pmatrix}\langle!\rangle\begin{pmatrix}\beta\\ \beta\end{pmatrix}$ Reverse reflexivity
7. $\left(\begin{pmatrix}\alpha\\ \beta\end{pmatrix}\langle!\rangle\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\right)\longrightarrow\left(\begin{pmatrix}\varphi\\ \beta\end{pmatrix}\langle!\rangle\begin{pmatrix}\alpha\\ \psi\end{pmatrix}\right)$ Odd permutation
8. $\left(\begin{pmatrix}\alpha\\ \beta\end{pmatrix}\langle!\rangle\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\right)\longrightarrow\left(\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\langle!\rangle\begin{pmatrix}\alpha\\ \beta\end{pmatrix}\right)$ Symmetry
9. $\begin{pmatrix}\alpha\\ \beta\end{pmatrix}\langle;\rangle\begin{pmatrix}\beta\\ \alpha\end{pmatrix}$ Bi-reflexivity
10. $\begin{pmatrix}\alpha\\ \beta\end{pmatrix}\langle;\rangle\begin{pmatrix}\alpha\\ \beta\end{pmatrix}$ Bi-reflexivity
11. $\left(\begin{pmatrix}\alpha\\ \beta\end{pmatrix}\langle;\rangle\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\right)\longrightarrow\left(\begin{pmatrix}\beta\\ \alpha\end{pmatrix}\langle;\rangle\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\right)$ Even permutation
12. $\left(\begin{pmatrix}\alpha\\ \beta\end{pmatrix}\langle;\rangle\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\right)\longrightarrow\left(\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\langle;\rangle\begin{pmatrix}\alpha\\ \beta\end{pmatrix}\right)$ Symmetry
13. $\left(\begin{pmatrix}\alpha\\ \beta\end{pmatrix}\langle:\rangle\begin{pmatrix}\psi\\ \varphi\end{pmatrix}\right)\leftrightarrow\left(\begin{pmatrix}\alpha\\ \beta\end{pmatrix}\langle!\rangle\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\right)$ Equivalence 1
14. $\left(\begin{pmatrix}\alpha\\ \psi\end{pmatrix}\langle:\rangle\begin{pmatrix}\varphi\\ \beta\end{pmatrix}\right)\leftrightarrow\left(\begin{pmatrix}\alpha\\ \beta\end{pmatrix}\langle;\rangle\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\right)$ Equivalence 2
15. $\left(\begin{pmatrix}\alpha\\ \neg\psi\end{pmatrix}\langle:\rangle\begin{pmatrix}\neg\varphi\\ \beta\end{pmatrix}\right)\leftrightarrow\left(\begin{pmatrix}\alpha\\ \beta\end{pmatrix}\langle¡\rangle\begin{pmatrix}\varphi\\ \psi\end{pmatrix}\right)$ Equivalence 3

Conclusion

We present a brief recapitulation of the notion of analogical proportion, in specific of the four homogeneous analogies, i.e. analogies that not mix different kind of indicators. These ideas extracted from some works of Henri Prade and Gilles Richard served as a base to the presentation of our system of logic. We have presented the language and the needed syntactic elements to understand our modal interpretation. The novelty of our analysis was the use of binomial notation in the representation of analogical relations. Then we continued offering an interpretation of the language and defining the operators of analogy semantically based on two relations that interact simultaneously. Finally, in this section we have presented the relation of logical consequence and we have showed how this relation induce a consequence operation.

In the following section we have analyzed some consequences of our definitions, specifically on the meaning of the operators of analogy and on the possibility of dualize them. In this part we conclude with an effective way to generate the dual operators and we clarify some questions linked to the relations with we define the operators semantically. Finally, we have present a logical calculus based on the semantics defined, the main novelty is the double reference to a one state and a one m-state, and the relation of non-identical m-states.

Although we have analyzed many questions we consider that there are some open questions related with this issue, we mention some of them. In the first place what is the philosophical relevance of the notion of complement state? Is it possible to offer a more restrictive definition that generates different behavior of the operators? Also, how we make more clear the relation between states and m-states? And finally, what versions of the "classical" modal systems may be defined in the logic presented here? These important questions escape the reach of this work and the answers are left to a future research.

Appendix 1

We present a proof of a theorem of the logic $\mathfrak{L}_{\boldsymbol{\alpha}}$, we call this theorem the *Central Permutation Theorem* (CPT) that represents the so called property of the analogy operation. We analyze all the elements of the proof and we explain the main features of the rules defined above.

$$1.\ \neg\left(\binom{p}{q}\langle:\rangle\binom{r}{s}\right)\rightarrow\left(\binom{p}{r}\langle:\rangle\binom{q}{s}\right)\quad hip.,\mathfrak{b}_1,s_1$$

$$2.\ \left(\binom{p}{q}\langle:\rangle\binom{r}{s}\right)\quad (1),\mathfrak{b}_1,s_1$$

$$3.\ \neg\left(\binom{p}{r}\langle:\rangle\binom{q}{s}\right)\quad (1),\mathfrak{b}_1,s_1$$

$$4.\ \left(\binom{\neg p}{\neg r}[:]\binom{\neg q}{\neg s}\right)\quad (1),\mathfrak{b}_1,s_1$$

$$\langle\mathfrak{b}_1,s_1\rangle\ \approx\ \langle\mathfrak{b}_2,s_1\rangle$$

$$s_1\leq s_2\leq\overline{s_3}$$

$$\swarrow\quad\searrow$$

$$5.\ p,\ \ (2),\mathfrak{b}_1,s_2\quad r,\ \ (2),\mathfrak{b}_2,s_2$$

$$6.\ q,\ \ (2),\mathfrak{b}_1,s_3\quad s,\ \ (2),\mathfrak{b}_2,s_3$$

$$7.\ \neg p,\ \ (2),\mathfrak{b}_1,s_3\quad \neg r,\ \ (2),\mathfrak{b}_2,s_3$$

$$\swarrow\quad\searrow\qquad\qquad\qquad\swarrow\quad\searrow$$

$$s_1\leq\overline{s_3}\leq s_2$$

$$8.\ \neg p,\ \ (4),\mathfrak{b}_1,s_2\quad \neg q,\ \ (4),\mathfrak{b}_2,s_3\qquad \neg p,\ \ (4),\mathfrak{b}_1,s_3\quad \neg q,\ \ (4),\mathfrak{b}_2,s_2$$

$$9.\ \neg r,\ \ (4),\mathfrak{b}_1,s_3\quad \neg s,\ \ (4),\mathfrak{b}_2,s_2\qquad \neg r,\ \ (4),\mathfrak{b}_1,s_2\quad \neg s,\ \ (4),\mathfrak{b}_2,s_3$$

$$10.\ p,\ \ (4),\mathfrak{b}_1,s_3\quad q,\ \ (4),\mathfrak{b}_2,s_2\qquad p,\ \ (4),\mathfrak{b}_1,s_2\quad q,\ \ (4),\mathfrak{b}_1,s_3$$

$$\times\qquad\times\qquad\qquad\times\qquad\times$$

$$(5,8)\qquad(6,8)\qquad\qquad(5,9)\qquad(6,9)$$

This formula is a representation of the property of *central permutation* of the analogy operation [Prade and Richard, 2009a, p. 132]. The property states that if A and B are analogous to C and D, we may conclude that A and C are analogous to B and D. The first line of the proof contains the formula properly said but negated, as this formula is a conditional the fol-

lowing lines 2 and 3, has the antecedent of the formula and the consequent of the formula, respectively. The step 4 is obtained from the application of the weak analogy operator negated. Between lines 4 and 5 are the operator restrictions that states the link between m-states and states.

The lines 5 – 7 contain the resulting formulas from the application of the rule of elimination of the analogy operator affirmed, this rule is applied to the formula in line 2. As we have been mentioned, this rule has as result two branches in which the two pairs of component formulas are sent. In this case p and q are sent to the left branch where p is present in s_2 and q in s_3; and r and s are sent to the right, and r is present in s_2 and s in s_3. An important and restrictive issue of the application of this rule is the presence of the $\neg p$ and $\neg r$ formulas in each branch, this fact is debt to the relation of the states with its complement. In this case s_2 is related with the $\overline{s_3}$ and the information on s_2 (p) is preserved in $\overline{s_3}$, but not in s_3, and for this reason the negation of p is sent to them. The same situation happens with r in s_2 and its negation s_3. This fact causes that in each branch are present three formulas and not only two.

Between the steps 7 and 8 we have a new interaction between states, the reason of this restriction is that the relation of information inclusion between states satisfy properties in the same sense of the modal systems K, T, S4, S5, etc. In this case, the relation is transitive and symmetric, therefore, it is plausible to think that this is a theorem of an extended version of S4. We explain briefly the properties in the example. We have a previous link between s_1 to s_2, and from s_2 to $\overline{s_3}$; and we have a strong operator that "recycles" the mentioned link. We assume the properties of transitivity and symmetry, and we know that the formula with strong operator (step 4) is present in s_1. By transitivity we relate s_1 with $\overline{s_3}$, and with symmetry we relate state $\overline{s_3}$ with s_2, and in this state the formulas of the center of the branches are present (center permutation). Insomuch as this restriction only affects the central branches, and as the formulas in this branches take advantage of the symmetry and transitivity to generate the contradictions needed to close all the branches of the tree, this relation between states is the one that represents central permutation.

We think that this procedure is justified at least in the following idea. When we generate the symmetric and transitive link between the three

states, the two m-states become the same m-state, that is, this link serve as "identifier" of m-states. As s_1 is related with $\overline{s_3}$ state, and s_1 serve as separator of the m-states, we invert the separation and identify the two m-states when we relate $\overline{s_3}$ with s_2. The (Fig. 18) shows how we could think this interaction.

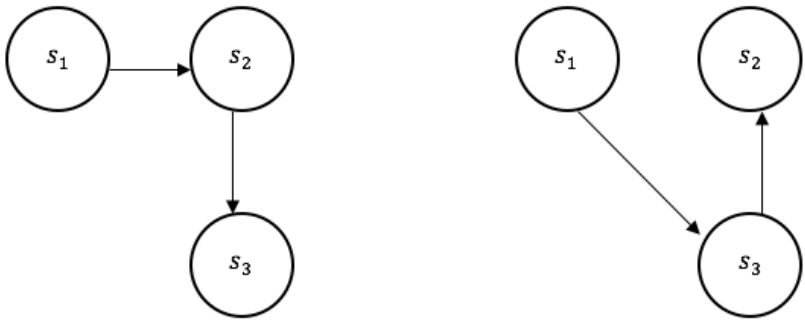


Fig. 18

Bibliography

Carnielli W., Coniglio m., Gabbay D. M., Gouveia P. and Sernadas C, (2008), *Analysis and Synthesis of Logics: How to Cut and Paste Reasoning Systems*, Springer Science.

Prade H. and Richard G., (2009), "Analogy, Paralogy and Reverse Analogy: Postulates and Inferences", [in:] *KI 2009, LNAI 5803*, ed. B. Mertsching, M. Hund, and Z. Aziz, [eds.], pp. 306–314, (2009), Berlin, Heidelberg, Springer-Verlag,

Prade H. and Richard G., (2010). "Analogical proportions: another logical view." M. Bramer et al. [eds.] Research and Development in Intelligent Systems XXVI, London, Springer-Verlag.

Prade H. and Richard G., (2013), "From Analogical Proportion to Logical Proportions", *Logica Universalis 7*, pp. 441–505.

Prade H. and Richard G., (2014). "From Analogical Proportion to Logical Proportions: A Survey", [in:] *Computational Approaches to Analogical Reasoning: Current Trends*, Studies in Computational Intelligence 548, H. Prade and G. Richard [eds.], Berlin, Heidelberg, Springer-Verlag.

José David García-Cruz
Universidad Nacional Autónoma de México, Mexico
sjemata@hotmail.com

STUDIA METODOLOGICZNE
NR 37 • 2016, 97–120
DOI: 10.14746/sm.2016.37.6

ARTURO ROMERO CONTRERAS

Analogy and Mapping: Philosophy, Mathematics and Space

ABSTRACT. In this paper I aim to show that the classic concept of "analogy" can be interpreted in mathematical terms. The vagueness of how "alike" two objects are, can be tackled by a consideration of their topological and group properties, especially symmetry and connectiviy. Two objects can be put in a relationship of mapping, and the likeness would depend on which properties are preserved through the morphism, including their local and/global character. The concept of analogy plays a key role in Aristotle and scholastic philosophy. In this philosophical tradition it is stated that some concepts are *univocal* and some are *equivocal*. Analogy is understood as a third term between pure difference and pure identity. But a problem arises however when resorting to more strict uses of analogical reasoning: it lacks of rigorosity. Not because science cannot employ analogies between realms, but because they cannot be evaluated. There are no objective degrees of likeness or at least criteria to evaluate how adequate or inadequate an analogy is. It is in the Renaissance philosophy however, where analogy gains a radically new significance, as it is linked to mathematical *structures*. It was not only proportion or metaphor, but a more general term which emerged progressively, namely, "form". Analogy was not to be settled upon vague and questionable resemblances—of qualitative nature—nor in pure quantitative terms—as in the case of proportion. Settled the ground for the discussion, some basic notions of topology and group theory are presented. The core idea of this section is the concept of map as a way of putting two different spaces in correspondence. With some mathematical elements we offer a model which depicts the double relationship of a subject to the world and to another subject, such that an ontological as well an intersubjective approach can be articulated. This model takes inspiration in polycontextural reasoning, a non-classic logic. In the next section I discuss the property of connectivity in polycontextural logic in contrast to the classical Aristotelian approach. I conclude with some phenomenological reflections to interpret the discussion carried above as a way of understanding the world and our experience in general.

KEY WORDS: analogy, topology, phenomenology, non-classical logics, intersubjectivity

1. Introduction

In this paper I claim that the philosophical concept of *analogy* a) can be interpreted in mathematical and, more specifically, geometrical terms

and b) that this mathematical framework has fundamental philosophical implications. Analogy has played many roles in the history of philosophy and it has been interpreted differently in a wide range of contexts. Regarding the use of analogy in philosophy and in science is has been pointed out many times the lack of rigorous criteria to apply it. But if we understand analogy through mathematical concepts like symmetry, space, connectivity and structure, we may count with important elements to *assess* scientific and philosophical uses of it. This concerns the first aim of the article, namely, the framework in which can we interpret analogy. The second aim is to ask, whether analogy, already interpreted through mathematical categories, can be philosophical meaningful, more concretely, if it sheds new light on how we conceive of ontology. Both aims are ambitious and cannot be fulfilled in an article. I intend however to provide some important insights to link analogy and mathematics and to offer directions to develop philosophical concepts relevant to ontological questions.

The article is organized as follows: first I introduce the concept of analogy as we find it in Aristotle. Then I proceed to show how analogy starts being formalized through Renaissance's geometry. This lays the ground to understand analogy as a mapping between spaces. Once in the realm of mathematical maps, I introduce the concept of symmetry through some basic diagrams. At this point, provided the elementary mathematical concepts, I try to apply them to the classical ontological structure of subject-object (objectivity) and subject-subject (intersubjectivity). The question is how to read and expand these classical structures anew through a type of mathematical analogy. To ground this remarks in a philosophical tradition and framework I chose Husserl´s phenomenology, where analogy seems to be at the core of ontology.

2. Some generals remarks on Aristotle's concept of analogy

The concept of analogy, as it is well known, plays a key role in Aristotle and scholastic philosophy. In the former, being is structured by relationships of genus and species in a vertical tree-like structure. Analogy,

however, allows a sort of horizontal linking of beings. Originally, analogy meant so much as proportion, like in the case A is to B as C is to D. Or, in its abbreviated form, as it happens in the so-called golden-ratio: A is to B as B is to AB. But there is in Plato and later in Aristotle's *Rhetoric*[1] and *Prior Analytics*[2] an "extension" from a pure quantitative to a qualitative use of analogy. Aristotle speaks of two types of analogy: *paradeigma* and *homoiotes*, both capable of being used in deductive arguments.

But we should not interpret analogy in a pure, linguistic way. In Aristotle, categories are necessarily both linguistic *and* ontological. In medieval thought it is stated that some concepts are *univocal* and some are *equivocal*. Univocity means that there are no *degrees of freedom* to interpret a word i.e., there is only one possible sense. Equivocity means on the contrary that words may be *polyvalent*, and that we cannot find the common ground for the resulting multiplicity. But there is a *third* term between pure difference and identity, this is analogy. As in Aristotle, analogy allows to *link beings* in a semi-proper manner. I claim that metaphysics should be understood as a "science of the common as such", as a *koinology* or *communology*, for being is nothing but the *connectivity* and *communicativity* between all beings. In this sense, we could say that classical ontology thought being as univocity. The philosophy of difference thought, in contrast, being through the other of univocity, i.e., equivocity. What we have to think is a way beyond this opposition. This is what analogy offers us.

3. Analogy and renaissance

Analogy has a rich history in philosophy, but there is a risk when we try to provide a more formal approach. It can be conceived of as a *mere* metaphor and metaphors lack of rigor. This is not because science cannot resort to analogies between realms, but because analogies and metaphors cannot be *assessed*. There are no objective degrees of likeness or at least criteria to evaluate how precise or imprecise an analogy is.

---

[1] [Aristotle, 1959].
[2] [Aristotle, 1989].

It is in the Renaissance philosophy, however, where analogy gains a radically new significance, as it is linked to mathematical *structures*. Indeed, there was surely an indiscriminate use of vague similarities between the farthest regions of being, especially between the macro- and the micro-world, between cosmos and man. Many superficial connections were established, so that nature showed correspondences in all scales and places. But at the same time, such resemblances, in contrast to medieval thought, were more and more expressed in terms of *mathematics*. This was not only in terms of proportion or metaphor, but a more general term which emerged progressively, namely, "form" (and pattern). Analogy was not to be settled upon vague and questionable resemblances – of a qualitative nature – nor in pure quantitative terms – as in the case of proportion.

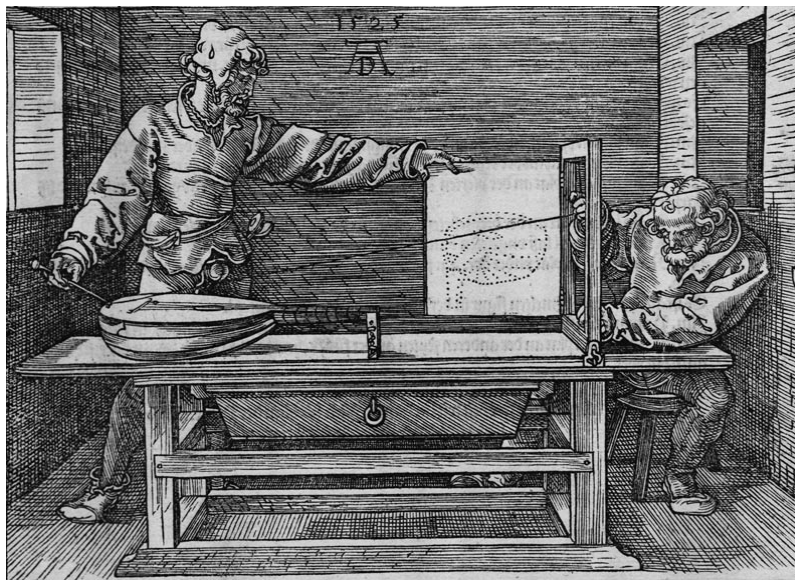
 [3]

Fig. 1.

[3] Dürer Anweisung zur Messung mit Zirkel und Richtscheidt (1. Ausgabe) (1538). Public domain: https://commons.wikimedia.org/wiki/File:D%C3%BCrer_Stich_aus_Anweisung_2.jpg Consulted: March 20 2016.

Drawing our attention to renaissance painting, one can notice at first glance that perspective is nothing but an instrument to produce the *effect* of depth in a painting. It is basically a *trompe l´œil*. But mathematically there is something different happening. We are *projecting*, or *mapping*, our experience-world onto another space, namely, that of projective geometry, which corresponds to a non-Euclidian space.[4]

In the picture above we see a work of Albrecht Dürer, depicting the technique of projection to obtain the effect of perspective on a picture. We speak of a non-Euclidian space because the parallel postulate does not hold. All parallel lines intersect in the so-called point to infinity. The fundamental contribution of renaissance painting is, as we have said, the idea of mapping one space onto another. From this moment on, it will be clear that figures and their properties are not independent of the space in which they are inscribed. We could risk an ontological generalization saying that no presented object is independent of the space in which it appears. There is no neutral phenomenology, but a multiplicity of spaces. But since there are multiple spaces, there must be a way to *connect* them. There is always more than one space and, of course, more than one way to translate one onto the other. In this sense mapping is equivalent to translating.

We should not speak here of representation, but of mappings or morphisms. Now, what is the relationship between our lived world – a mixture between the Euclidian and non-Euclidian world – and the picture? Could we speak of analogy? Indeed, we could – but (only) in the very special sense of partial or non-perfect *mapping*. What is mapping here? It is a transformation of one figure into another – by rotation, stretching, or putting into perspective – or of one space into another – via immersion or embedding

It is in this sense that mathematics opens up a new door to deal with the ancient philosophical issue of analogy. But before we explain this further, some clarification is needed about how we understand equivocity and univocity and their relationship to analogy.

---

[4] See: [Edgerton, 1975].

4. Equivocity and univocity

Analogy is a third term, an intermediate level between univocity and equivocity. But how should we conceive of univocity in the first place? Univocity implies the notion of "sameness". A concept is univocal if and only if it does not allow different interpretations, i.e., if it is absolutely determined or defined such that it does not allow different values. But this is a rather narrow concept of sameness, for it gives the idea of very rigid concepts. If we try to formulate the idea of sameness in group-theory, what we obtain is a *group* of transformations.

What does this mean? It means that an "object" may suffer different transformations without changing its structural properties. Let´s take the trivial example of an equilateral triangle. We can rotate it 120 degrees every time and we will always "see" the same triangle. We can flip it horizontally with the same result. All these transformations constitute a so-called group.

Here we see operations of rotation and reflection on the equilateral triangle[5]:

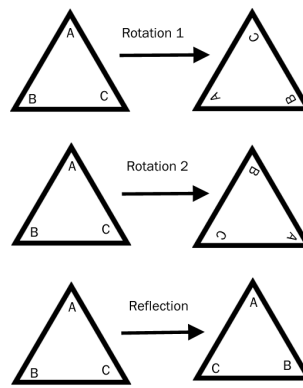


Fig. 2.

[5] All images are mine, except when indicated otherwise.

In group theory, invariants are the focus of attention. Transformations map one set X (domain) onto another set Y (codomain), but they may also be understood as mappings of a set X onto itself.

We could take, of course, other types of transformations, which seem at first sight to render different objects. Examples of transformations are translation, reflection, rotation, scaling or shear. Important in every case is that figures, or more precisely, *spaces*, even if they look very different, belong to the same group of possible *transformations*. Sameness does not seem to lead us to a *single* object, but to a group of possible variations. Now, we cannot always establish with ease if two objects are the "same". Actually, the question is, if we can *continuously transform* one into the other, and if in this transformation the defining properties of the objects are preserved.

We move now to equivocity. Equivocity means difference. It means, however, not only that a notion may possess different meanings, but that there is an *irreducibility of plurality*. Difference means, radically thought, that a variety of notions have nothing in common. Neither unity nor identity may be applied to them; they do not constitute a "category", or a "set", in a proper sense (we cannot define a common property to decide if an element belongs or not to the set). But the idea of absolute equivocity would be that of a non-relationship, no connection whatsoever, which is in some way contradictory. If we contrast the differences, say, of two sets, they must at least share a space, which makes that contrast possible.

Now, analogy should lead us through the path of *community* without unity and without identity, and without the dead-end of absolute equivocity. This is the core of analogy: to think the common without resorting to inflexible concepts of unity, identity or totality. In other words, what we think under the term analogy should allow us to think of relation in general without an underlying absolute unity (*hen kai pan* as it is said in Greek) like a subject, the world or God; without a common divisor (i.e., a ground or absolute basis); and without any whole (i.e., in a mereology, or theory of wholes and parts, we could never achieve the last totality, where everything would find its determinate place).

We turn back now to the concept of transformation. It is the concept of mapping as transformation that will allow us to think of different levels of

similarity between spaces. The concept of transformation allows us to evaluate sameness. But sameness depends also on certain *axioms*. For example: in geometry (example a), a rhombus does not have the same symmetry group of the square. But in topology (example b), a circle is equivalent to a square, for they can be continuously deformed into each other.

a) b)

Fig. 3.

A transformation is nothing but a mapping. Such a mapping may render identical objects, like in the case of the square and its symmetry group, as we have seen. But not every transformation keeps *all* properties of the original object. Mapping in topology may, for example, involve an immersion or an embedding. Embedding implies that a space is "contained" in another space; it is a subspace of it. For example, a *Klein bottle* is a manifold embedded in 4-dimensional space (R4). We can, however, immerse it in three-dimensional Euclidian space (R3), where we obtain, however, *singularities* (like self-intersections) that cannot be "faithfully" represented in R3. We "lose" information by passing from 4 to 3 dimensions. We have a similar case in map projections, i.e., projections of the sphere (S2) onto the plane (R2), from which we derive the different types of Earth maps.

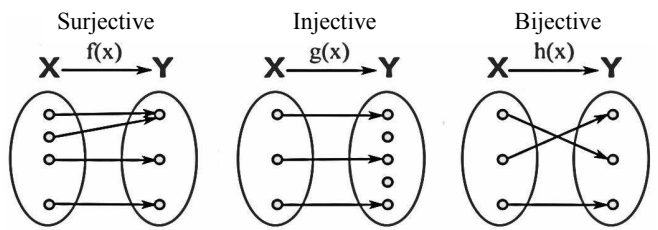


Fig. 4.[6]

[6] Wikimedia Commons under the license WTFPL 2.0 Source: https://commons.wikimedia.org/wiki/File:Surjection_Injection_Bijection-fr.svg"

In general, one can say that in the case of projections, we can have, on the one hand "better" or "worse" examples, depending on the function; and, on the other hand, different but equally good though only *partial* interpretations. Functions are ways to transform or to assign values of a set to another set through a rule. Functions may be, as we know, surjective, injective or bijective.

A bijection is the most faithful mapping, for it creates a one-to-one relationship of domain and codomain. This would render identity among two objects, and it would not be an analogy. But we have also equally "good" projections if they are all surjective. Non-surjective mappings (injective) are less accurate, because they are farther from the original object than in the case of surjective ones. This is a first glimpse of analogy understood in terms of functions or mappings. In the second case, we may have different surjective projections, all of them equally good, but they cannot be transformed one into the other, since each of them implies a *decision* on what to represent. Some projections respect one feature of the original object, some projections respect others.

5. Symmetries and diagrams

> What pattern connects the crab to the lobster and the orchid to the primrose and all the four of them to me? And me to you? And all the six of us to the amoeba in one direction and to the back-ward schizophrenic in another? [Bateson, 1979, p. 8].

All this may sound either too-mathematical or too abstract to have any philosophical salience. In order to extract far-reaching consequences from mathematical concepts when dealing with analogy, we need to comply with certain criteria. In the case of topology we have seen that to apply the notion of a map, we need sets or, even better, spaces, which are structured sets (i.e. they have a certain topology). Our philosophical concepts cannot be punctual, but have the need to belong to a net of relationships or to constitute a structure in themselves. Not only relationships between objects are needed, but between sets of objects with some structure, or even better, between structures.

In this section we direct our efforts to exploring whether geometry helps us to think analogically, focusing on one geometrical property, namely symmetry. To achieve this, we will now concentrate in the classical philosophical-ontological schemes advanced in modern thought, namely that of subject-object, and that of subject-subject. Such relationships are crucial not only for epistemology, but also for ontology and ethics.

The relationship Subject-Object could be represented with two letters (corresponding to each element) and a dash (representing some relationship: S-O). Since it is a reciprocal relationship, we could write it with a double arrow: S↔O. The relationship is not directed, so we could also invert our formula like this: O↔S. We can thus conclude it is symmetrical in a *general* sense. Let us consider now three elements: two subjects and one object. This would be the minimal depiction of the existence of *one* world with more than one perspective. This is also the minimal depiction of an "intersubjective" world. Intersubjectivity does not have here the form of absolute unity, but the subjectivity is "distributed". We speak of intersubjectivity because there are not many possible worlds, all indifferent to each other, but only one, which, however, may be seen from more than one perspective.

Two objects are symmetrical if one can continuously transform one into the other. Above, we saw already the example of the triangle. We could interpret rotations as the different possible *perspectives*, from which the object "looks the same":

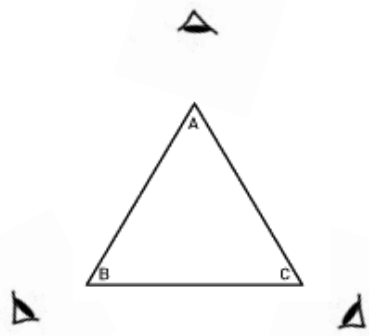


Fig. 5.

But we can also think of perspective in the sense that the Renaissance painting did, namely as points of view of the "same" world, rendering different views of it, as the following examples show:

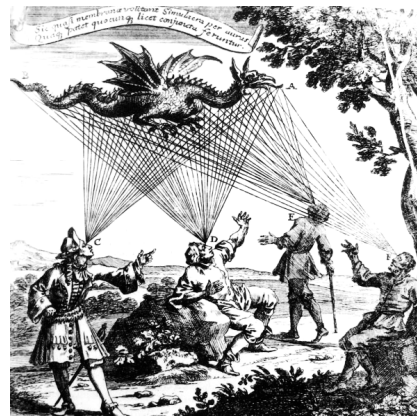
 [7]

Fig. 6.

Now, we could represent the relationship between two subjects (S1, S2) and one world (O) in two different ways: linear (S1-O-S2), (S1-S2-O), (S2-S1-O), (S2-O-S1), (O-S1-S2), (O-S2-S1); or on a surface:

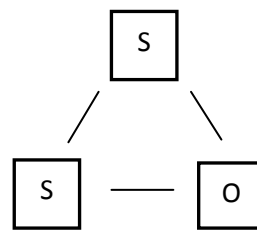


Fig. 7.

In the linear depiction S1-O-S2, we have a relationship between S1 and S2 only through the world, but it is not direct. It is, however, symmetrical

[7] Johann Zahn, "the radiating eye" from Oculus Artificialis Teledioptricus Sive Telescopium (1702). https://spyurk.am/uploads/images/scaled_full_4d38cd0d3554f455473b.png Consulted: March 20 2016.

to the form: S2-O-S1. In this sense, we have only three different linear possibilities: (S1-O-S2), (S1-S2-O), (S2-S1-O). The two last options are really not examples of intersubjectivity, for in both cases one subject has (indirect) access to the world, i.e. only through the other. In pure formal terms (S1-S2-O) and (S2-S1-O) represent the "same" case: indirect access. So, we could say that we really have two options: (S1-O-S2) and [(S1-S2-O) or (S2-S1-O)].

In the case of the plane depiction we can represent more structural elements. Actually, *all* combinations of the linear depiction are possible *simultaneously* in the planar one. It is just about writing the corresponding *arrows*. We are interested in very specific arrows. In our scheme we can ascribe different properties to the subjects and to the object at stake. Subjects can make interpretations of the world, but the world can´t make interpretations of them. It affects them, but in a different way:

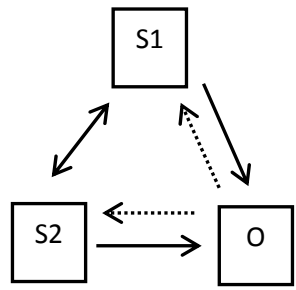


Fig. 8.

In our scheme, the arrow that goes in two directions means that S1 and S2 have a reciprocal relationship. We also see that S1 and S2 have a different but equivalent relationship to O. And finally, there is a relationship between every subject and the world, but this is not symmetrical in the same sense of the direct relationship between S1 and S2. In this manner, we can observe interesting symmetry properties. The *relationship* S1 to O and S2 to O are symmetrical in one sense, they are two "interpretations" of the *same* world. And yet, it is not exactly the same, for they render different perspectives.

The relationship S1 to S2 and S1 to O are not symmetrical. We can say that even though S1 and S2 are not the same, they have the same *relation-*

ship to the world. S1 is not S2, they are two different perspectives. But they are perspectives, and in this sense, they are the same, but only when contrasted to the world (O), which has no perspective at all.

In terms of negations, we can state that, from the perspective of S1, it is an *I*, and S2 is a *not-I*. But this not-I is also an *I*. Yet, O means also *not-I*, and that is true for both S1 and S2. We have, then, two types of negation, which in turn can be interpreted one as symmetry and one as asymmetry. The whole triadic complex is then a combination of symmetry and asymmetry. We recognize this in the distribution of three logical places: *I*, *you* and *it*. It is further true that both *I* and *you* are a part of the world; they emerge objectively from it, but they cannot be reduced to their objective existence. It is also true that for an *I*, the *you* and the *it* are *not-I*, but they have to be distinguished. The objective other and the subjective other do no coincide. Ontology (relationship Subject-Object) and ethics (relationship Subject-Subject) are different and yet interwoven. And it is lastly also true that although the *I* and the *you* have "access" to the same world, their views are not the same, otherwise we could collapse them into a single *I*, falling again into subject-object dualism. There is symmetry in the first sense (having access to the world), but also asymmetry, which so far both interpretations do not cover completely. This would mean that their interpretations are "analogous", but neither identical, nor absolutely different.

The German logician Gotthard Günther offers a reading of this triadic structure as we can see in the following scheme[8]:

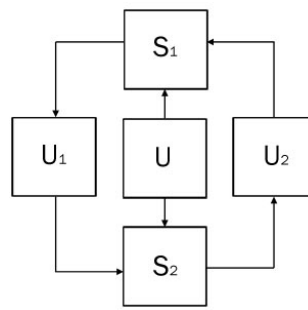


Fig. 9.

[8]After a diagram found in: [Günther, 1980, p. 88].

S1 and S2 are two subjective points of view of the world (U); the corresponding interpretations of the world are U1 and U2. The arrows show an "action" of the world on both subjects, who in turn generate an interpretation of it, which, in turn is "communicated" to the other. This diagram is interesting as it shows the logical distribution we have been talking about. We could now complicate the original scheme by introducing an element between pure subjectivity and pure objectivity (which by the way are only ideal poles in a multipolar structure), between both "I" (S1 and S2 included) and "it", for example, an animal (A in the diagram). An animal is not a pure object, but it is not a subject in the sense a human mind is.

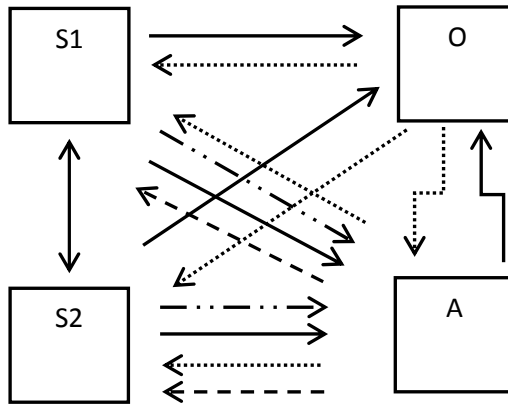


Fig. 10.

In the diagram the solid double arrow between S1 and S2 means a subjective relationship. Each subject (S1 and S2) has a double asymmetrical relationship to the world (O): the solid line that goes from subject to object means an objective apprehension; the dashed line means how the world "affects" the subject. Each subject has a triple relationship to the animal. First we have a solid line going from the subject to the animal, which means that it is an object of nature, like any other. The dotted line means how the animal affects a subject as an object. So far we have the same lines as in the relationship subject-object. But there is surely a specific way of

being affected by an animal (represented by a dotted line) and a specific way to relate to it (represented by the dashed-dotted line). There is in some way a symmetrical relationship between all living beings, for they establish systems of energy transfer. But this symmetry does no reach so far as the symmetry between human beings. And even tough animals and humans exhibit an asymmetrical relationship; this is more symmetrical than the relationship between the living and the non-living. And the animal (that of course, we also are, but not only) has also a peculiar relationship to the world: perceiving and being affected by it, which we represent by the not-straight dotted and solid lines.

If we enrich this scheme with other regions of being, we could see a complex system, in which we can establish different "observers" and different "objects" (which can exchange their functions or positions), different negations and different orders and levels of symmetry. This, however, leaves us with some sort of hierarchy, just as if symmetry was lost as we go farther and farther from human subjectivity. If it is true, as we said at the beginning, that a) being is community, that philosophy as metaphysics is somehow a *koniology*, a *communology*, and that b) analogy creates a nexus between non-strictly related beings, then we should explain how the connectivity of being changes through analogy.

6. Connectivity

Aristotle´s ontology, we know, is inseparable from his idea of grammar and logic. The structure of language mirrors the structure of being, and both obey the broader structure of logic. Being in this sense is a predication in the sense of *apophansis*: showing the subject in the predicate or the substance in its attributes. Being is expression. But all the expression of singular beings is linked to being as such, to being-qua-being. We know that being is said in many ways (*pollachós*), but also that being adopts the structure (or difference) between genres and species. Even if we take substance (*ousía*) to be the last instance considering being qua being, the question remains open about what makes *community* in being, why and how all

beings are gathered in being in general, instead of constituting disjoint atomic existences.[9] Aristotle´s division of being along the lines of genre and species produces a tree-structure like the following:

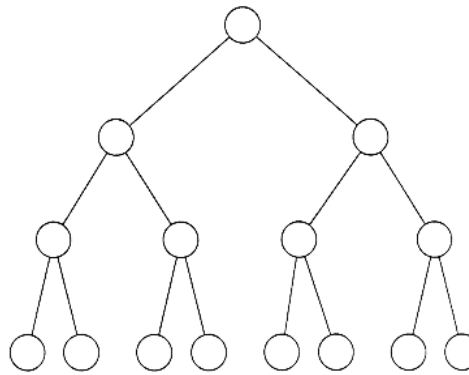


Fig. 11.

Being is *not* the top node in the reticular structure, but the *whole* structure, i.e., the *division of the one into many*. Today we see this tree in Linnaeus' classification of the living and in the diagrams of evolution. But how are elements related to one-another? Two horses, for example, are related so far as they belong to the same category, i.e., both are elements of the same set. A horse and a donkey may be related through a more general (an *upper*) category including, say, four-legged animals; and a man and a horse through the *higher* category of "animal". To relate different species we always need the upper category; because the absolute *connectivity* of the whole tree-structure depends on the unit at the top, i.e., it is absolutely *hierarchic*. It is only because of the top unit (the *One*), that all branches remain communicated. This structure of beings relies, of course, on its

[9] Stéphane Dugowson [2012] offers interesting contributions to define "connective spaces" from the standpoint of category theory.

[10] This analysis draws on ideas presented in [Günther, 1980]. The main focus of Günther is however a many-valued logic, without a reflection on the more general issue of connective structures.

binary logic and its unique negation. Every node divides into two, corresponding to the A and not-A form. Now, if we descend very low down the pyramid and try to establish a relationship between two species, we then have to climb up in the tree-structure until we find a *common category* which includes them.

There are some non-classical logics like that of Gotthard Günther (which he called *polycontextural*) that suspend the axiom of Aristotelian logic: *tertium non datur*.[11] In this case, we have not only two values (true, false), but a third one. This third value, however, can work again in a two-valued structure, but in another "contexture". It is as if the whole space of "being" was constructed by *patches of Aristotelian-logic* very much like non-Euclidian geometry (or a variety in general, to put it in Riemann´s terms) is constructed by patches of Euclidian-space. The structure of logic, i.e., its "valuedness" determines the *connectivity* structure of being. In this sort of lattice, we can connect beings through different *paths*, which do not have to go up in the structure like in the case of Aristotelian logic. These sort of lateral connections are not hierarchic anymore, but so-called *hetararchic*.[12]

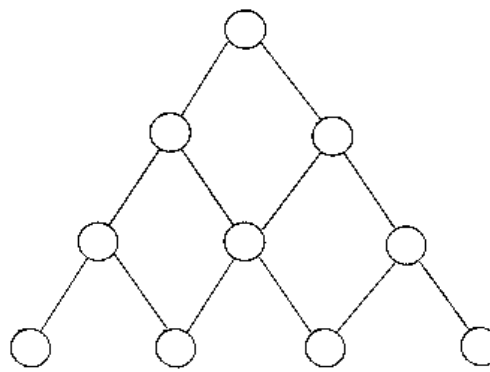


Fig. 12.

[11] See: [Günther, 1979] and [Günther, 1980].

[12] The concept was coined by Warren McCulloch in his seminal work on neural networks: [McCulloch, 1945]. Heterarchy implies lateral connections, which complement hierarchic ones.

In terms of negations we have, for every "opposition", two more options: the "and, and" (A and not-A); and "neither-nor" (neither A not not-A). This gives us an extended square of logical places, as Kaehr, a pupil of Günther suggests[13]:

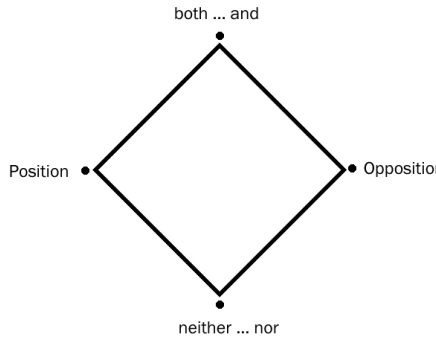
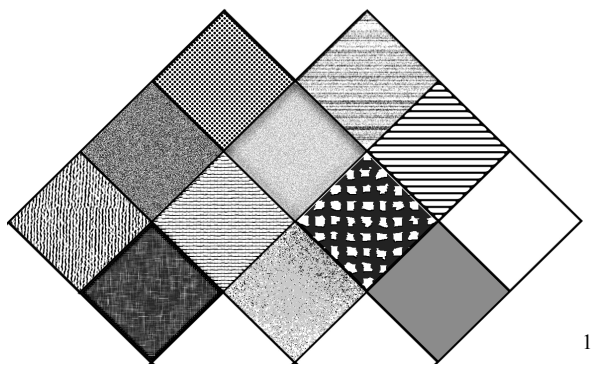


Fig. 13.

Now, to construct the whole polycontextural pyramid of being, que, we have to iterate the fundamental square in such a way that they cover the whole space, like in a *tessellation*.



14

Fig. 14.

[13] After [Kaehr, 1997, p. 20]. This corresponds by the way to a classical Indian square of oppositions, the so-called catuskoti.

[14] After [Kaehr, 1997, p. 20].

We should note, however, that the "whole" space is not simply connected; it is not a homogenous space. The "whole" is rather constructed through "patches" of this fundamental square. This is the main idea of polycontextural logics: for every context, we have an Aristotelic "world", plus two "unnamed possibilities". These two possibilities: (both, and), (neither, nor) remain unnamed in the same contexture, but obtain a positive content in some other contexture. Important is to separate the "and, and" and the "neither, nor", for even if both reject the opposition, they do it in different ways.

It is not said if this structure is "flat". It might well be the case for such a geometric structure of logic to be three or more dimensional. This is a fundamental question, because we can pose here the question about the continuity and discontinuity of different contexts (or contextures) and more radically, of logic. In other words, we ask if logic can be applied to a homogeneous world. In topology we distinguish between continuous (connected) and discrete (non-connected) spaces. But within continuous spaces, it is still to decide *how* they are connected. A space with a hole, for example, is non-simply connected. But there are other spaces, called multi-connected, which offer a combination of continuity and discontinuity. An example of such spaces is a polyhedron, which is connected, but at the same disconnected through the edges. If we construct a polyhedron for logic, we could not escape such questions.[15]

We have seen how logic changes *connectivity*. And here I come to our main issue again: analogy. I have argued that analogy changes the connectivity of being. To explain this, I resort very briefly to Husserl´s concept of the world as a *horizon*. The world of the horizon will show itself to be articulated by what Husserl calls "lines of analogy".

---

[15] The work of Jean-Yves Béziau is a remarkable example of a "geometric" interpretation of logic, both in the planar form of an hexagon and in a three-dimensional construction. In this sense, paraconsistent logics and the extension it provides to classical approaches offer the possibility to link logics with mathematical structures in the sense of Bourbaki. See [Béziau, 2001].

7. Analogy and phenomenology: the world

In his late writings, Husserl developed the concept of the *world* as an indeterminate and open horizon that serves as a background (*Hintergrund*) for all our explicit conscious thinking, which works as a foreground (*Vordergrund*). But very early, in his *Lessons on the phenomenology of time-consciousness*, he writes: "[…] if we have in the [temporal] succession unequal objects with equal distinctive moments, then certain "lines of equality" [*Gleichheitslinien*] run from one to the other, and in the case of similarity, then lines of similarity [*Ähnlichkeitslinien*]. We have here a reciprocal relationship [*Aufeindanderbezogenheit*] that does not constitute in [explicit] consideration, but lies at the base, as a presupposition for every intuition of equality and difference [*Gleichheitsanschauung und Differenzanschauung*] before every "comparison" and every "thought" [takes place]" [Husserl, 1966, p. 44].

In *Experience and Judgement*, Husserl clarifies this idea of a pre-predicative sphere as indeterminate and open. He states that we have a pre-theoretical approach to the world, a *pre-knowledge* (*Vorwissen*), which is, regarding its content, "indeterminate or incompletely determined, but never empty" [Husserl, 1939, p. 27]. This experience constitutes, further, an "experience horizon", that allows us to determine a thing ever more and more without ever exhausting it. It is rather our interests and goals in the world that lead us to say: it is enough, this degree of determination and detail suffices. Husserl concludes the following:

> I can convince myself that no determination is the ultimate, that the effectively experienced always has an infinite horizon of possible experience of itself. And this [horizon] is, in its indeterminateness [*Unbestimmtheit*], and in advance, in co-validity [*Mitgeltung*] as a space of possibilities [*Spielraum von Möglichkeiten*], hinting at a path of closer determination, that only in real experience is decided for a determinate possibility, actualizing it against other possibilities [Husserl, 1939, p. 27].

Our pyramid of being should now look like this:

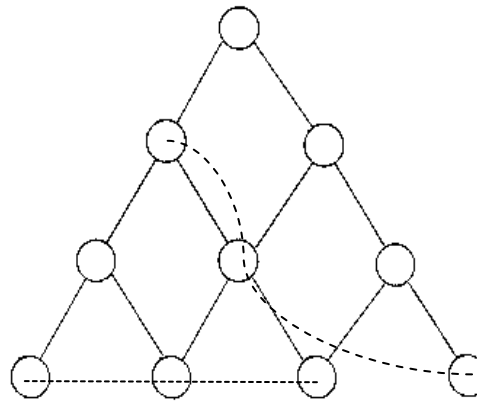


Fig. 15.

This means that before we constitute explicit objects and explicit relationships among them, there are lines of similarity, of analogy, of potential objects that run along an indeterminate horizon. It is as if objects existed only in certain virtuality, still full of possibilities, even contradictory, for we cannot apply our logical rules of identity and difference. The horizon is, let´s call it for the moment: polyvalent, or *paraconsistent*. As a metaphor we could remember here Schrödinger´s mental cat-experiment. Before we see inside the box, since the being-alive or being-dead of the cat depends on the spin of the electron, and since before observation, the spin is not determined, then the cat is at the same time dead *and* alive. Within the horizon, multiple possibilities dwell, until an object is determined and therefore becomes an explicit subject for conscious consideration.

We have the extended non-classic pyramid, but we have opened now strictly horizontal lines (paths) of analogy between beings. Analogy means here a non-hierarchical (i.e., a *heterarchical*) relationship. Dotted lines represent those possible lines of virtuality, characterized by non-classical logic but also by many types of morphisms and symmetries. Now such lines appear as possible *paths* in the structure of being. Husserl characterized the pre-scientific world as qualitative, vague and open. This is pre-

cisely what group-theory and topology provide us with: a systematic way of reasoning within the *qualitative*. Rotations, reflections, point symmetries, self-similarity, patterns in stacking and packing, progressions in series, strange attractors (or symmetries within chaos), fractals, etc., all this world is built upon qualitative similarity, that we find in the world as pattern and as a mixture of symmetry and asymmetry, before we construct rigid categories, structures, totalities and absolute unities of knowledge. It is the freedom within order itself, flexibility without arbitrary similarities, and it is the *connectivity* of beings along the dividing lines of categories. It is not the world before the world, but another layer, based on non-metric features, but in analogy.

8. Concluding remarks

I claim that if philosophy is to be understood in some systematic form, the central notion must be that of *structure*. Structuralism in mathematics, especially that of Bourbaki, tried to define "mother structures", like algebraic, order and topological ones. Philosophy and the social sciences adopted in course of the 20th century fundamental ideas of the Borubaki group. Structuralism should not be interpreted as a unified approach, whose fundamental concepts were established once and for all. On the contrary, there is no univocal and established concept of structure. We can say however that structures are sets (i.e. there is a "multiplicity" at stake) with some additional order. The contrary of order, so-called disorder, can be seen as triviality. Disorder is not "chaos" or "chance", but indifference. In thermodynamics disorder is called entropy. We see a phenomenon of entropy for example in heat-diffusion between two bodies. There order, and therefore difference, when two bodies in contact have different temperatures. We witness then a diffusion of heat, so that after a period of time, both bodies in contact have the same temperature. They cannot be differentiated anymore from that point of view. In nature, order can be seen as a long-lasting stability, or as *structural stability*. Such stability is not outside time, nor responds to eternal patterns. We can think of dynamic or

relatively static forms of order, but in any case we have always *different elements* and some *possible operations* between them, what produces a sort of "space of possibilities" in the wide sense of the word.[16]

Philosophy, logics and mathematics have conceived different types of individuals (what counts as an element of a set), of differences (and consequently, of negations) and of relationships between elements. At the beginning of the paper we spoke of univocity and equivocity. They are two modes of establishing mappings between spaces. Some words, for example, may have one or multiple meanings. In this sense, analogy can be seen as a) a way of establishing relationships between elements that do not belong to the same class (neither univocity, nor equivocity) and b) a way of establishing mappings between different spaces in different senses *at the same time*. It is as if analogy confronted us with another way of conceiving difference and thus of conceiving orders and structures in general. Structural mathematics, but also non-classical logics have opened new worlds that allow us now to redefine our old concepts on order and being in general. In mathematics: we have highly counterintuitive concepts of continuity, discontinuity, limit, interiority, exteriority, infinity, cardinality ("size" of sets), etc.; and in non-classical logics, we have new conceptions of negation and opposition. All this findings point to what we could name a new sort of "philosophical logic". But we are just starting the long and strenuous task of linking anew philosophy, mathematics and ontology.

Bibliography

Aristotle, (1959), *Ars Rhetorica*, tr. W. D. Ross, Oxford, Oxford University Press.

Aristotle, (1989), *Prior Analytics*, tr. Robin Smith, Indianapolis, Hackett Publishing Company.

Bateson G., (1979), *Mind and Nature. A Necessary Unity*, New York, E.P. Dutton.

Béziau J.-Y., (2001), "From Paraconsistent Logic to Universal Logic", *Sorites* (12), pp. 5-32.

---

[16] Luciano Boi has also shown a mathematical approach to ontological problems through the consideration of topological spaces. See his remarkable book the *Morphology of the Invisible* [Boi, 2011], which has inspired many of the ideas of this paper.

Boi L., (2011), *Morphologie de l´invisible. Transformations d'objets, formes de l'espace, singularités phénoménales et pensée diagrammatique (topologie, physique, biologie, sémiotique)*, Limoges, Presses Universitaires de Limoges.

Dugowson S., (2012), *Dynamiques connectives. Une introduction aux notions connectives : espaces, représentations, feuilletages et dynamiques catégoriques*, Saabrücken, Editions universitaires européennes.

Edgerton S., (1975), *The Renaissance Rediscovery of Linear Perspective*, New York, Icon Editions, Harper & Row.

Günther G., (1979), *Beiträge zur Grundlegung einer operationsfähigen Dialektik*, Vol II., Hamburg, Meiner.

Günther G., (1980), *Beiträge zur Grundlegung einer operationsfähigen Dialektik*, Vol. III., Hamburg, Meiner.

Husserl E., (1966), *Husserliana X.: Zur Phänomenologie des inneren Zeitbewusstseins*, The Hague, M. Nijhoff.

Husserl E., (1939), *Erfahrung und Urteil*, Prague, Academia.

Arturo Romero Contreras
Benemérita Universidad Autónoma de Puebla, Mexico
rcarturo@gmail.com

STUDIA METODOLOGICZNE
NR 37 • 2016, 121–135
DOI: 10.14746/sm.2016.37.7

CARLOS R. GUTIÉRREZ RUEDA

Analogy-Refutation-Argumentation. Between the Aristotelian Dialectics and Perelman's Theory of Argumentation

ABSTRACT. In this paper we review how analogy is used for refutatory purposes by Plato, Aristotle and Ch. Perelman. With the above, we want to show that analogy is a fundamental process for any theory of argumentation, and very particularly for any theory of refutation. For this, we follow the ensuing line: first, we analyze how Plato conceives analogy in the *Sophist*, as one of the parts of its dialectical method. Second, we offer two examples of how analogy is used in a refutation process. For this, we discuss the *Meno* of Plato – where the character 'Socrates' refutes the character 'Meno', using two analogies: Meno himself like an analogy of virtue, and a swarm of bees as an analogy of the confused ideas that Meno has in his mind. Third, we expose the so called 'rhetorical turn' about the platonic conception of refutation; this 'turn' is given by Aristotle in his *Rhetoric*, and we review various characteristics of it. Finally, we analyze the function that Perelman assigned to refutation in his argumentation theory. The conclusion of our paper is that analogy is present, and is used, in various theories of argumentation that have been created throughout history.

KEY WORDS: analogy, refutation, dialectics, argumentation theory

Introduction

The different theories of argumentation created during the course of the Twentieth Century have as a fundament that the idea of human disagreements can be resolved without violence. In effect, Perelman (1989), Toulmin (2007) and Van Eemeren (2006) purport that their theoretical-methodological proposals are a practical support for the solution of human conflicts. However, these models of argumentation that began from the

same fundament are not the first in history. In fact, with the birth of the dialectic, of rhetoric, of logic, in the fourth Century B.C., Plato and Aristotle created an argumentative model with the same intention: the solution of human conflicts.

Having said the above, refutation is one of the processes that is present in any conception of argumentation whose aim could be the solution of conflicts. Such refutation is present in all theories because it discusses a reasoned attack on the arguments that somebody proposes to support his conclusion. And, as we know, the first person in theorizing about this subject was Aristotle in his *Sophistical Refutations*. But, Aristotle himself did not begin to think about such refutation from out of nothing. As we can see in his writings, he found inspiration in writings of his Master, Plato. Setting out from this entire context, we want to ask: do the theories of argumentation that were created during the course of the Twentieth Century, especially the theory of Perelman, just gather up the theoretical elements proposed by Aristotle or do they contribute to the comprehension of the order of the refutation?

To answer our question we will follow the next thesis: that the proposal of the theory of Perelman in his *New Rhetoric* is developed in an original way in comparison with the theoretical proposal that Aristotle gave in his *Rhetoric*. With this, we want to maintain that the contemporary theories of argumentation, even though they take up a lot of Aristotelian elements, in fact, are novel and original approaches of refutation. Furthermore, we believe that it is very important to rescue the analogical process that Plato used in his dialogues as a way to refutation. At the end of my paper, I will develop this idea.

To support my thesis I propose to do the next recourse: first, to review how Plato conceived of refutation as a very important element of dialectics – in the *Sophist.* Secondly, and after reviewing the distinct definitions that Aristotle offers of refutation (in *Sophistical Refutations* and in *Prior Analytics*), we will explain how Aristotle breaks the dialectical context of Plato, carrying refutation to the field of rhetoric. We call this movement "the rhetorical turn" of the refutation. Finally, I will compare this conceptualization with the proposal of Perelman, in his book *The New Rhetoric*.

I want to clarify that this study is not simple because refutation is not an isolated argumentative process; on the contrary, it is related to a lot of processes, as much logical as rhetorical. Also, I want to clarify that this work does not have the intention to offer a definitive version of the problem; quite the first approach to the subject. For the moment, I just want to glimpse some ways that may let us tackle this subject in depth and with clarity.

The refutation in the *Sophist* of Plato: the dialectic perspective

We will begin our seeking of refutation (Lat. *elenchus*) in Plato's dialogues since, as we know, he develops this subject in some of his works (*Protagoras, Gorgias, Phaedrus, Sophist,* and *Laws*). But, we will focus our research in the *Sophist* because in this dialogue the refutation not only appears referenced but it is very important in the argumentative process of the dialectics, and it is valued positively from the educational perspective.[1] We will only refer to the others dialogues when it will be necessary to reinforce my exposition. As with all Plato's dialogues, the *Sophist* begins with an introduction in which the setting and the characters who take part in the dialogue are presented. In this case, the physical setting is one of the *agorai* of Athens, and the characters are Theodorus, Socrates, an anonymous stranger, and the young Theaetetus. The character of Theodorus is used only to open the scene and introduce Theaetetus to the anonymous stranger. Once Socrates learns that the stranger is "a real philosopher", and raves in his compliments towards this noble activity,[2] he asks what distin-

[1] To be outside the objectives of our work, we will not enter into the debate about the place occupied by the Sophist into the *corpus platonicum*. Nor will we develop the theme of the relationship of this work with other dialogues. We will assume that it is a sufficiently significant and autonomous unit to be studied individually. And we will only resort to other works when it is necessary to reinforce our argument. See: http://www.perseus.tufts.edu/hopper/searchresults?q=Parmenides [trans. Harold N. Fowler].

[2] Socrates calls the philosophers "superior beings" because they "seem to be refuting gods (Gr. *θεὸς ὥν τις ἐλεγκτικός*) who observe and contradict weak arguments" (216a-b).

guishes the sophist, the politician and the philosopher, all three of which are specialists in discussion (Gr. *τὰς ἔριδας ἐσπουδακότων*).

In this way, Plato briefly introduces to us the characters and main subject of the dialogue (216a-218a). Plato then (218a-b) describes to us the method through which the characters will seek differences in their proposals. When the stranger becomes tired after giving a long speech before the other Athenians, he proposes speaking through a dialogue consisting of questions and answers; that is to say, he proposes a dialectical practice (Gr. *διαλέγεσθαι*). Being loyal to his tradition, Socrates refuses his participation in that discussion, so he encourages the stranger to engage in dialogue with the young Theaetetus.

The scene ends with the dialogue: in one of the *agorai* of Athens, a stranger engages in dialogue with a young Athenian seeking the difference among the sophist, the statesman and the philosopher. But why does Plato, the author of the dialogue, leave the character of "the stranger" anonymous? As we will see, leaving this character without identification is an intentional act by Plato; this intentionality will help us understand why the author develops the subject of the refutation in this dialogue.

We start from the point that in the dialogue Plato never lets the reader know the identity of the stranger; however, from the beginning of the *Sophist*, he offers us a very important data for his identification, not to indicate a particular person but to *frame* his dialogue. In fact, in the beginning of the *Sophist* (216a), the author conscientiously affirms the fact that the stranger is "from Elea".[3] We understand that this is not casual information because other natives of the Sicilian city including the philosophers Parmenides and Zeno – elderly men who Plato[4] distinguishes as members

[3] The complete classical greek text says: "[…] *καὶ τόνδε τινὰξένον ἄγομεν, τὸ μὲν γένος ἐξ Ἐλέας, ἑταῖρον δὲ τῶν ἀμφὶ Παρμενίδην καὶ Ζήνωνα ἑταίρων, μάλα δὲ ἄνδρα φιλόσοφον*" (216 a). http://www.perseus.tufts.edu/hopper/searchresults?q=Parmenides [trans. Harold N. Fowler].

[4] Both lived in the late fifth century BC; while Plato was born around 427 BC. This means that Plato was a young man when Parmenides and Zeno were older adults (Plato, *Parmenides*: 127a). There, in addition to relating them as a teacher and disciple, Plato suggests that they were lovers. See also: [Diogenes Laertius, *Life and Works of the Most Illustrious Philosophers* (XI, 505); And Ateneus (XI 505)].

of the Eleatic school of philosophy and strong advocates of "the unity of what is." This reference to Elea has led many specialists – [Guthtrie, 1990] for example – to identify this anonymous character with the Eleatic current in ancient philosophy. In this way, we find the young Theaetetus being questioning by an Eleatic philosopher, not only about his origins, but about his philosophical position and method. This philosophical position and his method for seeking philosophical knowledge is what frames the *Sophist*.

What is the relevance of all of this for the subject of the refutation? I will establish the answer by parts by directing our attention to members of the Eleatic school of philosophy: Parmenides and Zeno. For this, we will visit another platonic dialogue: the *Parmenides*.

First, we know that in his *Poem* (fr. 2, 3)[5], Parmenides maintained that "It is and it is impossible for anything not to be", that is to say, he affirms Unity[6]; his pupil Zeno (Plato, the *Parmenides*: 128b) defended the same thesis, but expressed it negatively: "it is not many", that is to say, he refutes Plurality. And, each one offers "fine and excellent" proofs of his position. We could say that, in general terms, the Eleatic philosophers support with reasons Unity and refute Plurality.

Secondly, as Socrates says in the *Parmenides* (128b), to affirm Unity and refute Plurality is nearly the same thing; in fact, they are like two faces of the same coin. The main difference between them is the "aim" for which Zeno refutes Plurality. In fact, according to him, he does not intend to defend something but, to the contrary, his intention is to attack the adversaries of his master. According to him, his position emerges, (128c), with a "spirit of controversy" (Gr. *φιλονικία*); that is to say: attacking and, at the same time, ridiculing Parmenides, "[…] opposes (Gr. *ἀντιλέγει*) he advocates of the many and gives them back their ridicule with interest, for its purpose is to show that their hypothesis that existences are many, if prop-

---

[5] http://philoctetes.free.fr/parmenidesunicode.htm [trans. John Burnet].

[6] Plato explicitly presents the position of Parmenides: "in your poem you say that the one is the whole" (Gr. *ἐν τοῖς ποιήμασιν ἓν φῂς εἶναι τὸ. Πᾶν*) (128a). To link this anonymous sophist to the eleatic school, see: 242d.

erly followed up, leads to still more absurd results than the hypothesis that they are one" (128d).[7]

And here, we arrive at a very important point in our study of the refutation. Moreover, we can affirm that this *φιλονικία*, the love of victory by means of polemic discussion, is the motor of the refutation, because it is what leads Zeno to contradict all the other arguments, and to demonstrate that those theses contain contradictions. In a word, Zeno is the creator of the refutation.[8]

We are now ready to return to the *Sophist*. In this dialogue, we understand why Plato leaves one of the characters anonymous. His name is not important, only the method by which he defends his philosophical idea. This way, speaking with *φιλονικία*, is what *frames* both the seeking of differences among the sophist, the politic and the philosopher, and the proposal by Socrates in the beginning of the dialogue.

In this context, the stranger carries on a very long process of questioning and answering (Gr. *διαλέγεσθαι*) with Theaetetus, through which they seek, above all, a definition of the sophist (218b-231b). The method by which they arrive at this division is to begin with a tentative definition, and divide and separate their belonging to different genres and species. With this procedure, the stranger directs the young Theaetetus at the end of all of this exercise to determinate some of the characteristics that belong to the sophist (231d-232b). The stranger and Theaetetus find seven aspects that characterize the sophist, but of all of those, just two of them are of interest to us: a) "an athlete in contests of words (Gr. *τῆς γὰρ ἀγωνιστικῆς*[9] *περὶ λόγους ἦν τις ἀθλητής*); and b) that it is limited to the "art of disputing" (Gr. *τὴν ἐριστικὴν*[10] *τέχνην ἀφωρισμένος*). In short, the stranger compares the sophist with a disputer (Gr. *ἀντιλογικὸν*).

---

[7] http://www.perseus.tufts.edu/hopper/searchresults?q=Parmenides [trans. Harold N. Fowler]

[8] In fact, according to Diogenes Laertius (IX, 25), Aristotle himself considered Zeno as "the father of dialectics".

[9] *ἀγών* = Competition, struggle; Lecture, arena; Contention, dispute, litigation, danger.

[10] *ἔρις* = Pendency, quarrel, rivalry.

In this characterization of the sophist proposed by Plato, we can appreciate the sophistic practice of the Zenonian *φιλονικία* as a method of discussion by contradiction (Eristic), that is, opposing an argument with an argument. And this is the context in which one we must locate the first conceptions of the refutation. In effect, the refutation is a very important element in the dialectic discussion, where the thesis is attacked (Gr. *κατηγορία*) and defended (Gr. *ἀπολογία*) (Plato, *Phaedrus* 267a).

An example of refutation using analogy: the *Meno* of Plato

Now, what about the analogy? To close this section about Plato, we would like to point out that the Athenian philosopher used analogy as a very important element of his argumentative processes to, among other things, refute. To illustrate my point of view, I want to focus on one of his dialogues: the *Meno*. As we can remember, this dialogue begins with Meno asking Socrates whether he believed it was possible to teach virtue. Conspicuously, Socrates gives the question back to Meno – a pupil of Gorgias: "I have to reproach myself with an utter ignorance about virtue; and if I do not know what a thing is, how can I know what its nature may be?" (71b).[11] To give a better explanation about his point, Plato establishes an analogy between Meno and virtue: if we do not who is Meno, neither can we know if he is handsome, rich and noble; in the same way, we cannot know if his virtue is teachable until we know what it is.[12] As we can see, analogy is used as means for exemplification, and works by means of clarifying the question. This Socratic intention is not achievable because Meno does not understand the question.

---

[11] http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0178%3Atext%3DMeno%3Asection%3D71a [trans. W.R.M. Lamb].

[12] In this specific point it is very important to take into account the Greek text, because it appears '*οἷόν*' that clearly shows that it is an analogy. The full text says: "*ἢ δοκεῖ σοιοῖ ὀν τε εἶναι, ὅστις Μένωνα μὴ γιγνώσκει τὸ παράπαν ὅστις ἐστίν, τοῦτον εἰδέναι εἴτε καλὸς εἴτε πλούσιος εἴτε καὶ γενναῖός ἐστιν"*.

In a second example about the use of analogy by Plato, Meno defines virtue for the first time. This example is a perfect illustration of how Plato uses analogy to refute Meno. In 71e to 72a, Meno is confused, and instead of defining virtue, he gives some examples of it: he speaks about the virtue of men, women, elderly people, and children. Socrates points out to Meno that exemplifying something is not the same as defining it. He shows this mistake to Meno through his second analogy, in which he compares the examples of virtue that Meno has offered with a swarm (Gr. *σμῆνός*) of bees. Socrates ironically establishes the similitude: "I seem to be in a most lucky way, Meno; for in seeking one virtue I have discovered a whole swarm of virtues there in your keeping" (72a). Socrates then establishes how he will use this analogy: "Now, Meno, to follow this figure of a swarm (Gr. *τὴν εἰκόνα τὴν περὶ τὰ σμήνη*), suppose I should ask you what is the real nature of the bee (Gr. *περὶ οὐσίας*), and you replied that there are many different kinds of bees and you tell me that they are a lot of and the all types what do you answer me […]" (72a-b).[13]

Meno seems to grasp the analogy, because he responds, "they do not differ, the one from the other as bees." However, when he attempts to relate the idea of a swarm of bees to the virtue, Socrates asks him, "Meno: what do you call the quality by which they do not differ, but are all alike?" (72c),[14] Meno gets stuck and does not know how to answer. While Socrates is clear that "however many and various they may be, they all have one common character whereby they are virtues" (Gr. *κἂν εἰ πολλαὶ καὶ παντοδαπαί εἰσιν, ἕν γέ τι εἶδος ταὐτὸν ἅπασαι ἔχουσιν δι' ὃ εἰσὶν ἀρεταί*) (*ibidem*). In this last step, Meno's proposal for defining virtue remains openly refuted, because Meno recognizes that he does grasp what Socrates is aiming at. In effect, in 80a, when Meno compares Socrates to a torpedo fish, he affirms that if it is true that "on countless occasions I have made abundant speeches on virtue to various people", he can now say in front of Socrates what it is.

---

[13] *Ibidem*.
[14] *Ibidem*.

In this way, Plato uses refutation by analogy in *Meno* as a means of demonstration. Here we show only a pair of examples of the use of analogy to refute; however, the Platonic dialogues are full of these rhetorical and dialectical resources.

We do not want to close this section without saying that in the *Phaedrus*, Plato offers an example of refutation that Aristotle takes up in his *Rhetoric*. In 273b-c, Socrates explains to Phaedrus that Tisias, also a native of Sicily, was the creator of a persuasive technique that consists in refuting the opponent. He exemplifies it in the following way: if a brave and weak man beats up a strong but cowardly one, and the latter takes the former to court, the coward could refute the strong man by appealing to his weakness, while the strong man could refute the cowardly man by evoking his bravery. In this example, both men are refuted mutually, contradicting one another. From this, Plato deduces that it was Tisias who invented rhetoric.

The Rhetorical Turn in Refutation: Aristotle and rhetoric.

While Plato treats the dialectical discussion procedure as refutation, his treatment is not theoretical because it is nowhere defined. In any case, it falls within the framework of his interest in his struggle to distance himself from the Sophists. In fact, it was his pupil Aristotle who, with a little more maturity, made refutation a central concept within a theoretical framework. To clarify the influence of Plato on Aristotle, it is sufficient to cite the definition of rebuttal Aristotle offers in *Sophistical Refutations* (165a): "refutation is reasoning involving the contradictory of the given conclusion". And a few pages later (168a) is even clearer this influence, "For the same definition ought to hold good of 'refutation' too, except that a mention of 'the contradictory' (*ἀντίφασις*) is here added: for a refutation is a proof of the contradictory."[15] And yet, in *Prior Analytics* (66b), he states

[15] http://classics.mit.edu/Aristotle/sophist_refut.1.1.html [trans. W. A. Pickard-Cambridge].

bluntly: "[...] if what is laid down is contrary to the conclusion, a refutation must take place."[16]

From these quotes, we can deduce two ideas that are central to the Aristotelian conception of refutation: it is an argument and it implies a contradiction in the conclusion. Beyond that, Aristotle offers a clear definition of refutation, making a theoretical move that makes it clear: he brings the refutation into the framework of dialectics and locates it in rhetoric. This movement is what we call the "rhetorical turn" and that is what we intend to elaborate below.

According to Aristotle, rhetoric (Gr. *rhetoriké téchne*) is "the faculty of observing in any given case the available means of persuasion" (Rhetoric, 1355b); that is, it is the study of the mechanisms that we use to persuade because "all men attempt to discuss statements and to maintain them, to defend themselves and to attack others" (Rhetoric, 1354a).[17]

In this order of ideas, according to Aristotle, rhetoric gives us tools to persuasively argue a thesis or attack an opponent. However, according to Rocionero (1999), [the translator of Aristotle's *Rhetoric* into Spanish], Aristotle uses the term 'persuasion' (Gr. *πίστις*) in two very different ways; it can mean: a) "subjective persuasion"; or b) the means to produce this persuasion. Here we are concerned with the second sense, as Aristotle uses it to refer to statements that are compelling and probative. Yet, they are not probative in the sense of formal (analytical) logic, but in the sense of persuasion. And, indeed, the probative nature of persuasion (*apodeixis*) is seen in those forms of argument that Aristotle calls "enthymemes" (1355a). That is, an enthymeme is a rhetorical argument with which we persuade demonstratively (*apodeixis*), either to defend our position or to attack an opponent.

Here, the obvious question that we can raise with the Aristotle's *Rhetoric* is: how can we persuade demonstratively? Without any intentions to offer a comprehensive response – because *Rhetoric* as a whole explicitly answers this question – we would respond that, for Aristotle, we persuade

[16] http://classics.mit.edu/Aristotle/prior.html [trans. A. J. Jenkinson].
[17] http://classics.mit.edu/Aristotle/rhetoric.1.i.html [trans. W. R. Roberts].

"through the speech itself when we have proved a truth or an apparent truth" (1356a). By introducing the possibility of persuading demonstratively from what appears to be true (Gr. *εἰκός*), or what is plausible, Aristotle introduces to rhetoric a dialectical scope and brings this into the field of rhetoric. From this point of view, when Aristotle speaks of verisimilitude as a basis for entimematic demonstration, he passes over the pursuit of truth, and proposes discussion as a discipline, where what matters most is simply to discuss. To support our claims, we quote Aristotle himself: "It is evident, therefore, that the propositions forming the basis of enthymemes, though some of them may be 'necessary', will most of them be only usually true. Now, the materials of enthymemes are Probabilities (Gr. *εἰκός*) and Signs (Gr. *σημεῖον*), which we can see must correspond respectively with the propositions that are generally and those that are necessarily true" (1357a).[18]

Pursuing this line of reasoning, Aristotle suggests that which is probable (Gr. *εἰκός*) is that which generally happens; that is, the opposite of a necessity (1357a). When things, that may be other than they are, is possible to prove and/or disprove any statement that someone holding. Thus, the **refutation** is a rhetorical exercise, where we offer persuasive proofs, beginning with enthymemes since they are probable (1355a).

It is not until the second book of *Rhetoric* that Aristotle takes up the theme of the refutation. Indeed, in 1396b, the philosopher returns to the theme of enthymemes while discussing rhetorical arguments. Here he offers a new classification: "there are two kinds of enthymemes. One kind proves some affirmative or negative proposition; the other kind disproves one". He immediately defines the *refutative enthymeme* as "the conjunction of incompatible propositions" (1397a).

As will be noted, Aristotle maintains the dialectical sense of refutation given by Plato and already discussed here: "a proof of the contradictory". However, he goes a step further in his conceptualization to join this action to the concept of probability. With this move, as we have already indicated, refutation becomes rhetoric. This movement is so important that he

[18] *Ibidem*.

devoted the rest of Book II of his work to showing methods of refutation: for example, he lists the following: inflections, the correlative, the most and least, what we say in time, what I said against oneself, definition, etc. however, this subject will not be develop further here.

Refutation in the New Rhetoric of Perelman

In 1958, Perelman published his *Traité de l'argumentation: La nouvelle rhétorique* (*The New Rhetoric: A Treatise on Argumentation)*, which caught the attention of the academic world and pointed to the fact that it was a mistake to abandon rhetoric, and that it could be used to rationally resolve conflicts between humans. In the book, Perelman proposed that the rhetorical elements of the Greco-Roman tradition could be reclaimed and used to develop a new rhetoric.

In fact, Perelman begins his *Treatise* proposing a break with the Cartesian "ratio". This rupture is fundamental to understanding Perelman's motivations. In *Meditations on First Philosophy* (Lat. *Meditationes de prima philosophia*), Descartes created a metaphysical reason, that is, he lifted intellectual reason to the highest level, and proposed it as a substantial metaphysical category. But the reason for this idea was scientific: an idea that could be deduced without allowing any errors, to reach certainties that provided theoretical knowledge. The requirements for considering something to be "true" for Descartes were clarity and distinction. According to the seventeenth-century French philosopher, a proposition is true if I can distinguish clearly that is true. This pristine criterion became the metaphysical basis for the development of scientific knowledge. However, despite its epistemological and technical utility, it leaves out the rational exercise that deals with human problems. This is the great dissatisfaction that motivates to Perelman to create his *new rhetoric*.

To achieve his purposes, Perelman begins by establishing argumentation as one of the tools that allows human beings get into contact with each other, since each of us wants the others to have us in mind; thus, we reason

to have people pay attention to us (Perelman, 1989, 51). For Perelman, argumentation is a vital element of human coexistence.

In this context, Perelman (1989, 91) proposes that argument seek "to provoke or to increase the adherence of men's minds to the theses that are presented for their assent." According to this proposal, an effective argument, then, is one that increases the intensity of adherence so that listeners are triggered into the planned action.

This argument is fundamental to our study of refutation, because finding accession implies that one "Pleaders defend, arguing, opposing and sometimes contradictory theses". As Perelman noted, in the twentieth century, the notion of contradictory opposition in argument, which Plato proposed twenty fifth centuries ago, had to be recovered. However, although there are common elements with tradition, Perelman's theory of argumentation also has elements that do not appear in traditional theories of refutation. For now, we will discuss only one of them: the "force of argument". How it is that Perelman uses the force of argument to address refutation?

Perelman developed this notion in the third part of his book. It begins by stating that the argument is not something that happens in isolation. In fact, according to him, argumentative exercise, although consisting of discrete parts, cannot be conceived of as something disjointed. Far from it, for Perelman each of the elements of the argument constantly interact with one another. This interaction can occur among: "interaction among the different arguments utterances, interaction between those and the argumentative situation, between those and his conclusion, and finally, interaction between the discourse contents and those that have the last object." (Perelman, 1989, 699). These relationships determine what our author calls "amplitude", the "order" of the arguments and the **"strength" of the argument**. The force of the argument is what guides the argumentative effort, because when we argue it is an effort to gain the support of the listener. This notion is especially important because it is the *refutatory* effort that guides the speaker:

> Any refutation –whether of an admitted thesis, an argument not expressed, an objection to an argument– implies the attribution to what is rejected of a certain force that agrees to the useful application of our effort; It is overestimated that which is

> fought to give importance to the refutation, make it worthy of taking it into consideration, and this not only with a view to the prestige, but also in order to attract the attention of the audience [p. 713].

We have talked about what guides the rebuttal and what leads to a successful conclusion. Perelman discusses the evaluation of force as that which allows us to overestimate the argument and make the refutation sufficient.

To conclude our work, we want to mention that this is not the only contribution to the Perelman's theory of rebuttal with respect to Aristotle. Indeed, here we have outlined only the element of "argumentative force"; however, for a full view of Perelman's proposal in reference to refutation, we must also take into account the issue of scope. From this element of cohesive argument, Perelman established the processes that help the speaker prevent refutation. However, to avoid this, Perelman established features of the concept that do not appear in Aristotle. This element should be addressed in future research in an effort to give a full account of how Perelman conceives of refutation.

Bibliography

Aristóteles, (1999 ed.), *Retórica*, Madrid, Gredos. Trad. De Quintín Racionero.

Aristóteles, (2008 ed.), *Tratados de Lógica I (Órganon). Categorías, Tópicos, Sobre la Refutaciones Sofisticas*, Madrid, Gredos.

Aristóteles, (2008 ed.), *Tratados de Lógica II (Órganon). Sobre la Interpretación, Analíticos Primeros, Analíticos Segundos,* Madrid, Gredos.

Guthrie, W. (1990), *Historia de la Filosofía Griega*, Vol. IV. Madrid, Gredos.

Kirk G. S., Raven J.E., Schofield M., (1997), *Los Filósofos Presocráticos: historia crítica con selección de Textos*, Madrid, Gredos.

Perelman Ch. and Olbrechts-Tyteca L., (1989), *Tratado de la Argumentación: la nueva retórica*, Madrid, Gredos.

Platón (2008 ed.), *Diálogos V. Parménides, Teeteto, Sofista, Político*, Madrid, Gredos.

Platón (2010 ed.), *Fedro*, Madrid, Ágora.

Platón (1988 ed.), *Platonis Opera; Tomvs III*, Oxford Classical Text, Oxford University Press.

Scott, D., (2005), *Plato's Meno*, Cambridge University Press.

Toulmin S., (2007), *Los Usos de la Argumentación*, Barcelona, Península.
Van Eemeren F., Grootendorst R., Henkemans F. S., (2006), *Argumentación: análisis, evaluación, presentación*, Buenos Aires, Biblos.

Carlos R. Gutiérrez Rueda
Universidad Autónoma de Tlaxcala
ruedac@hotmail.com

STUDIA METODOLOGICZNE
NR 37 • 2016, 137–153
DOI: 10.14746/sm.2016.37.8

LAURENT DUBOIS

Self-Referential Analogies, Problems Solving and Power Tests

ABSTRACT. This article will focus on particular analogies: self-referential analogies. Self-reference is probably one of the most complex semantical products necessitating minimal initial knowledge. It is also the essential component of mathematical proofs like Gödel's first proof of incompleteness, Russell's paradox of "Set of the sets that do not contain themselves" and of artistic works like Escher and Magritte paintings and drawings. Analogies appear to be an excellent tool to build original, powerful and subtle self-references. Some of these interesting and surprising self-referential analogies can be found in Power Tests. Indeed, Power tests provide an excellent context to develop powerful items with minimal knowledge, particularly by using analogies, one of the simplest structures. The notion of self-reference as expression of the consciousness of its own existence will be developend and illustrated through three-parts analogies, leading to the birth of a new paradigm where classical consciousness appears to have two sisters : infra-consciousness and supra-consciousness. Finally, on the basis of these developments, a classification of levels of abstraction and cognitive abilities related to problems solving will be proposed.

KEYWORDS: self-reference, analogy, power test, logico-divergence, consciousness

1. What is a Power Test?

A Power Test is an IQ test more difficult than a classic IQ test but without a time limit to find the solutions to the items. The main bias in classical IQ tests is the time limit. Because of this time bias, classical IQ tests cannot contain too complicated items. In addition, Power tests are not supervised. The first Power test was created in the Seventies by an American named Ron Hoeflin. He created the Mega test, the "test of the million" intended to serve as an admission test to a very selective high IQ society in

which one must achieve a score of 176 in deviation 16 to be admitted. Remember that the minimum score required to be admitted to the society Mensa, the 1st high IQ society, consisting of more than 100,000 members across the world, is 132 in deviation 16. The most commonly used admission tests in Mensa are the Cattell and the Raven. In all cases, the tests used should be official. The Mega test is not an official test. It has been published in Omni Magazine. The principle of the Power Tests has been relayed in Europe by the Dutch test designer Paul Cooijmans. He created the "Test for genius" and a multitude of other tests. A deficiency of most Power Tests, and of the IQ tests in general, is their cultural bias. The 9I6 test, put online in 2000, is one of the least biased Power Tests and has become a reference test in the so called underground High IQ community.

The 9I6 test is one of the three tests constituting the Power Scale.

Power tests gives the opportunity to experiment complex analogies. Analogy is one of the favorite kinds of items in Power Tests.

2. What is an Analogy ?

In Logic, an analogy is a form of reasoning in which one thing is inferred to be similar to another thing in a certain respect, on the basis of the known similarity between the things in other respects.

The Principle of an analogy is as follows: “correct : incorrect :: true : false”; it must be read as this: false is to true as incorrect is to correct. This is called the “Aristotelian format” of an analogy. In this example, we have a logic of opposition. In modern terminology, the first part “a : b” of the analogy “a : b :: c : d” can be called the “source” and the second part “c : d” the “target”. In the standard modelling, analogical reasoning involves two "objects": the source and the target. The target is supposed to be incomplete and in need for a complete description using the source; for example: “Right : Left :: Dexter : ?”. The target has an existing part S_t (“Dexter” in our example) and a missing part R_t (“?” in our example). We assume that we can isolate a situation of the source S_s (“Right” in our example) which corresponds to a situation of the target part S_t (“Dexter” in our example) and the result of the source R_s (“Left” in our example)

which correspond to the result of the target R_t (“Sinister” in our example). We have B_s, the relation between S_s and R_s, and we want B_t, the same relation (::) between S_t and R_t.

On the basis of this structure, infinite variants are possible.

3. What is an Analogy in Power Tests ?

In a Power Test, an analogy intends to highlight the similarity of the relations between two couples of elements. This is more than a simple relation between elements. In this case, the « common feature » item is used. In analogies, a logical « process » is to be discovered. The same logic applies to both couples.

For the record, the particular context where we discovered interesting and surprising analogies is that of Power IQ Tests. What is the interest of Power-test like analogies ? They constitute an opportunity of evaluating very high cognitive abilities and a particularly stimulating context for innovations.

The following analogies are extracted from the 9I6 Test, the Hyper Test and the Concep-T test, the three Power Tests of the Power Scale.

Question 1:

PI : IQ :: 9I6 : ?

Answer :
PI : IQ :: 9I6 : I79

Here is precisely a variant of the format “a : b :: c : d” where the source and the target are intermingled. Indeed, the “source” relation is the link between PI and 9I6, i.e. a reverse alphanumerical correspondence.

Question :
Chronoscope : Time :: 9I6 : ?

Answer :
Chronoscope : Time :: 9I6 : IQ

Explanation: IQ is measured by the 9I6 test as Time is measured by a Chronoscope.

Question 2:

Analogy : : :: : :: Equation : ?

Answer :

Analogy : : :: : :: Equation : =

Explanation: “=” is to Equation as “: :: :” is to Analogy;
“=” is the operator of an Equation as “: :: :” is the operator of an Analogy.

Question 3:

Nowhere : Now :: Never : ?

Answer:

Nowhere : Now :: Never : Here

Explanation: Here is to Never as Now is to Nowhere.

Question 4:

Before before : Before :: Before after : ?

Answer :

Before before : Before :: Before after : Before

Explanation: The word “Before” is before the word “after” as the word “Before” is before the word “before”.

Question 5:

/ : Fraction ::  : ?

Answer :

Fractal

Fractal describes  as fraction describes /.

These analogies are not very difficult. They are interesting because their resolution requires minimal knowledge. The other analogies (like self-reference analogies) studied in this article are more complex than analogies used in classical IQ tests. We will indeed focus more particularly on « self-references » in analogies. Self-referential analogies are one of the best ways to avoid knowledge and cultural bias. Indeed, in order to reduce the impact of knowledge bias, it is necessary to create items where no other knowledge than that required to understand the words used is necessary.

4. What is a Self-Reference ?

In self-reference, the definition of an object, or entity, applies to the object, entity itself.

In other words, self-reference is the adequacy between the meaning and the being or the expression of something.

Self-reference occurs in natural or formal languages when a sentence, idea or formula refers to itself. The reference may be expressed either directly – through some intermediate sentence or formula – or by means of some encoding. In philosophy, it also refers to the ability of a subject to speak of or refer to itself. It is like having the kind of thought expressed by the first person nominative singular pronoun, the word “I” in English. Indeed, another kind of self-reference is the capacity to refer to oneself. This ability seems to be found in human beings only. If another entity could

express the consciousness of its own existence, we could express in an analogy the existence of similar ontological self-references.

We suggest a typology of three kinds of self-references: syntactical (point 4.1), semantical (4.2) and ontological (4.3) self-references. There is probably no pure syntactic self-reference since a process must be described to highlight or explain the self-reference, but we will classify in syntactic self-references those where only symbols are used.

Let us add that the notion of self-reference is related to self-similarity and recursivity.

4.1. Syntactic Self-References

Syntactic self-references are best illustrated in numerical series.

Here are some of them:

Golomb series

1, 2, 2, 3, 3, 4, 4, 4, 5, 5, 5, 6, 6, 6, 6, 7, 7, 7, 7, 8, 8, 8, 8, 9, 9, 9, 9, 9,…

This series is self-descriptive if it is admitted that spaces between numbers must be read as : There is 1 times the number 1, 2 times 2, 2 times 3, 3 times 4, 3 times 5, 4 times 6, 4 times 7, 4 times 8, 5 times 9…

The « blank » series is self-referential : « ».

Indeed, we have 0 times 0.

Number 1 notation is self-referential.

Indeed, we have 1 times 1.

0 (0 « 1 ») (x-times the following number)

The following series

555554444333221

is self-referential when read as this :

we see 5 « 5 », 4 « 4 », 3 « 3 », 2 « 2 », 1 « 1 », 0 « 0 »

In the same spirit, here is the classical Hilgemeir series:

1 11 21 1211 111221 312211

It is generally read from the second number which is referring to the previous one : I see 1 « 1 », 2 « 1 », 1 « 2 » 1 « 1 », 3 « 1 » 2 « 2 » 1 « 1 », …
This is a complex infinite self-referential series.
If we include all the previous lines in the reading, it gives this :
1 11 31 311311 31131113211321

As a transition to the following chapter devoted to semantical self-references, we may evoke Gödel's first incompleteness theorem. The first of Gödel's proofs of incompleteness in 1931, includes a self-reference as heart of the proof by a « coding » of a sentence making possible the use of the self-reference. If a system S devoted to write proofs proves only true things, and allows writing a sentence G meaning « This sentence cannot be proved in S », then necessarily the sentence G cannot be proved in S, and so G is true. Consequently, S can express true sentences that he cannot prove.

4.2. Semantical Self-References

This sentence is made of the words : « This sentence is made of the words : « … » ».

Question 1:
What question does this question ask ?
Answer :
What question does this question ask ?

Explanation : the question is its own answer.

Question 2:
What is not « clear » in this question ?
Answer :
What is not in this question ?
Sub-Answer :
Clear

Explanation : the answer to the initial question is made of all the words of the sentence but the word « clear ». This answer « What is not in this question ? » is a new question. The answer to this new question is the word removed from the initial question : « clear ». Is it clear ?

4.3. Ontological Self-References

Here we evoke self-reference in its highest power : the ability to express by oneself its own existence. As far as we know, this is the privilege of the human being. But maybe something else has this power – something in human beings, and something that uses human beings to express its own existence.

Before developing some ontological self-references through analogies, it is necessary to put some premises and to draw an interesting conclusion:

❖ The Universe is defined as including anything that exists, has existed, will exist in any way:

- materially or not;
- in any kind of dimension;
- transfinitely if necessary;
- including the largest possible (meta-) structure ;
- This definition is of course a part of the universe.

❖ Necessary apparatus for awareness-consciousness:

- Brain
- Central nervous system
- Senses
- Language

❖ The brain is the only organ aware-conscious of itself.

❖ Material and immaterial beings (Objects and thoughts) are conceived as sets of properties.

❖ Tools used in the proofs
- Inclusion
- Analogy

Proof of self-awareness and self-consciousness of the universe :

- Consciousness-awareness apparatus C is a subset of the human particular being H
- H is a subset of the Universe U
- C is a subset of U (transitivity)

Conclusion 1 : Human brain belongs to and is a way for the universe to be aware-conscious of itself.

Conclusion 2 : The classical semantics must be extended in order to take into account the fact that the brain is the only organ that knows that it exists and that the universe can know that it exists thanks to its « human forms ». Two new personal pronouns must be created :

- « I » that stands for a particular (human or not) form: I know that I exist as L. D.
- « I^I » or « u_I » that stands for the Universe expressing itself through one of its particular forms (Translation: « I^I » stands for ME expressing MYself through one of MY particular forms).
- « i » that stands for the brain as the only organ knowing that it exists; « i » know that i exist and that i am prisoner of a body.

The brain says : « i » am a brain. The human being says « I » am human. The universe says : « I^I » am the universe. So we have three different personal pronouns used by the same entity.

A lot of other consequences are implied by the possibility for the universe to be aware-conscious of itself, but this is the object of other articles.

What is of interest for us here is this : if another entity than the human being can express the consciousness of its own existence, as it seems to be the case, we will be able to express in an analogy the existence of similar ontological self-references.

5. Some Remarkable Self-Referential Analogies

Now it's time to use self-references in analogies.

5.1. Syntactic Self-Referential Analogies

Question 1:
: : : : : : : : ?

Answer :

:: is to :: as : is to :

We have here a simple or static self-reference.

Question 2:
X : Y :: Y : X : Y : X :: X : Y : Y : X :: X : Y : X : Y :: Y : X : : Y : X :: X : Y : X : Y :: Y : X : ?
Answer :
X : Y :: Y : X : Y : X :: X : Y
So the complete analogy is :
X : Y :: Y : X : Y : X :: X : Y : Y : X :: X : Y : X : Y :: Y : X : : Y : X :: X : Y : X : Y :: Y : X : X : Y :: Y : X : Y : X :: X : Y
Here is a simple way to solve this complex item :
Question 2 broken down:
X : Y :: Y : X :
Y : X :: X : Y :
Y : X :: X : Y : X : Y :: Y : X
: :
Y : X :: X : Y : X : Y :: Y : X : ?
Answer :
X : Y :: Y : X : Y : X :: X : Y

5.2. Semantical Self-Referential Analogies

Semantical self-references bring into play the meaning of the words used in the analogy.

Question 1:
Eror : Correct : Error :: ?
Answer :
Incorrect : ?

Explanation : Incorrect is to Error (because Error does not contain an error) as Correct is to Eror (because Eror does contain an error). Eror is self-referential as long as it is admitted to have the meaning of the word « error ».

Question 2:
Analogy : : :: : :: Question : ?
Answer :
?
Explanation: "?" is to Question as ": :: :" is to Analogy.

Here is the self-reference : the symbol of the question in the analogy is the answer to the analogy. We have here a "simple" or "static" self-reference because there is no "mise en abyme".

Question 3:
Repetition : Repetition :: Disappearance : ?
Answer :
A blank « »

Explanation : The word « repetition » is repeated ; the word « disappearance » disappears.

Question 4:
Raga Man. : Anagram. :: Gran Ma A. : ?
Answer :
Raga Man. : Anagram. :: Gran Ma A. : Anagram.

Question 5:
Raga Man : Anagram :: Se quen ce : ?

Answer :
Raga Man : Anagram :: Se quen ce : Sequence

Question 6:
Raga Man : Anagram's Anagram :: Raga Man : Anagram's Anagram :: emordnilap : palindrome : ?

Answer :
Raga Man : Anagram :: Raga Man : Anagram :: emordnilaP : Palindrome : Self-referential Relations
Explanation : Self-referential Relations is to Raga Man : Anagram :: emordnilap : palindrome as Anagram's Anagram is to Raga Man

Question 7:
Whole :Whole : … : : Hole : : : Hole : ?

Answer :

Whole :Whole : … : : Hole : : : Hole :

Explantion: A blank is to "Hole" as the whole analogy is to "Whole"
Both simple or static self-reference (the answer) and dynamical self-reference (the first part of the analogy).

Question 8:

Whole : Whole : … : : Whole : ? : : Whole : ?

In order to understand and solve this analogy, let us consider a more simple case:

Question 8.0 :

Whole : ? :: Whole : ?

Answer :

Step 1:

Whole : Whole : ? :: Whole : ? :: Whole : Whole : ? :: Whole : ?

First we replace the first question mark (reading from left to right), and after that the second question mark with the same elements.

Step 2:

Whole : Whole : Whole : Whole : ? :: Whole : ? :: Whole : Whole : ? :: Whole : ? :: Whole : Whole : Whole : ? :: Whole : ? :: Whole : Whole : ? :: Whole : ? :: Whole : Whole : Whole : ? :: Whole : ? :: Whole : Whole : ? :: Whole : ? :: Whole : Whole : Whole : ? :: Whole : ? :: Whole : Whole : ? :: Whole : ?

.
.
.

The process is infinitely repeated. We have a double «mise en abyme».
At each step, every question mark must be replaced by the entire "sentence" of the previous step. The process is exponential and leads to the building of a fractal analogy.

Now back to question 8:

Whole : Whole : … : : Whole : ? : : Whole : ?

In this version, the initial left question mark has already been replaced by the whole analogy (version 8.0) so that there is a shift between the two parts of the analogy. Now, the two visible question marks must be replaced by the whole analogy such as expressed in question 8, which gives :

Whole : Whole : … : : Whole : Whole : Whole : … : : Whole : ? : : Whole : ? : : Whole : Whole : Whole : … : : Whole : ? : : Whole : ?

Question 9:

Part : Part: Part: Part: (…) :: Whole : ?

Answer :

Part : Part: Part: Part: Part:(…) :: Whole : Part: Part: Part: Part:(…) :: Whole: Part: Part: Part:(…) ::Whole :Part: Part:Part: (…) :: Whole:(…)

Again focus on « parts » and « whole », but in a converse process. The whole analogy, including the "?", is to "Whole" as the part "Part :" of the analogy is to "Part".

The first part of the analogy induces a linear self-reference ; the second part of the analogy induces an exponential self-reference.

In any case, we have a dynamical self-reference : the answer contains the question and consequently the answer. The question mark is an essential element of the non-solved analogy; it is replaced by the answer to the analogy, so it is the key and the generator of the «mise en abyme» process. And we have again a fractal analogy. Fractal analogies are good examples of Logico-Divergent solutions. Let us recall that Logico-Divergence is a standard (logical) process that leads to non-standard (divergent, non expected) solution(s) (conclusion(s), answer(s)).

Let us note the difference between the infinity implied in a potentially infinite series and the infinity of a fractal analogy. The fractal infinity induces a temporal dimension.

5.3. Ontological Self-Referential Analogies

Here the analogy is a way to express self-reference in its other acceptance : the ability for an entity to express its own existence through the personal pronoun « I ».

We have seen that something in the human being (the brain), and something that uses the human being to express its own existence (the universe) know their own existence. Indeed, the human brain is the only organ that knows that it exists. And the universe can know that it exists thanks to its « human part ».

The brain says : « i am a brain ». The human says : « I am human ». The universe says : « I^I am the universe ». So we have three different (voluntarily spelled as they are) personal pronouns used by the same entity.

Expressed in a three-parts analogy, it will give :

Brain : « i am » :: Human : « I am » :: Universe : « I^I am »

« I^I am » is to the universe (consciousness) as « I am » is to the human (consciousness) as « i am » is to the brain (consciousness).

We will call « infra » self-reference the awareness-consciousness of the brain; self-reference the awareness-consciousness of the human being; supra self-reference the awareness-consciousness of the universe. In the same way, we can call « infra » awareness-consciousness the awareness-consciousness of the brain; awareness-consciousness the awareness-consciousness of the human being; supra (or higher, or meta-) awareness-consciousness the awareness-consciousness of the universe.

Higher consciousness is the result of a qualitative jump. Nothing, in human consciousness, the last and most qualitative step in evolution, allows to foresee the occurrence of supra-consciousness, i.e. the consciousness-awareness of MYself as whole. I^I will call Meta-Consciousness or Metaphysical Consciousness the consciousness of MY-self as Whole (entire reality).

This analogy illustrates the birth of a new paradigm, maybe the best example of Logico-Divergence. If confirmed, the discovery of the existence of three existential identities in a same entity constitutes a cognitive, semantic, psychological, logical, physical and metaphysical revolution. Numerous consequences can be drawn from this discovery, and this is the object of other articles.

Conclusion

An analogy can be seen as an inference from one particular (source) to another particular (target), contrary to major inferences like the deduction,

the induction and the abduction, where at least one of the premises or the conclusion is general. An analogy is in itself a weaker form of inference. Now it constitutes the basis necessary for other kind of inferences as it is the first step and the simplest way to highlight relations between elements. And if we combine the principle of the analogy with the process of self-reference, we have seen that it becomes a very powerful tool to create and/or to subsume semantic and conceptual « mise en abyme » and fractals expressed in the Aristotelian format « x : y :: a : b ».

We saw that very interesting self-referential analogies can be found in what is called Power Test (more particularly in the 9I6 test and in the Concep-T test) in a kind of underground community made of people interested in high level solving problems and high performance in cognitive abilities. Some original self-referential analogies were even created for these Power Tests. Analogy appears to be very useful in scientific and artistic problems solving. Power Tests constitute one of the most exciting problem solving contexts. This is why analogies used in them can reveal useful in larger context like science and art, especially when they imply self-references. With conceptual self-references illustrated in three-parts analogies, we have the expressions of highest levels of abstraction where a « qualitative » conceptual jump is necessary in order to understand the solution.

These original self-referential analogies allow to extend the typology of kinds of abstraction and to suggest a classification of the different ways of understanding the solution of a problem. So we suggest a typology of six kinds of cognitive abilities :

- The answer is found without help.
- The answer is understood without explanation.
- The answer is understood with an explanation and without particular mental effort or concentration : it may be the case with self-referential sentences.
- The answer is understood (with or without explanation) with some concentration : it may be the case with numerical series, for example.
- The answer is understood (with or without explanation) with some mental effort : it may be the case with dynamical self-references.

– To be understood, the answer (with or without explanation) need some « qualitative mental jump » : it is the case with problems implying meta-consciousness.

In any case, the solution to a self-referential problem is under the eyes.

Acknowledgements : special thanks to Doctor Laurence Van Bree and to each reviewer for their interesting and useful remarks and suggestions.

Laurent Dubois
Universite Libre de Bruxelles, Belgium
chronoplanet@gmail.com

STUDIA METODOLOGICZNE
NR 37 • 2016, 155–173
DOI: 10.14746/sm.2016.37.9

MAŁGORZATA LEŚNIEWSKA
PIOTR LEŚNIEWSKI

Analogy-Making in Biology. An Essay on the Comparative Spirit

Fate has been kind
to me thus far
(…)
My yen for comparison
might have been taken away

Wisława Szymborska *Among the multitudes*

What is the visible and what is the invisible?

Paracelsus *Paragranum*

ABSTRACT. Analogy-making fulfills many important functions in biology – heuristic, systematizing, explicative, assertive-justifying, illustrative-didactic, although the term 'analogy' is rarely used nowadays. In the paper we present examples of analogy-making in biological sciences and in the teaching of biology.

KEY WORDS: analogy, anomaly, biology, evolution, development, evo-devo

1. Introduction

As noted by Minelli [2009] *the comparative spirit that for a long time had seemed to be lost in many areas of biology seems to have given new life*. In recent years, comparative studies in biology have contributed to many unexpected discoveries, which have, among other things, affected

the development of a new, significant interdisciplinary trend known as evolutionary developmental biology (evo-devo in short).

In the present paper we provide answers to the following questions: what functions does reasoning by analogy play in biology and what is its specificity in this branch of science?

Our paper is just an outline of the issues, as it is impossible given the limited scope of this text to present the vast range of the problems related to the application of reasoning by analogy in biology.

The structure of the paper is as follows. We discuss briefly the role of analogical reasoning in the development of biological sciences and in the teaching of biology. We present the functions of analogy-making in various fields of biology and bionics separately. We also approach the issue of the scope of application of analogical reasoning in biology.

2. Analogies discovered in nature and dynamics of biology

The development of life sciences is largely the history of the formulation of different types of reasoning referring to analogies discovered in nature. It is impossible to imagine life sciences without the systematizing function implemented by these sciences, and the systematizing function – without recognizing the structural similarities between the observed objects. A standard example of systematization in natural sciences is biological classification of living organisms.

As for the substantiation of claims in natural sciences, analogy has a number of complex cognitive functions. There are areas of natural sciences, in which the only possible way of substantiating claims is reasoning by analogy, based on the presentation of the appropriateness of certain relationships between phenomena belonging to the field under investigation and the relationships between the phenomena in another, better known field [Biela, 1989]. For instance, drawing conclusions about the biology of animals in ancient geological epochs on the basis of the knowledge of modern animals (which does not always have to be true) or making inferences about the course of a developmental process in a given group of

animals on the basis of the development of a single species known in this respect (the species *Strigamia maritima* can serve as an example here as this is the only species thus far known in terms of its embryonic development among centipedes from the order Geophilomorpha [Brena, 2014]).

For many reasons, the investigation of the biology of the majority of species is impossible. Therefore only certain, selected species are used in studies – the so-called model organisms. These are species whose breeding and observation are possible and convenient. These organisms, for instance, have short development cycles, and they easily reproduce and develop in breeding conditions. The most famous model species of animals include the fruit fly *Drosophila melanogaster*, the worm *Caenorhabditis elegans* or the mouse *Mus musculus*, model species in the case of plants include, for instance, the thale cress *Arabidopsis thaliana* or the Asian rice *Oryza sativa*, a model amoeba is *Dictyostelium discoideum* [Twyman, 2003; Minelli, 2009]. The observation of life processes of these species, and also – especially in recent years – genetic and molecular studies, provide information that is used by analogy to explain various aspects of the biology of other species, which for different reasons are not available for direct investigations. Obviously, this type of inference should be made with great caution. Many times it has been shown that closely related organisms feature substantial differences, for instance, in terms of their development [Twyman, 2003; Krakauer et al., 2011].

The data on some processes or phenomena obtained experimentally in animals is very frequently used for drawing conclusions about their application in humans. Therefore it is through analogy that conclusions are drawn about the action of drugs, various chemicals, mutagens, teratogenic agents etc. For example, by observing the reactions of organisms and the behavior of animals in space the impact of similar conditions on the human body can be predicted. First – innovative operations before they are carried out in humans are carried out in animals.

Forensic medicine makes use of observations of animal corpses as the basis of knowledge about the processes of decomposition of human corpses, which is extremely helpful in determining the time and circumstances of death [Bajerlein et al., 2011].

Entire fields of biology – such as comparative anatomy and morphology, taxonomy, molecular genetics – make reference to analogical reasoning. Evolutionary and phylogenetic studies also rely on the comparison of the characteristics of different organisms – in search of similarities which provide evidence for affinities between organisms.

Jacob [1993] also emphasizes that: "in order to know an object, none of the analogies by which it is linked to things and other beings should be neglected."

The entire field of science – bionics (biomimetics) – is based on the use of analogy. This interdisciplinary field of science investigates the structure and the principles of the functioning of organisms so that the same or very similar solutions can be applied in technology and architecture – in the design of airplanes, ships, buildings (Figs 1 & 2) etc. Steadman [2008] recalls the concept of *organic analogy* – which means an organism as a model for design.

Fig. 1. The Sagrada Familia – Gaudi's temple in Barcelona. An example of organic architecture, photo by Ewa Malinowska

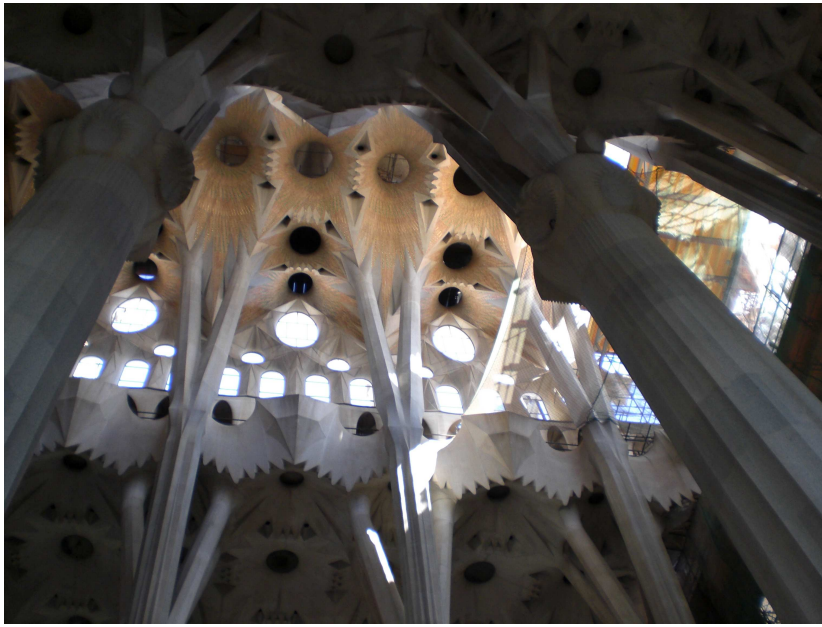


Fig. 2. The Sagrada Familia, Gaudi's temple in Barcelona (interior), photo by Ewa Malinowska

The most accurate imitations of the structure of body organs are used in prosthetics [Kuhlmann, 2011; Rattay, 2011]. "Biomimetics makes use of functional analogies, processes, mechanisms, strategies of information derived from living organisms" [Gruber, 2011]. Some important technology problems in engineering application have been resolved by drawing the inspiration of biological systems [Ren and Li, 2013].

The emergence of a new trend in research – evolutionary developmental biology – was largely due to bold comparisons made despite skeptics convinced of their futility. It was not believed that, for instance, genetic studies of the fruit fly could in any way be useful in the studies of vertebrates, including humans. However, it turned out that there was a big surprise awaiting the skeptics [Carroll, 2005]. Let us quote here a fragment of a great book by Carroll [2005, p. 71]: "The discovery that the same set of

genes control the formation and pattern of body regions and body parts with similar functions (but very different designs) in insects, vertebrates, and other animals has forced a complete rethinking of animal history, the origins of structures and the nature of diversity. Comparative and evolutionary biologists had long assumed that different groups of animals, separated by vast amounts of evolutionary time, were constructed and had evolved by entirely different means. The connection between members of some groups – among the vertebrates, for example, or between vertebrates and other animals with a notochord – was well established. But between flies and humans, or flatworms and sea squirts… no way!"

3. The role of analogy in the teaching of biology

Illustrative analogy or metaphors are used in the teaching process to make students familiar with new, unknown content by means of images or similar aspects of the knowledge they already have. Although it is difficult to imagine teaching biology without providing accurate analogies/metaphors, there are studies that undermine the value of the application of analogy in the teaching process [review of the cases in a study by Venville & Treagust, 1997].

One of the most famous analogies was applied by Darwin [2001] when comparing the process of evolution to a large, branching tree. However, in explaining the mechanism of evolution of the living world – natural selection – he used the analogy of artificial selection made by man in order to get new breeds of domesticated animals and plants. (This comparison is considered a weakness in Darwin's theory [Venville & Treagust, 1997]).

An analogy is often used to explain the evolutionary events in Earth's history, by comparing the history of our planet (approximately 4.6 billion years) to a 24-hour day. This helps make students aware of the time scale and place the events in time, which would otherwise be very difficult to understand. Every second in this model corresponds to tens of thousands of years in real time. One can see that in this perspective, for example, the

first cell formed at around 5:30 A.M., and the last animal ancestor in the line leading to humans emerged at 11:58 P.M. [e.g. Campbell et al., 2012].

Another commonly applied accurate analogy for the description of the respiration process is its comparison with the combustion process (this analogy is derived from A. Lavoisier, the discoverer of the role of oxygen in the combustion process).

Venville & Treagust [1997] showed using many examples that analogies may be able to improve student understanding of some biological concepts, however, they have some constraints, which teachers should be aware of.

4. The role of analogy in classification structures

The word "classification" has two different meanings – it usually means the result of the work of a taxonomist, but it can also refer to the very act of classifying.[1]

Humans classified objects and phenomena by means of generic or collective terms until the time they possessed the ability to communicate using speech. These were probably simple classifications of great importance for the daily life and functioning – such as the division of animals and plants into edible or inedible ones, useful, harmful, dangerous ones etc. [Mayr, 1974].

Classifications in the biological sciences have been known since ancient times. Plato's famous definition of man – "Man is a two-footed, featherless animal" [Laërtius, 1853] – was derived from a classification based (as in the case of any classification) on analogical reasoning.[2] Aristotle is called the *father of biological classification*. [Mayr 1974, p. 72].

Linnaeus (1707–1778) (called the *father of taxonomy*) developed a system of the classification of living organisms, which he described in his famous work *Systema naturae* (first edition in 1735), and its principles are

[1] For the record, it should be noted in passing that the distinction between a given research activity and the result of this activity was at the basis of the systematic distinction between *pragmatic methodology* and *apragmatic methodology* made by Ajdukiewicz.

[2] See [Laërtius 1853: p. 231].

used until today. In this work, he introduced, among others, the principle of binominal nomenclature in biology.

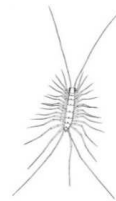
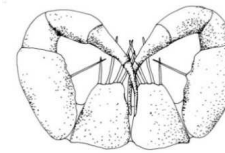
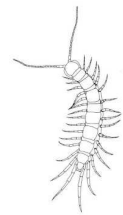
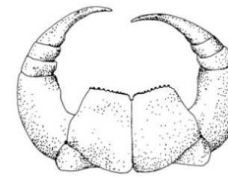
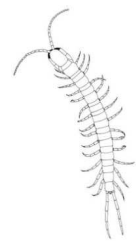
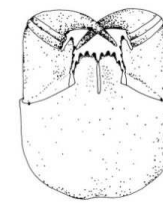
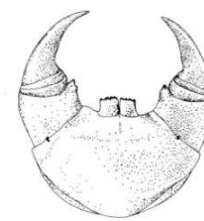
G. Cuvier (1769–1832), known as the *father of comparative anatomy*, in his work *The Animal Kingdom* (French *Le règne animal*, 1817) introduced the classification of the animal world into 4 groups – or as he called them "*embranchements*" – Vertebrata, Mollusca, Articulata and Radiata. The classification was based on four different basic body plans of animals. It was an innovative approach – Linnaeus did not use higher categories than classes [Urbanek, 2007].

An important contribution to the theory of taxonomy was made by K. Darwin (1809–1882), mainly by creating the theoretical foundations of the natural system.

At the turn of the nineteenth and twentieth centuries, the so-called population systematics (new systematics) was developed, which in its classifications, apart from the morphological structure, started taking into account all available data on the biology of organisms.

All the available biological knowledge (molecular data in particular) is also used in the development of contemporary classifications.

An example of a classification is the division of the class of centipedes (Chilopoda) into orders and families (Fig. 3). Centipedes include predatory invertebrate animals, with a segmented body, where each segment of the trunk has one pair of legs. What distinguishes all centipedes from other types of arthropods (Arthropoda) is (among others) the presence of maxillipedes fitted with poison claws containing a venomous gland (Fig. 3). Maxillipedes are considered to be the transformed first pair of legs and they are mainly used to capture their victims and introduce venom into their bodies. All centipedes feature a high number of pairs of legs – from 15 to 191 pairs and this is always an odd number. (In addition to these features, all centipedes have other features in common. However, this will not be discussed here as these features are relevant only for specialists). The living centipedes are classified into five orders: Scutigeromorpha, Lithobiomorpha, Craterostigmomorpha, Scolopendromorpha and Geophilomorpha (Fig. 3). It is obvious that within individual orders animals have certain features in common, and the differences we observe between them allow us to (and lead us to) distinguish lower taxonomic units, such as families, genera and species.

Order/Family	Habitus	Maxillipedes (examples)
Order: Scutigeromorpha Family: Pselliodidae Scutigeridae Scutigerinidae		
Order: Lithobiomorpha Family: Henicopidae Lithobiidae		
Order: Craterostigmomorpha Family: Craterostigmidae		
Order: Scolopendromorpha Family: Cryptopidae Plutoniumidae Scolopendridae Scolopendrinae Scolopocryptopidae		
Order: Geophilomorpha Family: Aphilodontidae Ballophilidae Dignathodontidae Eriphantidae		

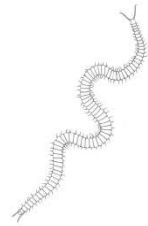
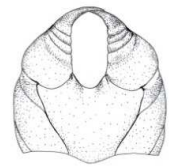
Geophilidae Gonibregmatidae Himantariidae Linotaeniidae Macronicophilidae Mecistocephalidae Neogeophilidae Oryidae Schendylidae		

Fig. 3. Division of the class of centipedes (Chilopoda) into orders and families [according to Bonato at al. 2011], characteristic habitus and an important feature common to the entire class – maxillipedes (the figures were used in the study by Leśniewska 2014)

A special category of specimens within a group of known species is formed by anomalous specimens, i.e. specimens with the morphology featuring deviations from the "normal" structure, which is manifested by the majority of individuals belonging to a given species. (Obviously, distinguishing an anomaly is always based on the knowledge of the norm, which is not always evident). A classification of morphological anomalies based on binominal nomenclature and the Linnaean hierarchical system was introduced by Isidore Saint-Hilaire [1836]. This was an important moment not only in the development of teratology, but also for comparative morphology and developmental biology. This researcher proved that among morphological anomalies found in various animals (particularly in humans) one can see similarities that allow for the distinction of certain categories. As noted by Alberch [1989], the formation of "monsters" is governed by some internal logic and it is common both to anomalous and normal forms. In the context of the application of analogical reasoning, classifications of anomalies deserve special attention. The fact of the existence of similarities among anomalous features in different specimens leads to a deeper understanding of biological processes – in particular developmental processes, especially in the case of species where the study of their development is not yet possible [e.g. Leśniewska et al., 2009]. Figure 4 presents only one type of a trunk anomaly (so-called dorsal mispairing) in a centipede species from the order Geophilomorpha – *Haplophilus subterraneus*.

This example shows that in different specimens the same type of a defect forms during ontogeny. Thus it can be assumed that the mechanism of the defect formation is similar. And this brings us to the possibility of formulating a hypothesis about the likely course of the normal and impaired development in centipedes [Leśniewska et al., 2009].

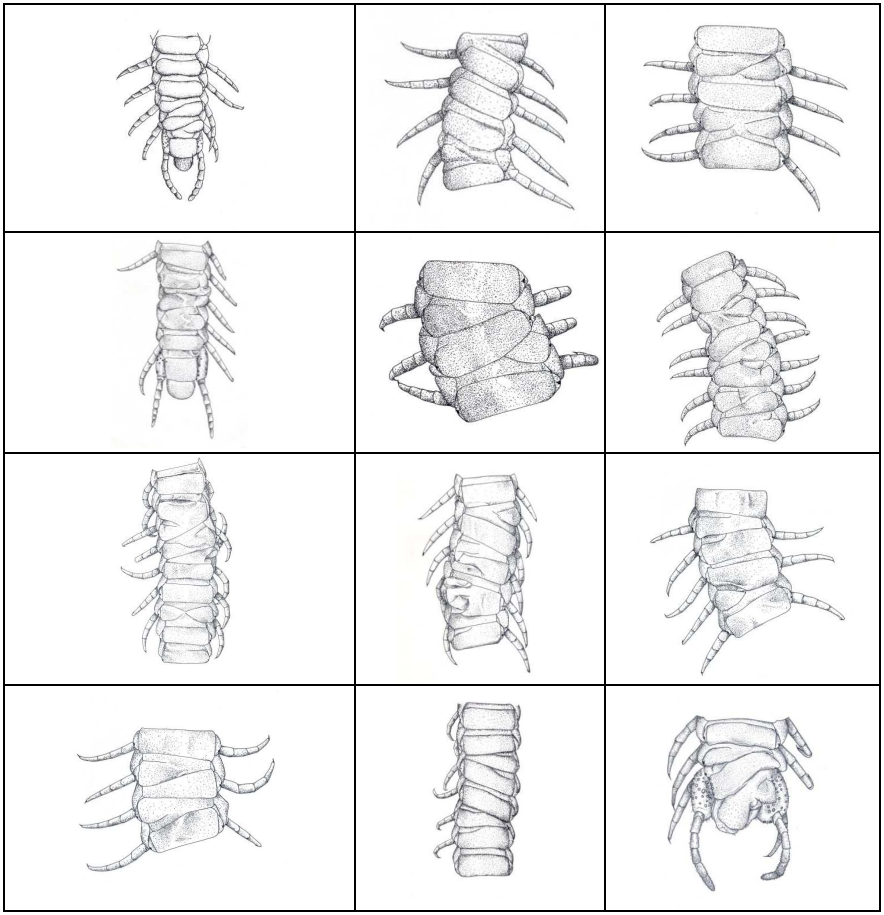


Fig. 4. Diversity of one type of an anomaly, "dorsal mispairing", in specimens of one centipede species – *Haplophilus subterraneus* (some figures were used in the studies by Leśniewska et al. 2009; Leśniewska 2012, 2014)

In the discussion of similarities between anomalies, it is worth emphasizing in passing that it was Quine who said that *the tension between law and anomaly is vital to the progress of science*.[3]

The study of the diversity of organisms combined with their comparison, description and classification has led to an important discovery that not all forms of organisms can be found in nature, and that many of them manifest limited variability. The regular development such as the occurrence of an odd number of leg-bearing segments has already been mentioned. This is a good example of limited variability [Minelli, 2009]. A similar phenomenon can also be observed in the case of anomalies – not all kinds of anomalies that we could imagine exist in nature, and some are found very rarely [Geoffroy, 1863; Alberch, 1989]. An anomaly that develops extremely rarely in centipedes is the occurrence of an even number of leg-bearing segments in a specimen [Leśniewska et al., 2009; Leśniewska, 2012]. This very interesting issue of the causes that underlie the absence of certain forms in nature has been approached by many contemporary biologists, particularly evo-devo researchers [Hall, 1999; McGhee, 2007; Minelli, 2009]. Readers interested in this topic should refer to the literature on the subject. This is only to signal that analogical reasoning is always used at various levels and stages of biological research often leading to some unexpected, new discoveries.

5. The problem of the scope of application of comparisons

Now, let us return to Curvier and the classification of animals he introduced. This scholar believed that animals belonging to different *embranchements* cannot be compared to one another. This issue was the cause of an argument he had with another great comparative anatomist – É. Geoffroy St. Hilaire, who was convinced that all animals are built according to the same plan, and therefore there are no obstacles to carry out comparisons between any species, even of the boldest kind [e.g. Hall,

[3] See [Quine 1987, p. 8].

1999; Minelli, 2009]. He referred to the adequacy existing between parts of the body of different animals as analogy, and he called the system of views related to this issue as the theory of analogy (*Théorie des analogues*) [Urbanek, 2007]. (The term analogy in the sense used by Geoffroy now corresponds to the term homology, see below.)

An important contribution that É. Geoffroy St. Hilaire made was to show that it is possible to compare the structure of animals belonging to separate groups, with the assumption of profound transformations of the structure and functions, while maintaining mutual relations between respective parts [Urbanek, 2007, p. 19]. A comparison of the general plan of the structure of arthropods and vertebrates carried out by É. Geoffroy St. Hilaire (so-called Geoffroy's inversion) has become famous. This scholar tried to show that by simple inversion of an arthropod's body "upside down", the main organs of an arthropod's body are positioned in the same way as in vertebrates. Although the concept by É. Geoffroy St. Hilaire was not commonly approved by his contemporaries, the comparison made by Geoffroy has currently been recalled by evolutionary developmental biology (evo-devo) as it was discovered that morphogenetic signals determining the formation of the ventral or dorsal side in embryos are almost identical in arthropods and vertebrates [De Robertis & Sasai, 1996; Urbanek, 2007; Minelli, 2009]. Thus modern research in molecular biology and evo-devo largely confirmed the approach presented by Étienne Geoffroy Saint-Hilaire. It turned out that animals with most distant affinities have a lot in common. Comparative studies have led to the discovery of the unity of the structure and function of various organisms at different levels and in different aspects – in relation to the cells, tissues, physiology, and development. Recent studies have shown that different organisms are composed largely of the same set of genes. The diversity of forms is due to changes in the regulatory systems governing the expression of these genes [Hall, 1999; Carroll, 2005]. The creative potential of these regulatory systems is due to their combinatorial structure. As stated by Jacob [1997] – all living creatures seem to be formed from the same modules, arranged in different ways. The living world is as if it were a combination of a set of a finite number of elements, which resembles a gigantic puzzle – a result of constant shuffling of genes by evolution.

6. Analogy and homology as fundamental concepts of comparative biology

In biology, the use of analogical reasoning differs from the way in which the concept of "analogy" is applied. The concept of analogy in biology refers to similarities arising from the adaptation of different organisms to similar habitats, and thus similarities related to the function. A concept that is used to define similarities showing the affinity of organisms is the concept of homology.

We owe the clarification of the concepts of analogy and homology in zoology to Richard Owen [1843]. According to this author:

(1) "Analogue" – "A part or organ in one animal which has the same function as another part or organ in a different animal";

(2) "Homologue" – "The same organ in different animals under every variety of form and function."

A classic example of analogous organs are the wings – of an insect and the wing of a bird or a bat (their similarity is related to a similar function). A classic example of homologous organs is the human arm and the wing of a bird (although they look different, their structure is similar, which is due to their affinity).

The introduction of this distinction, and thus making us aware of the existence of two types of similarities, has greatly contributed to the development of comparative biology [Urbanek, 2007, p. 36].

Although the concept of analogy therefore relates only to functional similarities, it has greatly contributed to the development of biology, which Konrad Lorenz talked so beautifully about during a lecture after receiving the Nobel Prize [Lorenz, 1974]. In particular, he pointed out to the role of analogy between the behavior of humans and birds in the theory of animal behavior developed by him.

The basic concept of comparative biology is thus the concept of homology. Owen believed that homology relations can be of three types and he therefore distinguished between *special homology*, *general homology* and *serial homology* [Urbanek, 2007].

A problem associated with the identification of homology features is the issue of homology criteria. According to Owen, the basic criterion was the mutual position of parts, their mutual relationship within a larger structure. This was also in line with the views expressed by É. Geoffroy Saint-Hilaire and his "principe des connextions". Owen attributed a lesser role to embryonic development, while a greater role was attributed by him to the existence of a series of gradual transfers in the structure of organs, from the simplest to the most complex form [Urbanek, 2007].

One would expect that features of similar genetic and developmental background would be homologues, and features that are phylogenetically homologous would show similar genetic and developmental adjustment. In practice, however, this expectation proved to be false, which led to the introduction of the concept of *biological homology* [Wagner, 1996].

In recent years, the development of evo-devo enabled the introduction of new criteria for homology. Currently, homology should not be viewed in an all-or-nothing relationship, but in a combinatorial way [Minelli, 1998, 2009, 2016; Minelli & Fusco, 2013].

It seems that long disputes about the understanding and the criteria for homology have not led to a common view on this issue.

In recent years, one rarely comes across the concept of analogy in literature, while homologies are often described as synapomorphic features [Nelson, 1994].

7. Conclusions

According to Biela [1989], analogy can fulfill the following functions for scientific knowledge:

- heuristic (posing problems and putting forward scientific hypotheses),
- systematizing (distinguishing and organizing elements, conceptual categorization, typologization),
- explicative,
- assertive-justifying,
- illustrative-didactic.

Analogy-making fulfills all these functions in biological sciences, although the term *analogy* is rather rarely used. Significant similarities between organisms, showing their affinity, are referred to as *homology*, and in recent years this concept has been undergoing a transformation.

Inference by analogy is made in natural sciences in order to find answers to questions about the affinity of organisms, the course of evolution, phylogeny, developmental mechanisms, and thus it fulfills the argumentative and heuristic functions. It also has a practical dimension – it is used in bionics, pharmacology and medicine. It fulfills illustrative, educational and systematizing functions. It is a source of creative ideas leading to the development of this field of science.

Finally let us focus on the linguistic aspects. Currently main meanings of the Greek word 'αναλογία' (a feminine noun) are *relation*, *proportion*, and *ratio*. But there is a masculine noun 'αναλογισμός' and it means *fresh calculation*, and *reconsideration*. The word appears for example in the third book of *The History of the Peloponnesian War* (Chapter 36). It seems that the range of applications and the results of the use of analogy-making within the dynamics of biology rather quite aptly reflect the meaning of this Greek word.

Bibliography

Alberch P., (1989), "The logic of monsters: Evidence for internal constraint in development and evolution", *Geobios, mémoire special*, 12, pp. 21–57.

Bajerlein D., Matuszewski S., Konwerski S., (2011), "Insect succession on carrion: seasonality, habitat preference and residency of histerid beetles (Coleoptera: Histeridae) visiting pig carrion exposed in various forest (Western Poland)", *Polish Journal of Ecology*, 59 (4), pp. 787–797.

Biela A., (1989), *Analogia w nauce*, Warszawa, Instytut Wydawniczy Pax. [Polish]

Bonato L., Edgecombe G.D., Zapparoli M., (2011), *Chilopoda – Taxonomic overview*, [in:] Minelli A., [ed.] *The Myriapoda. Treatise on zoology – anatomy, taxonomy, biology*, Volume 1, Leiden, Boston, Brill, pp. 363–443.

Brena C., (2014), "The embryoid development of *Strigamia maritima* and its bearing on post-embryonic segmentation of geophilomorphs centipedes", *Frontiers in Zoology*, 11:58; DOI: 10.1186/s12983-014-0058-9.

Brigandt I., Griffiths P.E., (2007), "The importance of homology for biology and philosophy", *Philosophy & Biology* 22, pp. 633-641. DOI: 10.1007/s10539-007-9094-6

Blumberg M. S., (2009), *Freaks of Nature and What They Tell Us about Development and Evolution*, Oxford/New York, Oxford University Press.

Campbell N.A., Reece J.B., Urry L.A., Cain M. L., Wasserman S.A., Minorsky P. V., Jackson R.B., (2012), *Biologia*, Collective translation from English, Poznań, Dom Wydawniczy Rebis. [Polish]

Carroll S. B., (2005), *Endless Forms Most Beautiful. The New Science of Evo Devo and the Making of the Animal Kingdom*. London-New York: W. W. Norton & Company.

Darwin K., (2001), *O powstawaniu gatunków drogą doboru naturalnego czyli o utrzymaniu się doskonalszych ras w walce o byt*, Translated from English by S. Dickstein and J. Nusbaum, Warszawa, De Agostini Altaya. [Polish]

De Robertis E.M., Sasai Y., (1996), "A common plan for dorsoventral patterning in Bilateria", *Nature* 380, pp. 37−40.

Fusco G., Leśniewska M., Congiu L., Bertorelle G., (2015), "Population Genetic Structure of a Centipede Species with High Levels of Developmental Instability". PLoS ONE 10 (6): e0126245. DOI: 10.1371/journal.pone.0126245.

Geoffroy Saint-Hilaire I., (1836), *Traité de Tératologie*, Vols I-III, Paris, J.-B. Baillière.

Gruber P., (2011), *Biomimetics in Architecture (Architekturbionik)*, [in:] Gruber P., Bruckner D., Hellmich C., Schmiedmayer H-B., Stachelberger H., Gebeshuber I.C. [eds.] *Biomimetics – materials, structures and processes. Examples, ideas and case studies*, Springer, pp. 127–145.

Hall B. K., (1999), *Evolutionary Developmental Biology*, Dordrecht-Boston-London, Kluwer Academic Publishers.

Jacob, F. (1997), *Mysz, mucha i człowiek*, Translated by W. Jadacka, Warszawa, Państwowy Instytu Wydawniczy. [Polish]

Jacob F., (1993), *The Logic of Life. A History of Heredity*, Translated by B. E. Spillmann, New Jersey, Princeton University Press.

Krakauer D.C., Collins J.P., Erwin D., Flack J.C., Fontana W., Laubichler M.D., Prohaska S.J., West G.B., Stadler P.F., (2011), "The challenges and scope of theoretical biology", *Journal of Theoretical Biology*, 276, pp. 269–276.

Kuhlmann D., (2011), *Biomorphism in architecture; Speculations on growth and form*, [in:] Gruber P., Bruckner D., Hellmich C., Schmiedmayer H-B., Stachelberger H., Gebeshuber I. C., [eds]. *Biomimetics – materials, structures and processes. Examples, ideas and case studies*, Springer, pp. 149–174.

Laërtius D., (1853), *The Lives and Opinions of Eminent Philosophers*, Translated by C.D. Yonge, London, H.G. Bohn.

Leśniewska M., Bonato L., Minelli A., Fusco G., (2009), "Trunk anomalies in the centipede *Stigmatogaster subterranea* provide insight into late-embryonic segmentation", *Arthropod Structure & Development* 38, pp. 417–426.

Leśniewska M., (2012), *Morphological anomalies in "Haplophilus subterraneus"* (Shaw, 1794) – (Chilopoda: Geophilomorpha), Poznań, Kontekst Publishing House.

Leśniewska M., (2014), *Fenotyp zakazany. Segmentacja Chilopoda i evo-devo*, Poznań, Kontekst Publishing House. [Polish]

Liddell H.G., Scott R., (1883), *Greek-English Lexicon*. New York: Harper & Bros.

Lorenz K.Z., (1974), "Analogy as a Source of Knowledge", *Science, New Series*, Vol. 185, No. 4147, pp. 229–234.

Mayr E., (1974), *Podstawy systematyki zwierząt*, Translated by J. Proszyński, Warszawa, Państwowe Wydawnictwo Naukowe. [Polish]

McGhee G., (2007), *The Geometry of Evolution. Adaptive Landscapes and Theoretical Morphospaces*, Cambridge, Cambirdge University Press.

Minelli A., (1998), "Molecules, developmental modules and phenotypes: A combinatorial approach to homology", *Molecular Phylogenetics and Evolution* 9, pp. 340–347.

Minelli A., (2009), *Forms of Becoming. The Evolutionary History of Development*, Princeton NJ, Princeton University Press.

Minelli A., (2016), "Tracing homologies in an ever-changing world", *Rivista di estetica*, n. s., n. 62, LVI, pp. 40–55.

Minelli A., Fusco G., (2013). *Homology,* [in:] K. Kampourakis (ed.) *The Philosophy of Biology: A Companion for educators*, Dordrecht, Springer, pp. 289–322.

Nelson G., (1994), *Homology and systematics*, [in:] Hall, B.K. [ed.] *Homology. The hierarchical basis of comparative biology*, Academic Press, pp. 102–151.

Owen R., (1843), *Lectures on the comparative anatomy and physiology of the invertebrate animals, delivered at the Royal College of Surgeons in 1843*, London, Longman, Brown, Green, and Longmans.

Paracelsus, (2008), "Paragranum" [in:] Paracelsus (Theophrastus Bombastus von Hohenheim, 1493–1541), *Essential Theoretical Writings*, A. Weeks (ed.), Leiden/Boston: Brill, pp. 61–295.

Quine W. V., (1987), *Quiddities. An Intermittently Philosophical Dictionary*. Cambridge MA: The Belknap Press.

Rattay F., (2011), *Improving Hearing Performance Using Natural Auditory Coding strategies*, [in:] Gruber P., Bruckner D., Hellmich C., Schmiedmayer H-B., Stachelberger H., Gebeshuber I. C [eds], *Biomimetics – Materials, Structures and Processes. Examples, Ideas and Case Studies*, Springer, pp. 249–260.

Ren L., Li H., (2013), "Functional characteristics of dragonfly wings and its bionic investigation progress", *Science China, Technological Sciences*, 56 (4), pp. 884–897.

Steadman P., (2008), *The Evolution of Designs. Biological Analogy in Architecture and the Applied Arts*, London and New York, Routlege, Taylor & Francis Group.

Szymborska W., (1998), *Poems new and collected 1957–1999*, Translated from the Polish by S. Barańczak and C. Cavanagh, San Diego, A Harvest Book, Harcourt Inc.

Twyman R. M., (2003), *Biologia rozwoju. Krótkie wykłady*, Collective translation edited by J. Klag, Warszawa Wydawnictwo Naukowe PWN.
Urbanek A., (2007), *Jedno istnieje tylko zwierzę… Myśli przewodnie biologii porównawczej*, Muzeum i Instytut Zoologii, Polska Akademia Nauk. [Polish]
Venville G. T., Treagust, D.F., (1997), "Analogies in Biology Education. A Contentious Issue", *The American Biology Teacher*, 59 (3), pp. 282–287.
Wagner G. P., (1996), "Homologues, natural kinds and the evolution of modularity", *American Zoologist* 36, pp. 36–43.

Małgorzata Leśniewska
Department of General Zoology, Adam Mickiewicz University, Poznań, Poland
malgorzata.lesniewska @amu.edu.pl

Piotr Leśniewski
Department of Logic and Methodology of Science, Adam Mickiewicz University, Poznań, Poland
grus@amu.edu.pl

STUDIA METODOLOGICZNE
NR 37 • 2016, 175–200
DOI: 10.14746/sm.2016.37.10

AGATA GOŁAŚ

Analogies between pathologies of personality

ABSTRACT**.** This article aims to discuss personality disorders with particular emphasis on anankastic (obsessive-compulsive) and antisocial personalities, analyzing them from medical, psychological and dialogical perspectives. By seeking analogies between these personality types and indicating similarities and differences in their aetiologies, their pathomechanisms and clinical pictures, the author tries to find the common ground that might become a starting point for reflections on the diagnostic and above all therapeutic perspectives. From these reflections a space emerges for the philosophy of dialogue and possibilities of applying its premises to effective therapeutic work with patients in whom personality disorder causes suffering or impairs or even paralyses their effective functioning.

KEY WORDS: analogy, anankastic, obsessive-compulsive, antisocial, personality disorder, philosophy of dialogue,

1. Introduction

"Better is the enemy of good" – this common saying may be a motto to describe the day to day functioning of an individual with a compulsive-obsessive disorder. This motto determines the standards for their actions and tasks undertaken, at the same time being a specific type of curse that makes functioning in interpersonal relationships difficult by contributing to a considerable level of distress, or even suffering, which they frequently attempt to shut out by taking up a multitude of activities that may overcome this suffering. Thus, a self-perpetuating obsessive vicious circle seems impossible to be broken unless long-term therapy and systematic work on self-development are initiated. However, the one element that seems indispensable is self-control – and what can be done if it is this very

self-control, albeit excessively developed and covering nearly all spheres of functioning, that is the curse for anankastic individuals?

Control and perfectionism – two key words that open doors to a specific universe of meanings, standards and ideals particularly contrast with another personality trait, which is also the breeding ground for a serious psychopathology, namely, an antisocial personality. An individual whose set of personality traits and behaviours fits into a prototype image of an antisocial personality may be prone to dismiss social obligations and to ignore his/her duties and requirements [WHO, 2010]. It might seem that such a functioning model significantly distinguishes an anankastic person from someone who is obsessive-compulsive; nevertheless, some analogies between them may be observed.

The aim of this paper is to identify the key analogies between the obsessive-compulsive and antisocial personality. Is assumed that in the case of an antisocial personality a strongly narcissistic figure is not present, which necessarily should be considered in the case of the personality traits of someone who is highly psychopathic. An attempt will be based on a critical analysis of numerous scientific articles focusing on personality psychopathology, with the classification criteria indicated by the International Statistical Classification of Diseases and Related Health Problems ICD 10 [WHO, 2010] and the Diagnostic and Statistical Manual of Mental Disorders DSM V [APA, 2015], as well as on conclusions made in the course of my own research studies carried out for my master's dissertation under the guidance of Professor Lidia Cierpiałkowska (*Obsessive-compulsive personality and functioning in social relationships*). I will also try to point out how conclusions on personality disorders resonate on the grounds of philosophy – in particular in the dialogical tradition – and numerous questions arising from it.

Obsessive-compulsive personality disorder is one of most prevalent personality pathologies in the general population: with 2.1 – 7.9% [APA, 2015] suffering from it; however, it is speculated that these estimates are excessive as too many diagnoses are made for patients asking for psychological assistance [private data: L. Cierpiałkowska]. Nevertheless, anankastic personality disorder presents itself in a wide range of spectrums, even

more so if we depart from a rigid diagnostic framework, instead concentrating (which I will attempt to do in this paper) on the characterization of personality underlying it, and not on the meticulous checking of the requirements of the psychiatric classification, nor on attaching diagnostic labels.

2. Anankastic personality – basic questions

An anankastic personality may be analyzed in terms of superstructure and development on the anal triad: orderliness, meanness and obstinacy, which Freud considered fundamental in an anankastic personality, also pointing out the role played in its formation by the parents in early childhood [Freud, 1955]. Sigmund Freud was the first to signal that such a specific set of character traits may be a source of many psychological problems of an individual, both in terms of individual psychophysical welfare and efficient functioning in the realm of interpersonal relationships. A thinker who made use of Freud's scientific work, at the same time disputing it, was Erich Fromm, who enriched the portrait of an anankastic with the trait of 'being separated from the world', which is not usually mentioned in the analysis of obsessive-compulsive personality, and which in my opinion is a starting point for understanding the difficulties that anankastic individuals struggle with in social interaction and relationships.

The temptation to ask: why? is difficult to resist since this isolation from the environment is a source of psychological suffering of an anankastic individual, impairing his/her functioning in social aspects of life, when turning away from other people is his/her conscious decision. Conscious – yes, but is it fully volitional, in line with suppressed and marginalized needs and desires? I believe that in the case of an obsessive compulsive individual we deal with not only the anal triad but also with a 'fear triad', which may be analyzed parallel to the cognitive triad of depression as propounded by the forerunner of the cognitive-behavioural approach to psychological disturbances – Aaron Beck [Beck, 1987]. Such might comprise fear of oneself, fear of others and fear of the future – where the fear is understood wider than the negative affective tone – as a state of chronic ten-

sion and psychological discomfort, strengthened by a conviction that the world and people are threatening, which in turn necessitates distrust and continual control. Moreover, an anankastic individual carries out such incessant supervision also on him/herself.

What exactly is such self-control? This single word covers an elaborate, complicated mechanism that tracks not only actions undertaken but also thoughts appearing, which are almost instantaneously classified into two categories, built on the principle of opposition: 'correct-incorrect', 'valuable-worthless'. Such a dichotomist cognitive distortion significantly narrows the perspectives of experiencing the world by obsessive-compulsive individuals as it prevents them from seeing a whole gamut of shades of grey; neither does it allow tolerating any ambiguity or indefiniteness in oneself. Anankastics seem to believe that their own mind should function like a perfectly designed faultless system, working without stopping, similar to an indestructible machine that needs not even a minute of regeneration. Any attempts to apply such prohibitive mechanistic standards to processes occurring in their mind or psyche are bound to end in failure, the more spectacular and painful, the longer the list of expectations and demands has been set by the individual him/herself. 'Nobody is perfect' – another commonsense truth in everyday discourse is completely foreign to obsessive-compulsive individuals. The compulsion to be perfect in nearly every activity undertaken hinders their execution to a lesser or higher degree as the individual focuses on persevering in their contemplation of what might go wrong, at which point of their minutely described plan an imprecision may creep in, or more importantly, how such 'faulty performance' may affect the judgment passed by people of importance and by the individuals themselves. And just as in the case of the former decisive body the evaluation is frequently positive to anankastic's genuine (?) surprise, (obsessive-compulsive individuals often focus their professional or scientific interests on areas at which they are talented and good), in the case of judge number two – it is unequivocally negative. An anankastic is the most ruthless judge of him/herself, with an incredible ability of nit-picking, at finding minute shortcomings that may serve as a starting point for extensive criticism of his/her ego, sometimes verging on self-devaluation or

self-abasement. Thus, this 'chief justice' accompanies an anankastic day by day, following his/her every step, sabotaging any attempt that might bring relief to their restless mind, which gradually but inevitably burns in the blaze of subjectively imposed standards and expectations. All this sounds terribly depressing, but in my view it is adequate to the volume of psychological suffering that an anankastic has to deal with.

Observed from outside, an obsessive-compulsive individual may be doing quite well in life, both in their professional life and in family roles, or even in the field of hobbies. However, how far this 'fulfillment' gives him/her genuine profound satisfaction and is a source of positive emotions such as joy, excitement, satisfaction, and to what extent is it just checking items on the "to do" list? Is open to question and I tend to think that the latter is true. Obsessive-compulsive individuals are so much lost in getting tasks done, plans carried out and standards required, that they lose sight of the essence of activities that are supposed to be relaxing and entertaining, forgetting the experience of pleasure. Their satisfaction is temporary, promptly giving way to a new goal to be set, a new challenge to overcome. In a broader perspective – the perspective of the philosophical problem of the selection and implementation of the strategy of life – we should consider the following question: how is it possible to live like this? The answer to this question is: yes, it is possible. Moreover, obsessive-compulsive individuals tend to think that their lifestyle is the only model possible and they would like to make it a standard for other people. Hence, anankastics have no difficulty in giving others a quick, unsparing evaluation, running along the lines of the aforementioned black-and-white scenario: you are either (at least) as good as I am, or you are nothing. I may present this evaluation in a slightly idealized form, but, nevertheless, such extreme elements of the cognitive system are numerous when we delve deeper and deeper into the hierarchy of the convictions and scheme of things in the minds of obsessive-compulsive individuals. According to theorists of cognitive-behavioural psychology [Beck, Freeman, Davis, 2015] in the mind of an anankastic an elaborate system of precepts, bans and attitudes compensates for a deeply hidden, yet continually present, key conviction about his/her helplessness, vulnerability, incompetence and

unworthiness of love. Such a set of convictions shapes what may be perceived as the peremptory unquestionable automatic thoughts of an obsessive-compulsive individual that serve as guidelines for their behaviours and actions as well as those expected from others. Characteristic strategies are the strategies of responsibility and systematicity; on the other hand, spontaneity and playfulness are severely underdeveloped [Purdon, Clark, 1999].

3. Anankastic personality: an alternative approach

Not willing to limit myself only to a single research tradition in psychology in the description of an obsessive-compulsive personality, I will use observations made by major psychological theories.

It was the aforementioned Sigmund Freud who laid foundations for the psychodynamic analysis of obsessive-compulsive personality, where the role of defence mechanisms in the course of the formation and upholding of this psychopathology is emphasized. In anankastic personalities the most frequently voiced mechanisms are: intellectualization, reaction formation, displacement and isolation of affect. Their common feature is that they are to protect an individual from emotions causing distress and suffering, to provide apparently rational justification of their behaviour towards others and towards themselves, and also to channel in any way their needs and impulses that are meticulously displaced from their consciousness.

A psychodynamic approach that I would like to debate is the theory of levels of personality organization by Otto Kernberg [Kernberg, Caligor, 1996]. According to its premises the author situates personality disorders on the continuum of levels of personality organizations, assigning each of them a definite spot, along with a whole range of traits typical to it. An obsessive-compulsive personality is located at the top of this hierarchy, identical with functioning at the neurotic level, or the only slightly disturbed one. I hope that in the light of conclusions made so far in this article an observation is inevitable that the functioning of an anankastic is distant from what might be called ‘undisturbed’. It is obvious that an obsessive-

compulsive individual copes well in everyday struggles with the world, and distress accompanying that person does not necessarily have to be significantly intensified. One must not forget, however, that there are situations when an anankastic's psychological suffering is so pronounced that not only are they paralyzed in daily routines or in interpersonal relationships, but also the need to deal with themselves becomes a source of severe emotional pain. Therefore, I can relate better to the views of Nancy McWilliams [McWilliams, Milska-Wrzosińska, Pałynyczko-Ćwiklińska, 2015] who opts for an opinion that each personality disorder should be analyzed across the entire spectrum of personality organization levels. Then it would be possible to characterize an obsessive-compulsive individual who does not perform well in life, in keeping with the premises of this theory, by means of, say, low borderline organization. "The distance between extreme obsession and delusion is not great" – I believe that these words by McWilliams aptly justify adapting such a non-determinist approach to the theory of levels of personality organization.

A sphere of particular interest and that still remains largely unexplored is the sphere of interpersonal relationships. A starting point for deliberations in this area might be to outline another psychological theory, i.e. interpersonal approach, and to map out an image of an anankastic individual in line with its premises. It clearly distinguishes two separate areas of interpersonal relations: the dimension of task performance and the dimension of proximity. And it is right here that problems start for an obsessive-compulsive individual – by entering into interpersonal relations they confuse both areas, which must not be regarded as an attempt at reconciling them and creating a relationship on a multidimensional platform, but rather as a failure at distinguishing between them due to their proximity and due to the fact that everyone is seen through the lens of task performance. Why does it happen that an anankastic individual is not able to suspend his/her desire to execute omnipotent control even in the face of the partnership and intimacy that constitute the essence of close interpersonal relations? In the analysis of this issue theorists of the interpersonal approach trace back this relational disorder that anankastic individuals face to parental attitudes in early childhood, characterized by excessive control over the child on the

one hand, and on the other – by lack of appreciation of its achievements and successes. Such a combination of effects leads directly to the creation in the child of a conviction that only by a relentless pursuit of perfection, by moving closer to an unattainable ideal, by completing most accurately any tasks or expectations may that child prove their worth, and deserve interest, approval and love. Such a distorted vision of oneself and of one's own place in the world becomes more pronounced as the child develops, leading to an 'adult' obsessive-compulsive personality, enclosed in the casing of precepts, bans and demands [Millon, Davis, 2015].

In the search for the origins of the development of obsessive-compulsive traits in an individual one may refer, after Millon and Davis, to attachment theory, which first and foremost attempts to find sense in the compulsive behaviours of obsessive individuals on relational grounds. By his/her actions an anankastic tries to earn the interest and approval of people around them, which stems from his/her conviction that he/she, as a worthless person, does not deserve them. Followers of attachment theory are convinced that obsessive-compulsive individuals may represent each of the four classical attachment patterns (secure, anxious-resistant ambivalent, anxious-avoidant, disorganized); this in a way supports my view about the necessity to analyze the characteristics and functioning of obsessive-compulsive individuals across the entire continuum of personality organization. Through such a perspective on anankastics it is possible to perceive a number of identities that cannot be simply ascribed to only one category of psychological constructs (defined organization level, single attachment pattern). A trait that most certainly can be identified as common for a number of obsessive-compulsive personality 'varieties' is an instrumental approach to other people, treating them like minute cogs in a machine designed to put their ambitious plans and goals into action.

I focused on such instrumental attitude towards other people in the course of work on my master's dissertation – I wondered (and still do) where such a strong aversion to being with other people originates, especially in situations when the interaction is to be of a character completely different, not instrumental nor professional. I will leave this question unanswered for now, returning to it later on in the article.

It is worth referring again to the work of Millon, this time in the bio-psychosocial and evolutional context that may shed a different light on the specificity of the obsessive-compulsive personality. In the process of constructing his vision of anankastics, he makes the word "contradictions" a notion that may be regarded as central to the dilemmas obsessive-compulsive individuals are caught in [Davis, 1999]. It is particularly manifest in the domain of proximity and dominance – an anankastic individual oscillates between getting closer to people and engaging in close relations with them, and complete isolation and avoidance of any interpersonal involvement; frequently this conflict is branded with a tendency to obedience on the one hand, and the desire for rebellion on the other. In order to control the frustration stemming from the conflict of the two opposing tendencies, an obsessive-compulsive individual engages in the execution of duties and standards, thus pushing aside and stifling the emotions wracking within.

I have already mentioned the manner in which family and environment factors may contribute to the formation of the traits that determine a person's obsessive-compulsive functioning. In order to present a complete multidimensional picture of possible influences, biological conditioning must also be mentioned. Cloninger [Cloninger, Svrakic, Przybeck, 1993] points this out very accurately in his neurobiological concept of the temperament and personality. By linking temperamental factors with the activity of certain defined neurotransmitters, he distinguishes their specific triad, unique for various personality types, which for the obsessive-compulsive personality is as follows: pronounced harm avoidance, limited reward dependence and limited novelty seeking.

So far, very few researchers have been willing to study an anankastic personality, and I can only speculate why this is so. However, a premise that removes some of the mystery of the obsessive-compulsive personality, making it quite common, is the conviction that an anankastic individual does well in the world, efficiently working in their chosen area, conscientiously executing tasks and duties imposed on them. Indeed, this may often seem to be the case; however, this adaptability to functioning in a given environment does not preclude the considerable psychological suffering

that obsessive-compulsive individuals grapple with, and which remains unseen to the outside world, enchanted with their intellectual efficiency, good organization and conscientiousness. If, from the perspective of a neutral observer it is difficult to notice any abnormalities, any departures from the norm in the lifestyles and behaviour of an obsessive-compulsive person, where should one seek the origin of the fear, tension and discomfort that invariably accompany an obsessive-compulsive individual? Scant attempts at finding an answer to this intriguing question can be organized into two trends: one concentrating on cognitive deficits, and the other focusing on social deficits. The former area was studied by Aycicegi-Dinn, Dinn and Caldwell-Harris [2009]. The results they obtained from studies on tasks involving working memory, and perceptive and executive processes, made the researchers propose a hypothesis about a compensating role that a whole range of strategies play towards executive deficits in obsessive-compulsive individuals: perfectionism, pedantry, systematic nature, meticulous planning. Their results demonstrate again that a specific anankastic behaviour may play a variety of roles, far more distant from the mere execution of everyday tasks and duties. From a psychodynamic perspective they were analyzed as defence mechanisms protecting from undesired emotions; from a cognitive viewpoint they were thoughts and behaviour schemata formed on the basis of conditioning convictions; and finally, from a neurobiological perspective they were compensations for disorganized cognitive processes.

Studying such a tight network of defence mechanisms, and compensation and remedial strategies that an obsessive-compulsive individual has built, evokes an inevitable thought: is it all really necessary? As it is impossible to step into an anankastic individual's shoes, the answer will always be incomplete, yet it is sufficient to firmly conclude: "yes, they are indispensable". Gallagher et al. [2013] showed in their studies how intolerable for obsessive-compulsive individuals are situations that carry any amount of unpredictability and indefiniteness, how much fear and distress they bring. An anankastic persistently seeks information to fill even a minimal gap in knowledge to make a situation ahead as clear and straightforward as possible. A particular type of appeasement is felt when

this information comes from a person they admire and respect, who is a role model for them, and an authority. However, even in such a situation, not everything is as simple – on the one hand appeasement, on the other, however, a challenge to come even closer to the master and face up to the challenge of his very presence. Analyzing the functioning of obsessive-compulsive individuals in a multitude of spheres, I cannot overcome the impression that they possess a specific knack of getting entangled in various vicious circles in their minds, and thoughts and ideas formulated in them interact with the environment instead of being corrected and directed onto a more adaptive path and thus become self-perpetuating.

In light of the proposal of Skodol et al. [2002], an obsessive-compulsive personality may be analyzed on two planes: domination – submission, and affiliation – separation. This perspective becomes more significant if we undertake to understand the specifics of the functioning of anankastic individuals in social relations that as part of a professional task involve the creation of social bonds. A prospect of collaboration, delegating tasks, or considering other people's opinions is quite a challenge and brings with it a large amount of discomfort that may result in chronic stress, tension and anxiety, but may also diminish the efficiency and quality of tasks executed. Obsessive-compulsive individuals feel best in situations in which they are 'lord and master' for themselves, and the many actions they are to perform can be carried out at their own speed, according to their reformulated guidelines by putting their meticulously prepared plans into action. Any departures from them, obstacles or difficulties, may give rise to interpersonal conflicts with individuals marked as 'distractors' and may result in negative affective states. What is important, the greatest difficulty lies not in the fear of an inadequate execution of a task by a potential co-worker, but in the very fact of delegating tasks to him/her, as well as the risk that he/she may want to carry them out in a manner different from the one chosen by the anankastic, and which he deems to be the only proper and right way in a given situation. Thus, we arrive at the heart of the dilemma that anankastic individuals face in nearly every situation in which they have to consider many perspectives – take into account opinions that are different from theirs – as for obsessive-compulsive individuals

this a major flaw imposed on their methodically built, subjective vision of the world, impossible to tolerate and at least intensely dysphoric. A key conviction that surfaces then is not: "I would do it better" but "you ruined the perfect harmony of my ideally constructed world" (though the former may also be prevalent).

In light of the considerations above, what is puzzling is the efficient functioning of obsessive-compulsive individuals when they are given tasks along with a set of requirements and standards they should meet. Why should they comply with rules that are not their own rules? The most likely explanation is that anankastic individuals manoeuvre their own guidelines, incorporating those rules in their subjective system, identifying with them and taking them as their own. Such an explanation sheds light on a phenomenal ability of obsessive-compulsive individuals to maximally plan the meticulous and punctilious execution of professional duties, making them ideal candidates for the title of 'employee of the month' or 'leading researcher'. Additionally, a cognitive dichotomy may be observed in professional spheres of obsessive-compulsive individuals – in contacts with persons deemed by them as authorities, they behave in a meek, consensual, even humble manner, whereas people who in their opinion are lower in professional hierarchy are treated in an indulgent, dismissive or even disparaging way. To justify such polarized attitudes towards other persons and their indisputable adequacy, both in terms of flattery towards authorities and devaluation towards subordinates, obsessive-compulsive individuals can give a series of rationalizing arguments.

What happens in the world of obsessive-compulsive individuals when they leave the office, finish the last sentence in a report, or complete their daily professional duties? Here the drama starts – how to fill the pervasive void when they run out of opportunities of filling it with tight meshes of professional duties and self-development demands? Becoming lost in professional duties, designating their life almost entirely to them, necessarily limits the time obsessive-compulsive individuals may devote to other spheres of life. Even if, by coincidence or by means of more socially directed measures, they have somehow managed to make a circle of acquaintances with whom they have kept moderately systematic, mutually

satisfying contact, then as a result of the solidification of obsessive-compulsive elements of their personality they gradually lose them. Very often they only notice that the space around them becomes more and more empty when they have nobody around to share their concerns and joys with. And those joys also gradually dwindle as separating themselves from other people anankastic individuals lose one of the most crucial sources of joy and fulfilment – sincere, close relations with other human beings. When the feeling of loneliness finally forces its way into their conscience, it attacks with a tremendous force, causing acute suffering as well as feverish attempts at stifling it. They try to restore calm to their mind by the only subjectively available means: even more rapid involvement in professional duties, or turn to substances. Anything, as long as they do not think, as long as their restless mind gets a moment of rest, because they cannot just turn away from it saying; 'I don't feel like talking to you anymore'. An anankastic individual in decompensation is an inmate in the strictest of prisons – their own psyche.

The above reflections depict a rich if somewhat sombre palette of colours. And that is my intention – to show the entire spectrum of concerns of obsessive-compulsive individuals, and primarily emphasise the importance of administering proper therapeutic care. This care does not have to be synonymous with psychotherapy as such effective therapeutic effect can be obtained by means of warm relations with another person, well-wishing, patient, intent on listening and being there even if the anankastic individual may react with aversion to such social/friendly endeavours. An ambivalent or even hostile reaction should not be surprising if we realize the intensity of fear present in obsessive-compulsive individuals in situations demanding interpersonal involvement. In contacts with another human being, a whole range of anankastic concerns and fears comes to the surface – fear of maladjustment, incompetence, inadequacy, of being not good enough. This situation becomes even more unbearable as the interpersonal sphere comprises a huge dose of unpredictability, forcing the obsessive-compulsive individual to tolerate its indefiniteness and undertake the risk of relying not only on him/herself. To the anankastic, this risk becomes too big and so it is very infrequently, if ever, taken. And the longer the separa-

tion from people, the longer the escape to their small private world, the deeper the fear of becoming involved in a relation up to the moment when the obsessive-compulsive individual concludes that he/she is fed up with being with him/herself. If, however, an anankastic individual, despite their internal fears, takes the risk of interaction that results in a rejection by the potential partner, then this will confirm and strengthen their negative conviction about themselves in relation to the world and its rules, leaving no space for any spontaneous changes in subsequent experiences and relations.

Research studies conducted in the area of personality unequivocally characterize the obsessive-compulsive personality as one of the most fixated thought patterns and action models which, when activated, frequently gives rise to results opposite to those planned – instead of improving functioning it considerably hinders it. Moreover, obsessive-compulsive individuals are convinced that their own system of schemata should be the only one commonly in force, and any individuals whose behaviour departs in any way from it, especially when it may conflict with the interests of the anankastic himself, irritate them. He/she will also be the first one to criticize, giving admonishments and instructions, pointing out any shortcomings or errors. Such a peremptory attitude of putting oneself on the pedestal of infallible authority and expertise makes all contacts with the obsessive-compulsive individual burdensome, and discourages interaction from a partner, effectively limiting the perspective of engaging in a closer relation. Such social reluctance does not surprise – who would think (even if they had sufficient perseverance to penetrate it) that behind this know-all façade hides a fragile, insecure person, craving proximity and acceptance? [Hopwood, Thomas, Markon, Wright, Krueger, 2012].

Thus, we slowly approach the focus of my research interests, namely, a motivational system of obsessive-compulsive individuals with emphasis on their motives in the interpersonal sphere. The explanation why it happens that obsessive-compulsive individuals, seemingly knowingly and voluntarily, renounce any attempts at establishing close interpersonal relations hopefully emerges clearly enough against the backdrop of the analysis of fear overflowing them in contacts with others, as analyzed above.

What remains to be determined is the sphere of their needs, as frustration is an inevitable consequence of the rejection of interpersonal relations. A profound desire to be with other human beings accompanies obsessive-compulsive individuals incessantly, the only difference being in the thickness and composition of the mask with which they try to cover it. Hence, while observing anankastic behaviour, we are prone to conclude that, to put it colloquially, they do not need relations with other people to be happy, and that professional contacts and professional activities are a sufficient substitute for social and private life. And this is by no means so. Affiliation needs are an inherent element of obsessive-compulsive personality, however strongly such individuals would protest. Here, we can pinpoint the fundamental difference that might serve as a demarcation line to separate the anankastic from the antisocial personality, which will be characterized below – in the anankastic affiliation needs are powerfully present, if stifled, whereas in an antisocial individual we may venture to state that such needs are originally nonexistent. This motivational discrepancy is a key aspect that distinguishes planned therapeutic procedures for both types of personalities – the basic problems that constitute them are emphatically different, despite some superficial functional similarities.

If antisocial individuals do not display the need for contacts with others, is it then necessary, or even to go a step further, does the therapist have the right, to take any measures to create such a motivation in them?

4. Models of antisocial personality

Let us first analyze in closer detail the specificity of antisocial personality, both in terms of the character traits they possess, and the method of functioning in their environment and within their own psyche.

The term ‘antisocial personality’ is frequently (and erroneously) used interchangeably with the notion of ‘psychopath’ – however, they are not identical, even if their defining elements overlap in some aspects, as they are type-specific. It may also happen that a person displays character traits that describe him/her as both antisocial and psychopathic. It is also possi-

ble that an individual displays beside common traits decidedly more antisocial, or more psychopathic traits, then one dominant personality pattern is analyzed. This distinction is crucial for the idea behind this paper – I would like to outline key analogies between obsessive-compulsive and antisocial personalities, assuming that the antisocial model does not possess a heavily narcissist trait that would have be taken into account while analyzing heavily psychopathic personalities (which would complicate further a comparison and indication of differences and similarities to the anankastic personality).

The first idea that surfaces while considering the antisocial individual is a conclusion that 'he/she disregards everyone and everything'. This commonplace social conviction is not distant from the actual image of an antisocial individual, and certainly may serve as a starting point for a closer look at his/her functioning. There is no doubt that the last thing they care about are the feelings and needs of other people. An antisocial individual not only dismisses and disrespects them, they appear to be unaware of their existence. If we were to ask them: 'Has it ever occurred to you that s/he might have felt humiliated and saddened by your behaviour?', with all likelihood we can expect answers along these lines: 'being humiliated, sadness – do such emotions exist?'. This example may sound slightly trivial, yet it illustrates well what disturbances we have to deal with in antisocial individuals. However, we have to exercise caution and scientific alertness to avoid falling into the trap of analyzing the behaviour of antisocial individuals only in terms of illegal deeds or clearly infringing another person's good (both material and psychological). It sometimes happens that antisocial individuals commit criminal acts, clearly trespassing the moral-legal order, yet just as frequently, they carry out their egocentric-manipulative acts 'in white gloves', sometimes leaving their victim unaware of being used and cheated. Similarly, one should not expect an antisocial individual to feel any remorse, guilt or shame as a result of their wickedness – these emotions are totally inaccessible to them; the belief that their deed was improper may be only activated by means of instrumental conditioning (mechanism punishment – reward), that will surprisingly quickly be obliterated (regardless of the severity of the punishment). Situa-

tions that are expected to release 'self-critical' emotions in antisocial individuals unleash intense aggression and hostility that frequently give rise to attacks, either verbal, emotional or physical towards a person seen as the source of frustration. Another human being is perceived as a perfect target on which to place the causes of all negative incidents, undesired affective states and thoughts – 'guilt is in everyone else but not in me'. Such a viewpoint makes an antisocial individual unable to learn from his/her experiences, or peacefully finalize conflicts or modify their attitude in consequence of reflections made in contacts with other people. The word 'reflection' seems to be another word absent in the vocabulary of antisocial individuals – every event in their life is included in their personal autobiography without drawing conclusions or analysis of possible mistakes or pondering on what would be worth changing in their acts. Planning as such, however, is not entirely foreign to them; on the contrary, they are masters of intrigue and conspiracies, yet it is purely mechanical, not touching on the sphere of meaning and sense that we would like to find in human actions.

Studying the image of antisocial individuals against the criteria set forth in ICD 10, of particular interest is the point which directly mentions the manner in which they function in interpersonal relations – it focuses not only on the inability of upholding permanent bonds with other people, but also (and presumably above all) on the lack of difficulties in establishing them. What is it that makes antisocial individuals gain the trust of another person, establish a close relation with them and then quickly lose it? It is worth quoting here the psychopathy concept described by Robert Hare [2008]. It distinguishes two factors that constitute the psychopathic personality: the first one concerns interpersonal and emotional attitudes towards the world and style of verbal communication, the other characterizes behaviours marked by impulsiveness, ruthlessness and antisocial traits. The first factor comprises a set of features that are prerequisite for the superficial 'interpersonal attractiveness' of an antisocial individual – personal charm, eloquence supported by excessive self-esteem and readiness to use manipulation and lies – they all serve to build an image of a perfect companion of fun and conversation that no one would suspect of being devoid

of any moral principles, a ruthless exploiter and manipulator (and such labels are frequently justified when the extent of social harm an antisocial individual inflicts is taken into account). Seduced by a friendly aura displayed by the antisocial person, an interaction partner begins only later to notice flaws in this beautiful, yet profoundly false, portrait of his/her antisocial companion; this often happens after he/she has fallen prey to their cunning egotistic actions.

A feature that may cause considerable anxiety in interaction with an antisocial individual is a penetrating emotional cold that emanates from them. The emotions they appear to display are only ineptly placed masks, yet alluring and promoting contacts due to their expressiveness and effectiveness. Anger has a privileged role in the affective system of an antisocial individual, and it is displayed across the entire spectrum of intensity – from subtle vexation and irritation to spectacular outbursts of uncontrolled fury.

In order to illustrate in a most complex way the multiplicity of masks an antisocial personality may put on towards an individual, and any additional typical characteristics, it is worth referring to the typology presented by Millon and Davis [2005]. They singled out five types of antisocial personality in view of traits characteristic for other personality disorders. A 'greedy' type is a 'pure' antisocial model, whose representative holds a belief of being victimised by the world, and that justifies and obliges him/her to show predatory, envious and greedy behaviours. A type that 'protects his own reputation' seeks recognition in other people's eyes, in which he/she wants to admire himself very much like the mythical Narcissus (and therefore this type is considered to be a combination of antisocial and narcissist personalities), watchful for any signals of danger and ready to engage in violent actions to defend him/herself (or rather the image he/she is trying to create). Another type, enriched with 'histrionic' traits, is a 'risk-taking' type, who gets involved in dangerous situations with consequences that are difficult to predict or control. An admixture of schizoid and avoidant personality defines a 'nomadic' type – like the 'greedy' type, this type puts himself in the position of a victim, this time by a fate that has damned him/her and made him/her a social outcast.

Finally, there is the 'hostile' type with a sadistic-paranoid trait – filled with obstinacy, malice and cruelty. It is puzzling that researchers did not try to single out a type that would compile antisocial and obsessive-compulsive traits. It is apparent that such a combination is not rare, which is also evident in my studies.

Before moving on to collating and comparing the image of obsessive-compulsive and antisocial personalities I will attempt to demonstrate, similarly to characterizing an anankastic personality, possible causes of the formation of this personality pathology. Current psychological knowledge usually sees the causes for the development of antisocial personality in a number of biological determinants, especially damage of the brain in specific locations [after Pastwa-Wojciechowska, 2014]. Researchers are primarily interested in abnormalities in the frontal lobe, prefrontal cortex, temporal lobes and amygdaloid body – dysfunctions in any of these areas may contribute to the appearance of psychopathological symptoms as presented by antisocials, especially in their behaviour. Worth mentioning here is also a psychodynamic concept, as it is close to the common understanding of antisocial behaviours – as a result of an incomplete education and impaired superego functioning (which here may be understood as conscience), and excessive development of the aggressive self (here identical with an egotistic, self-centred personality).

5. Analogies between types of personality

Obsessive-compulsive and antisocial personalities. A perfectionist committed to control and observation of rules, and a manipulator absorbed in the chaos of his own unpredictability and impulsiveness, with no moral principles or self-reflection. Is it worth the effort of trying to find any common denominators in these two, apparently completely different personalities? I believe that it is, and will try to prove it.

The first difference between compulsive-obsessives and antisocials is apparent in their first contacts. Both the former and the latter treat a partner with whom they are in a relationship with in a cold, mistrustful, sometimes

patronizing manner, with a considerable amount of reserve and aloofness. The interlocutor may have an impression that the anankastic treats him/her with indulgence and levity, as if by definition what he has to say does have any significance or value. Obviously, this information is not conveyed directly – not to respect the well-being of the interlocutor, but to protect his/her own image, which might become tarnished if he/she allowed himself an action that might be deemed impolite. An open message is not indispensable, though – his entire posture conveys this attitude and judgement of the other person. And since this judgement in most cases is decidedly negative, in this relation an obsessive's partner feels inferior, incompetent, briefly – stupid. It is worth noting that this situation may look diametrically opposite in interaction with a person considered to be an authority to the anankastic/antisocial, or someone who may in a way contribute to the anankastic's well-being – then a whole range of ingratiating, flattering or self-presenting behaviours appears, all with the intention of presenting himself/herself in the best possible light and to improve the chances for the approval of this 'important person'. This characteristic may seem somewhat extreme, the more so that the anankastic/antisocial possesses an amazing skill of subtly manipulating his interlocutor in an almost undetected way; however, the intention of such interpersonal behaviour is clearly visible.

Another analogy that can be observed between obsessive-compulsives and antisocials is in the sphere of oneself, which is a belief in their unusual competencies and abilities that they should develop to reach perfection, at the same time expecting those around themselves to confirm that they are noticed and admired. Inner satisfaction of a job well done is only a transient gratification, which rapidly disappears in the cascade of new requirements and exorbitant standards – hence the importance of external confirmation signals, even if they bear little resemblance to true assessment and criticism. Both anankastics and antisocials are extremely sensitive to any signs of unfavourable opinion about them or their actions. Any word of criticism is perceived as an attack aiming to humiliate them and renounce their distinguishing qualities and competences. This inability of cognitive and emotional reworking of bitter messages makes obsessive-

compulsives/antisocials similar to paranoid individuals; however, the latter are more distant from the realm of such suspicion-filled predictions, and their disturbed reality check is more intensified. This confluence of the three apparently extremely different personality types allows us to presume that the underlying causes of all personality disturbances are two key beliefs: of helplessness and of not deserving to be loved [Beck, Freeman, Davis, 2005]. Inbuilt in early childhood into the foundations of a developing personality, they give direction to beliefs formulated through their lives, and serve as guidelines for incorporating and interpreting new experiences – none of these processes have the power to transform these two key beliefs; on the contrary, they strengthen them, confirming the individuals in their opinion that reality is exactly the way they say.

The pessimist undertone to these reflections inevitably questions the effectiveness of all therapeutic measures taken against such profound and persistent abnormalities as personality disorders. Here, the starting point is certainly the clear formulation of therapeutic goals that are both important to the patient and realistic to achieve under the guidance of the therapist, whose involvement in the entire process is equally important. At this point, the common path towards understanding obsessive-compulsive and antisocial personalities somewhat diverges. The anankastic, as someone whose functioning is focused on compensational strategies aiming at concealing deeply hidden convictions about his own incompetence, worthlessness and generally being not good enough, now stands a chance in therapy to reach and eradicate them as there is every likelihood that he will allow these features to surface, acknowledge their existence and confront them. With the antisocial individual, however, the chance that he will acknowledge a potential presence of negative convictions about himself in his belief system is negligible. While speaking of therapeutic work with such individuals (which incidentally happens quite rarely as antisocial's functioning inflicts pain on their environment rather than on themselves, and it is not them who are in need of psychological support), it is decidedly more realistic to focus on introducing changes in their behaviour and social functioning, and not on fundamental restricting of their personality. A question remains: to what extent the changes thus obtained will remain permanent,

and how soon after termination of therapy a return to old pathological patterns will take place? An obsessive-compulsive individual keeps having something hanging over their head – in the course of therapy we aim to develop a skill and give permission to ignore it, even for a short while. With antisocial individuals the situation is exactly opposite – we aim to create a conviction in them that the thing hanging over their head is simply indispensable to function in society without ruining moral order and infringing on other people's well-being. So, here we deal with two opposing ends of the control continuum – on the one hand excessive incessant control in anankastics, and on the other – its complete absence in antisocials.

The issues of conscience, responsibility and obligation present themselves differently in anankastic and antisocial individuals. Similarly to the issue of control, they can be analyzed on some continuum. Inadequate, excessive self-attribution of responsibility for all negative incidents, locating causes of failures only in their own competence will be typical for obsessive-compulsive individuals. The tendency for seeking those guilty of a negative state of affairs around them and not in themselves, and thus getting out of taking responsibility for one's own words and deeds will characterize antisocial individuals.

Similarly, it is difficult to mistake an obsessive-compulsive for an antisocial when we compare their social life and typical daily schedule. An anankastic has a detailed 'to do' list planned to the smallest detail, filled with various obligations and tasks from which no departure is possible (the very perspective is a potent stressor). The antisocial, however, engages in activities connected with risk (substances, fast driving, casual sex); activities that are impulsive, hasty, frequently devoid of any rationale beside getting a thrill of emotion, are his 'daily bread', and without them life would be bland and boring. An obsessive-compulsive individual does not even think that he/she might postpone some activities for later, engaging in pleasure or pure entertainment instead; for the antisocial it is inconceivable that work can absorb so much of one's time and energy when days can be spent in a much nicer and less tiring way. Here an analogy comes to mind of 'master and slave' – an anankastic fulfilling all, even the most absurd

whims of the master – the antisocial, who spends his time devising ways of finding entertainment without any personal work or effort.

A totally different attitude of the two personality types is also worth noting in terms of social norms, moral principles and legal codes, since this is something that can be first noticed by an external observer looking for abnormality symptoms. An obsessive-compulsive individual feels obligated to follow and observe all norms and regulations, even if this maybe difficult or burdensome. An antisocial individual will deem such behaviour to be extremely non adaptive and meaningless – rules are to be broken, and respecting them only makes sense if there is severe punishment when your are caught. This way of thinking somewhat resembles the thinking of a young child, whose motivation for complying with parental guidelines is solely the fear of being caught and punished. What if such a fear, so primitive in ontological development, is absent? Here we can capture the underlying difference in the emotional functioning of anankastic and antisocial individuals, which is a guideline for the formation of more visible differences both in terms of mentality, experience and behaviour. An obsessive-compulsive individual might be called 'one big walking fear', whereas an antisocial individual is not familiar with the phrase 'to be afraid' – he has never experienced such an affective state, it is incomprehensible to him, although he can recognize it in other people [after Pastwa-Wojciechowska, 2014]. Any affect that surfaces in an antisocial is recognised by him as anger – the emotion inaccessible to an anankastic, and difficult to voice in public towards an object different from himself. These differences in their emotional system are basic not only for any attempts at understanding obsessive-compulsive and antisocial personalities, but above all they constitute a central component of any planned assistance.

6. Research findings and further research perspectives

So as not to be content with only theoretical considerations, in the course of studies for my master's dissertation on the interpersonal functioning of obsessive-compulsive individuals, I examined 165 individuals,

out of whom 115 showed characteristics that allowed me to include them in one of the three personality groups: obsessive-compulsive, antisocial and 'double' (with high scores on both obsessive-compulsive and antisocial scales). In the first group, there were 61 patients, in the second 20, and in the third – 34. This last group appears to be particularly interesting – anankastic-antisocial – as its appearance in such large numbers was unexpected in research preparations.

The main premise of my paper, based on theoretical and research publications on personality and all pathologies within, was to demonstrate that both obsessive-compulsive and antisocial individuals treat other persons instrumentally, not engaging in emotional interpersonal relations, regarding other people as tools that can be used in the execution of tasks and duties. I was hoping, however, that this superficial mask conceals a different type of motivation prompting anankastics and antisocials to abandon the task of forming and developing close interpersonal relations.

Not wishing this to become a report of an empirical study, I will just present the selected and most relevant conclusions (those interested in the issue are requested to read my master's dissertation, where the results of my investigations are discussed in detail).

A statistical analysis of the collected empirical material did not permit to reject a zero hypothesis about the lack of differences in social orientation adapted by obsessive-compulsive and antisocial individuals, thus not allowing to accept an alternative hypothesis about such differences being present. However, a closer glance at the justifications formulated by the individuals to instructions, which asked them to divide between them and their imaginary interaction partner, in three cases, jobs to do, in another three – a randomly obtained sum of money (the situations differed in the extent of their proximity to the imaginary partner that the studied patient had do define; in the task consisting in job division the difference was in the competences of the imaginary partner), demonstrated subtle differences between the groups. Obsessive-compulsive individuals more frequently referred in their argumentation to the need to control the situation, and that precluded the delegation of a large portion of duties to the partner. They also expressed their mistrust in the potential partner's competences as well

as a fear that only a singlehandedly executed job could bring the desired results. Antisocial individuals did not use this type of justification, although they seldom delegated totality of jobs to their collaborator. For antisocials, a major argument that induced them to participate in the job was a belief that the partner could do something against their will, or that the transfer of all duties to the partner might somehow turn against them. There were also statements in which antisocials openly declared that they 'did not feel like overworking'. It is then clear that subtle differences in motivation, elusive in questionnaires, are visible in situations when patients were given some room to present their own way of thinking. I am convinced that to capture such an enigmatic psychological construct as human motivation it is necessary to conduct an extended interview, and that also emphasizes how important for studying the psyche is meeting another person, in the dialogical perspective, and that no scientific theory will/could ever take its place.

Bibliography

Aycicegi-Dinn A., Dinn W. M., Caldwell-Harris C. L., (2009), "Obsessive-compulsive personality traits: compensatory response to executive function deficit?", *International Journal of Neuroscience*, 119(4), pp. 600–608.

American Psychiatric Association, (2005), *Diagnostic and Statistical Manual of Mental Disorders DSM V*, APA.

Beck A. T., (2002), "Cognitive models of depression*", Clinical advances in cognitive psychotherapy: Theory and application*, 14(1), pp. 29–61.

Beck A. T., Freeman A., Davis D. D., (2005), *Terapia poznawcza zaburzeń osobowości*, Translated from English by M. Cierpisz, Wydawnictwo Uniwersytetu Jagiellońskiego. [Polish]

Cloninger C. R., Svrakic D. M., Przybeck T. R., (1993), "A psychobiological model of temperament and character", *Archives of General Psychiatry*, 50(12), pp. 975-990.

Davis R. D., (1999), "Milion: Essentials of his science, theory, classification, assessment, and therapy", *Journal of Personality Assessment*, 72(3), pp. 330–352.

Freud S., (1955), *On transformations of instinct as exemplified in anal erotism*, [in:] *The Standard Edition of the Complete Psychological Works of Sigmund Freud*, Volume XVII (1917-1919): *An Infantile Neurosis and Other Works*, pp. 125–134.

Fromm E., (2003), *Mieć czy być?*, Translated from English by J. Karłowski, Poznań, Dom Wydawniczy Rebis. [Polish]

Hopwood C. J., Thomas K. M., Markon K. E., Wright A. G., Krueger R. F., (2012), "DSM-personality traits and DSM-IV personality disorders", *Journal of Abnormal Psychology*, 121(2), pp. 424–432.

Hare R. D., (2008), *Psychopaci są wśród nas*, Translated from English by A. Skucińska, Kraków, Wydawnictwo Znak. [Polish]

Kernberg O. F., Caligor E., (1996), *A Psychoanalytic Theories of Personality Disorders*, [in:] J. F. Clarkin and M. F. Lenzenweger (eds.), *Major Theories of Personality Disorder*, New York, Guilford Publishing.

McWilliams N., Milska-Wrzosińska Z., Pałynyczko-Ćwiklińska A., (2015), *Diagnoza psychoanalityczna*, Gdańskie Wydawnictwo Psychologiczne. [Polish]

Milion T., Davis R., (2005), *Zaburzenia osobowości we współczesnym świecie*, Translated from English by H. Grzegołowska-Klarkowska, J. Kotlicka, M. Ślósarska, Instytut Psychologii Zdrowia, Polskie Towarzystwo Psychologiczne. [Polish]

Pastwa-Wojciechowska B., (2014), *Psychopatyczne/ antyspołeczne zaburzenia osobowości* [in:] L. Cierpiałkowska and E. Soroko, (eds.), *Zaburzenia osobowości. Problemy diagnozy klinicznej*, Poznań, Wydawnictwo Naukowe UAM. [Polish]

Purdon C., Clark D. A., (1999), "Metacognition and obsessions", *Clinical Psychology & Psychotherapy*, 6(2), pp. 102–110.

Skodol A.E., Gunderson J.G., McGlashan T.H., Dyck I.R., Stout R.L., Bender D.S, Grilo C.M., Zanarini M.C., Morey L.C., Sanislow C.A., Oldham J.M., (2002), "Functional impairment in patients with schizotypal, borderline, avoidant, or obsessive-compulsive personality disorder", *American Journal of Psychiatry*, 159(2), pp. 276–283.

World Health Organization, (2008), *International Statistical Classification of Diseases and Related Health Problems ICD-10*, WHO.

Agata Gołaś
Adam Mickiewicz University, Poznań, Poland
agavta@gmail.com

STUDIA METODOLOGICZNE
NR 37 • 2016, 201–208
DOI: 10.14746/sm.2016.37.11

RUXANDRA IRINA VULCAN

A Favourite Analogy: The Microcosm

ABSTRACT. As pre-scientific cognitive tool, the analogy is very important during the Middle Ages and the Renaissance. Although it underlies the metaphor in rhetorics, the analogy as *similitudo* comes under dialectics, in its theorization of the Renaissance (by Rudolf Agricola or Ramus). This « locus » of dialectical invention allows to build up semantical nets with surprising extension according to the historical moment. This contribution proposes to study this major theme in its historical changes from the Middle Ages to the Renaissance in the erudite literature, like the *Roman de la Rose* or *Placides et Timeo*, first doxographical dialogue in vernacular language, then in various dialogues of the XVIth century (for example, Pontus de Tyard for the Pléiade or Pierre Viret for the Reformation, among others ; the last author using in his *Dialogues of the desorder* (1545) the mirror of animals for the socratical quest of the self). At least, it shows how this instrument for cognition and for discursive *cornucopia* binds man with cosmos in various beautiful proportions.

KEY WORDS: analogy, microcosm, Middle Ages, Renaissance.

Theoretically, analogy is a very important cognitive tool mostly for all periods prior to modernity. In the pre-scientific era, it allowed the building of meaningful semantic nets in what Michel Foucault called "l'enchevêtrement des choses et des êtres" (the tangle of things and beings), in his famous book *Les mots et les choses. Une archéologie des sciences humaines* (1966).[1]

In fact, analogy is based on similitude, but similitude is a notion built semantically in history and philosophy; it depends indeed on the ontological organization of being in each age. The allegory, on the other hand, is defined as a closed concept including semantical units as the virtues, Mod-

[1] [Foucault, 1966, pp. 81 ff ; Descola, 2006].

esty, for example. The interest of the allegory concerning the microcosm consists in the fact that it includes an analogy: the essential relation between microcosm and macrocosm. Therefore its semantical contents can receive different interpretations according to the epistemology through history.

Fundamentally, Plato's Timaeus sets up a global conception of the world including man and the Soul of the world as the Soul; their similitude is not object of theorization. In the Middle Ages, this harmonization gives rise to a systematization in degrees of nature (as Scot Erigène, in the XIIth century), whose man would be the conclusion (as Alain de Lille).

This present study, limited to the appeareance of the allegory of microcosm in the French literature till the scientifical modernity, includes some medieval texts and especially some texts of the Renaissance which testify the big favour of this allegory.

Theories in the Renaissance

In the XVI century very interesting theories about analogy were developed in the humanist circles, wishing to oppose the pure scolastical logic a more flexible method, more adapted to the analysis of the real and to natural language before the scientifical turn towards modernity.

It is about rhetorics and dialectics. The more conceptual field of dialectics regards the *similitudo* and *dissimilitudo* in relationship to the definition of notions as crucial. In Rudolf Agricola's first humanist theory (*De inventione dialectica*, (1515),[2] both come under the external *loci* of invention, beyond the internal ones which concern the definition of things according to Aristotles, consististing in genre, in species, and in *proprium* (their special qualities); Agricola adds their properties "around substance" as a semantical larger nucleus (not fully logical) – see the first book of the *De inventione dialectica* regarding the "loci" of invention [Agricola, 1529,

[2] Cf. [Agricola, 1529, p. 22].

p. 22]. The *similitudo* is thus a term well categorized at the beginning of the analysis of notions.

These principles are also espoused by Pierre de La Ramée (or Petrus Ramus) in his *Dialectique* of 1555. He maintained the dialectical role of the *similitudo* under the "loci" of invention, but he preferred to place it under the first "loci", even before the definition, which was, according to him, only derived from them. These theoretical differences allow us to see the instability of the new humanist systematization between logic and rhetoric – and the term self of invention is then genuinely rhetorical, but integrated by dialectics; it also makes evident the richness of the notion (quite like the double abundancy of things and words, from Erasmus, *De duplici copia rerum ac verborum*[3] , in accordance with his rhetorical point of view). Cognition and invention are thus one and the same thing for Renaissance men.

The famous allegory of the microcosm illustrates these comments well when it brings together the macrocosm, the "big world" and man through similitude, as the "little world". This complex representation includes some fundamental "sèmes" (semantical units) which become richer between the Middle Ages and the Renaissance. For simplifying this approach, the nets of these units are called « chains of similitude »; the similitude becoming an epistemological operator for variations. First in Jean de Meung's *Roman de la Rose* around 1270; then in the doxographical Dialogue in French, *Placides et Timéo* (at the end of the thirteenth century); then in the Renaissance, the *Curieux* of Pontus de Tyard, two pre-scientific dialogues (between 1557 and 1578), and lastly, in Réformateur Pierre Viret's heuristic variant, the *Dialogues du désordre* of the (1545) as well as Maurice Scève's epic the *Microcosme* (1562).

The Middle Ages' growing similitudes

In *Roman de la Rose*, the poet praises the man-microcosm:

[3] Cf. [Erasmus, 1988].

> "When he would be couragous and waise, he has all the virtues that God has given to the world. He shares all things contained in the world and participates to all their kindness; he has his being with the stones; he lives with the grass; he feels with the animals and understandswith the angels […] It is a little new world, when he doesn't make worser then a joungwolf !" [v. 19043-19058].[4]

In these verses, the poet assigns man cosmic roots, as the "companion of all things" in the levels of being in the world; the mineral, the vegetable, the animal and the angelic. This concerns a semantic construction where man participates in the universe and the supra-natural in accordance with the medieval ontology. These semantic units build the first chain of similitudes, i.e. the so to speak *nucleus* of the allegory.

The next text, *Placides et Timéo*, presents a second chain of *similitudes*: the elements, the cosmos and the body, in a somewhat different way from the former. This net includes the four elements (heaven, air, sea, and earth) compared through similitude with parts of the body: the head with the heaven, the torso with the air, the stomach with the sea and the feet with the earth; and more, the head extends the referential dimensions to the "throsne of Dieu", defined as its « lord" and meaning. The eyes lastly are depicted as two stars to the moon and the sun.[5]

Each one of the analogies becomes more poetic than descriptive complements to reveal better the "secrets" of nature which the teacher, Timeo, passes on to his pupil; this Dialogue is in the classical tradition of the *Secretum secretorum*, as a letter from Aristotle to Alexander, brought to us by the Arabs; it is about the education of a prince which includes few comparisons; "as through the air run winds, clouds and obscurities, so in the mind

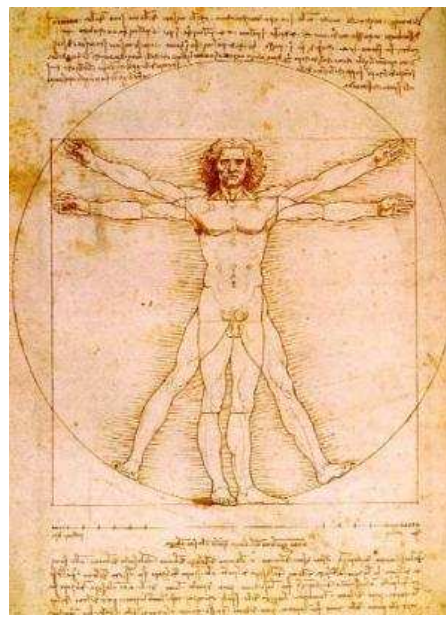
---

[4] « S'il vousist estre preuz et sages : / De toutes les vertuz habonde / Que Dieus a mises en cest monde ; / Compainz est de toutes les choses / Qui sont en tout le monde encloses / Et de leurs bontez garçonnierres : Il a son estre avoec les pierres, / Il vit avoec les herbes drues / Et sant avoec les bestes mues ; / Encor puet il trop plus en tant /Qu'il avoec les anges entent. / Que vous puis je plus recenser ? / Il a quanque l'en puet penser : / C'est uns petiz mondes nouviaux – / Cist me fait pis que nus louviaus ! the edition of [Meun and Lorris, 1992, p. 988]. Vocabulary: « Moult a li chaitis d'avantages » = il a de nombreux avantages ; « de leurs bontez garçonnieres », = il participe de ; « quanque » = tous ; « pis que nus louviaus ! » = pire qu'un louveteau.

[5] M.-A. Schmidt quotes a famous illustration from the *Elucidarum* of Honoré d'Autun, *ibid*., p. 140.

of man fly thoughts, happiness, sadness"; or "as the waters run in the sea and return, so the humours of man have to flow down to the stomach", etc[6]).

Yet this allegorical net presents a semantic shift compared to the previous anthropological insight, spread wider throughout nature in its entirety: it is about the stress placed on human reason, which organizes the being ("le vivant") in a vertical anthropocentrical axis. It is, moreover, traditional in the medieval tradition; the author assigns him a higher place; man is the "highest creature", the "dignified animal". Another semantic unit is also present in this allegory: the microcosm takes the form of a circle long before Leonardo da Vinci drew his famous "Vitruvian man" : "man must have good measures for his arms and long for giving a nice circle"[7].



[6] Cf. [Anonymous, 1980, *Placides et Timéo ou Li secrés as philosophes*, § 215-217, pp. 93 ff].

[7] Cf. [*Placides et Timéo,* § 214, p. 93].

In the XVIth century, the developments become more arborescent because of the Renaissance of the "good letters and disciplines". So the first chain of similitudes maintains the same systematization of the being ("le vivant") analogous to man, but in more learned terms: bones for the mineral, plants for the vegetative life, animals for the "sensitive and moving life", then the "separate intelligences" for the reasonable or intellectual life" and lastly "the big motor" with "the divine and eternal life".[8] The commentaries that enrich the topics, also include parts of popular culture: for the vitalist analogy between bones and stones; the locutor, the Curious, in the Premier Curieux of Pontus de Tyard (1557, 1572), quotes as proof the fable of the Giants – which yields in Rabelais' Pantagruel to a pleasant variant, the eating of the "big apples" letting men grow by the legs to giants [Rabelais, 1994, p. 303].

In the same Pontus' text, the second chain of similitudes between the elements and the body is multiple, referring first to mental faculties (the perceptions to the earth, the imagination to the water; the reason to the air, the understanding to fire, and the intelligence to heaven or to its motor). Then the similitudes go on to extend to the humours and the planets because of their influence. In fact, the new theorization of the "intellectual power" of man allows us to see the addition of a philosophical humanism, since the man-microcosm includes "understanding, apprehension, imagination, memory, will, moods"[9]) and also his multiple realizations ("the discourse of arts, and the certitude of sciences" ; the reflection on virtues leads to a Neo-Platonist commentary about the body and soul. The eye, finally "piercing the obscurities of ignorance about things, spreads […] till to the big eternal and immortal source […]", which transforms man into a quasi-divine animal, into the most beautiful and accomplished animal that Nature has created, nourished by the most beautiful Soul"; a man-microcosm who agrees, as the "Copula mundi" with the World "so big, so radiant, so well disposed, so stained also by the Soul".[10]

---

[8] [*Ibid*., p. 133 ; Tyard, 2010 and 2013].

[9] See [Foucault, 2008].

[10] [Tyard, 2013, p. 141]. « Brief, rien n'est nommé ou reclamé par le grand Monde, qui n'ait quelque exprés adveu en nostre Microcosme ; l'homme le plus beau et accomply animal que Nature cree, nourri de la plus belle Ame ; tout ainsi, que rien n'est si grand, si

This glorious harmonization is not the same for all the authors. Many of them go no further than the analogies between man and animals. The similitude then becomes an heuristical operator with variables. For Pierre Viret, it is used for the self-knowledge, between bestiality and humanity. The Reformer questions the satirical similitudes for metamorphosing man into a morally reformed Subject (in his *Dialogues of the disorder*, 1545[11]). For Pietro Pomponazzi, man becomes a cosmic "chaméléon" , inverting with fancy the relationships of man, the subject of the world [Pomponazzi, 1930]. At least, this historical study leads, so to speak, to the abolition of the allegory itself because of the epistemological turn of humanism: man becoming the Subject of knowledge (in Maurice Scève's epic *Microcosm*), a man centered on himself (as shown by da Vinci's Vitruvian man, the man in his perfect circle).

In short, the similitude is a variable epistemological operator; one of *poiesis* through its aesthetical effects.

When one compares it with the metaphor which works on semantic condensation and lexical shifting, the similitude works on the spacialization of its referents, as the former example of the eye with the stars. The expansion allows us to see non quantifiable but beautiful proportions through their immensity. In effect, the problem is not quantities, but qualities, as underlined precisely by Ramus; for the microcosm, as shared qualities, external to things in their disproportion. The effect of strange beauty results from the light – organic and thinking light on one hand, and on the other, eventually inorganic light. This is also the case for the similitude between dreams and clouds in heaven. Even when it is less about epistemological relationships, they are not less meaningful through the *poïetical* net that similitudes create chaos and non sense. In fact, all these illustrations clearly demonstrate that similitude is a *locus* of dialectical invention

---

viste, si resplendissant, si bien disposé, que le Monde, soustenu aussi par l'Ame , si ainsi se peut nommer, la plus belle hors de toute comparaison […]».

[11] [Viret, 2012 (1545)].

– in the meaning of the Renaissance – and that this precisely gives a margin to individual interpretations of its true meaning.

These considerations propose that fields of research be opened, eventually on mythology, classical and modern as the new one, created by the Mexican, Miguel Angel Asturias (in *Hombres de maíz*[12]).

Finally, the allegory of man-microcosm plays a role as a turning point from the Middle Ages to the Renaissance; whereas the cosmical roots of man are evident in the Middle Ages, in the Renaissance however, man frees himself out of them and defines himself as a moral and cognitive subject. Nevertheless, the *topos* of the man-microcosm does not disappear totally from the intellectual horizon due to the nostalgia for cosmic roots, and so it reappears in a different form according to the different epistemological contexts over the centuries. Today its resurgence (return) seems more likely in the frame of the sciences of the being; it can be the newest modernity. The analogy, on the other hand, loses its role as epistemological operator during the turn towards quantification and the universal scientific *mathesis* of modernity.

Bibliography

Agricola R., (1529), *De inventione dialectica*, Paris, Colines.
Asturias M. A., (2014), *Hombres de maíz*, Madrid, Cátedra.
Descola Ph., (2006), *Par-delà nature et culture*, Paris, Gallimard.
Erasmus, (1517), *De duplici copia rerum ac verborum*, Bâle, Froben / (1988), *ASD*., [ed.] Betty I. Knott, vol. I, 6.
Foucault M., (1966), *Les mots et les choses. Une archéologie des sciences humaines*, Paris, Gallimard. Foucault M., (2008), *Introduction à l'Anthropologie de Kant*, Paris, Vrin.
La Ramée P. de, (1555), *Dialectique*, Paris, André Wechel.
Meun J. de (and Lorris G.), *Roman de la Rose* (1992), [ed.] A. Strubel, Paris, Livre de poche, Librairie Générale Française.
Placides et Timéo ou Li secrés as philosophes, (anonymous, XIII century), (1980), [ed.] C. Alexandre Thomasset, Genève-Paris, Droz.

[12] [Asturias, 2014].

Pomponazzi P., (1930), *Les causes des merveilles de la nature ou les enchantements,*trad. H. Busson, Paris, Rieder.
Rabelais Fr., (1994), *Pantagruel*, [ed.] J. Ceard, Paris, La Pochotèque.
Scève M., (2013), *Microcosme*, in *Œuvres complètes*, [ed.] Michèle Clément, Paris, Editions Classiques Garnier, vol. V.
Schmidt M.-A. (1970), *La poésie scientifique en France au XVIe siècle*, Lausanne, Editions Rencontre, 1970.
Tyard, P. de, (2010), *Le Premier Curieux ou Premier Discours de la nature du monde et de ses parties*, [in:] *Discours philosophiques*, (1578), *OC*, (2010) [dir.] E. Kushner, [ed.] J. Céard, Paris, Editions classiques Garnier, t. IV, 1.
Tyard, P. de, (2013), *Le Second Curieux ou le Second Discours de la nature du monde et de ses parties* (1557), édition augmentée [in:] *Discours philosophiques*, (1578), *OC*, (2013) [ed.] Fr. Roudaut, Paris, Editions classiques Garnier t. IV, 2.
Vinci, L. da, « The Man of Vitruve », wikipédia.
Viret P., (2012), *Dialogues du désordre*, (1545) / [ed. crit.] R. Vulcan, Geneva, Labor et Fides.

Ruxandra Irina Vulcan
Paris-IV Sorbonne University, France
irivulcana@gmail.com

STUDIA METODOLOGICZNE
NR 37 • 2016, 211–222
DOI: 10.14746/sm.2016.37.12

ESTELLE CARCIOFI

George Sand and Boris Vian, Differences among Similarities: On Two Insights into the Mysteries of Love[1]

PERVENCHE
Je le dirai à mon grand-père.

LA DUCHESSE
(de plus en plus souriante, désignant le corps)
Il est mort.

PERVENCHE
Il fait peut-être seulement semblant.

LA DUCHESSE
(éclatant de rire)
Oh ! quelle absurdité !

PERVENCHE
Vous faites bien semblant d'être vivante.[2]

ABSTRACT. My paper is about life and love based on an analogy between two texts. The first is a letter written by the French writer George Sand to her ex-lover, another French writer, Alfred de Musset. The second is a poem, "L'évadé" ("The Escapee"), written by the French poet Boris Vian. Both texts present a way of life, but each is based on a special conception of love. In these two texts, love is the most important value in the model of a good life. However, behind the obvious common points between them, many differences are hidden. The paper has following structure:

[1] This work has been presented during the First World Congress of Analogy, on November 4, 2015 (Puebla, Mexico) [https://www.youtube.com/watch?v=EqppSxPomts, accessed July 22, 2016], YouTube. Katarzyna Gan-Krzywoszyńska and Piotr Leśniewski (Adam Mickiewicz University, Poznań, Poland) were by my side, in many ways, when I worked on this topic. They gave me so much that all I can do is to write these so little but so intense words: thank you.

[2] [Prévert, 1972, p. 99].

firstly, I present both texts and their authors, secondly, I discuss similarities and differences and lastly, I explain how these differences enlighten us about the special message of each text.

KEY WORDS: analogical analysis, George Sand, Boris Vian, love

1. Introductory remark

There is a famous note by Max Scheler: *Wer den ordo amoris eines Menschen hat, hat den Menschen*.[3] Once the Schelerian remark is accepted as a point of departure, then each inquiry into the problem of love at the same time throws some light on the very foundations of the humanities.[4] My paper consists in an analogical analysis of two (literary) records of love experiences. The first text is an excerpt from a long letter written by George Sand. "George" is a masculine first name but, contrary to what one might think, George was a female. Her real name was Amantine Aurore Lucile Dupin (1804–1876). This French writer was a rebellious woman at the time, especially considering her rank: she wore trousers, smoked, and, most of all, left her husband and her children in order to be more free. In 1833, she met Alfred de Musset (1810–1857), another French writer. They had an intense and violent love affair, lasting some months.

When George writes to Alfred the letter from which we are about to study an excerpt, they had already separated some months earlier. Sand has another lover; but Musset hesitates to fall in love again because he is afraid of being hurt.

The second text is a poem written by Boris Vian (1920–1959), a man who had many talents: he was a writer (of songs, novels, poetry, articles ...), a musician, a singer, an engineer, a translator, etc. He was not healthy and thought that he would die before the age of forty.The poem "The Escapee" (or, sometimes, "Time to live") was written five years before his death.

---

[3] See [Luther, 1972, p. 124].

[4] For the counterrationality of love see [Gan-Krzywoszyńska, Leśniewski, 2015, pp. 172-176]. For psychological perspectives in studies on love see for example [Balderston, 2014, p. 527].

2. Analogical analysis of both texts

2.1. Common features

In my opinion, there are two types of common features between both texts examined in this paper: (1) their topics, (2) their message. Indeed, both texts are about *love* and *life*. And George Sand and Boris Vian seem to give us the same message: a life full of love is a complete life. In other words: the more you love, the more you live. Does this mean we can conclude that both texts are "synonymous", that they tell us the same thing?

If we pay closer attention, using analogical methodology, we discover, however, that there are not only many differences between the two texts, but that these differences are deep. We will address this issue in order to show that, in fact, the messages of these texts are very different, contrary to what we could believe if we read them quickly. What are these differences between the texts that we could mistakenly think are very much alike?

2.2. Differences

2.2.1. Two relations with the world around: harmony and desire of elevation

The first obvious difference is that George Sand speaks in her letter only of the feelings of the lover, that is to say, love lived, felt, by a person in love with another person. With Boris Vian, the escapee runs towards a woman, but this is only a very small part of his love. Indeed, although the word "love" is not at all written in the poem, love is everywhere, and all the man does is tell his love. For example, the escapee loves freedom so much that he is ready to die for it. And he loves plunging his face into the water so much that he stops running in order to do it, while some men shoot him. The escapee is in love, it is true, but not only with a woman: he is in love with freedom, too, and with everything around him (the trees, their smell, their leaves, the water of the river...). The paradise of Boris Vian is on Earth… The escapee feels in harmony with the world and does

not try to add anything to it that would be greater. This harmony becomes even a form of fusion when he dies and his blood runs together with the water of the river.

With George Sand, on the contrary, reality is not loveable at all, it is too low and unworthy. Her paradise is "above". She writes to Musset: "You were not destined to wallow in the mire of reality. You are made to create your own reality, in a more elevated world". Musset has to reach "sublime heights" to rise above the "dull world where spiritless men languish". How? Thanks to love! Because, according to her, to be in love and to "show his heart candidly and generously" is the only way to elevation. She uses many adjectives to describe this higher world that we can reach only when we know really how to love: *beautiful, great, sublime, eternal, rich, powerful, strong, elevated, noble*. In addition to these words, she uses a long metaphor about love in which she compares love to a sacred building. Let's examine this metaphor to see if it has an echo in Boris Vian's poem.

2.2.2. The builder and the picker

"Love is a temple", George Sand writes. Into this temple, the lover dedicates their worship to the divinity that the beloved is. Of course, in our life, we may fall in love with several persons. No problem, George Sand says, only the temple is important: "Whether the idol stands for a long while or is soon broken, you will have built a beautiful temple" or "the god may change, but the temple will last as long as you live". So, what is important, more than the beloved, is the temple, that is to say, love, love as a work. So, she tells Musset that he has to dare to fall in love again, because "a soul like [his] must create great works". She adds that looking for love again, always "may be the dreadful, beautiful and dauntless work of a lifetime". Love would be a temple, an architectural and sacred work, and the life of one who knows how to love would be a literary work: "may your life be as beautiful as the poems your intelligence has devised". We can notice that, according to George Sand, although she talks about love,

she talks about the heart only one time, and she never talks about the body. Of course: the faculties of creation are "more elevated". They are intelligence and the soul (the soul inhabits the temple).

It is interesting to notice that in Boris Vian's poem we also find one building. But it is not a temple: it is… a jail. And the symmetry is perfect: (1) according to the poet, the building has not to be built: it is already done. (2) And it is not a goal, the arrival: it is the starting point, and even a place from where you have to escape, even if you will die escaping. The escapee runs away from this closed place and he never builds another one. And it is not about his soul or his intelligence, but only about his body. He uses his body not to build, but only to run and welcome all around him: he deeply smells the scent of the trees, his shadow dances with the sunlight, he picks up leaves and brings them to his lips, he plunges his face in the creek, he drinks water. He loves sensually, carnally. Unlike what we find in the letter, the lover in the poem does not need to search, painfully, for (something or) someone to love: what he loves is everywhere, handy, simple, intense.

As for the creation, the only two "works" in the poem are "the steel blue guns" and the "four walls", that is to say, the guns of the jailers and the jail. These creations are not elevated at all: they take away life and freedom.

On the one hand, the intellectual builder. On the other hand, the picker-runner. Two behaviours. And two relationships with time, as well.

2.2.3. Two relationships with time

In Boris Vian's poem, the word "time" is the most used, with eleven occurrences. Four times, we read what the escapee wants: "If they could just give me time". He knows that he is the target of men with guns. He knows that he is going to die very soon. If he wants time, it is to live, and love, freely, here and, above all, now. *Hic et nunc*. As Thoreau, he wants "to live deep and suck out all the marrow of life".[5] So, he's running, and he

[5] [Thoreau, "Where I Lived, and What I Lived For"].

stops only to do simple things that make him happy. He is both in the present time, and in a hurry.

To build, on the contrary, is a long process. In the present, we build, but the result is not immediate. We have to work, to suffer, before we can enjoy: the happiness is at the end of the path. Later. Tomorrow. But the escapee does not need to wait: his happiness is the path. Now. Today.

Furthermore, to build is a process which is based – and which aims at – a kind of stability, a stability which is not compatible with hurrying. We can notice that this stability seems to be a good thing according to George Sand. For example, when she speaks about the love stories we may have in one life, she says that "the more you have had to change, the more apt you may be to keep it". We would change only when we have to. Here, we can ask ourselves: this research for keeping, for stability, for the refuge we find in the temple, is it on the side of death more than on the side of life? Because all buildings are motionless, made of cold stones, like… graves. In contrast, in the poem, the man runs from the very beginning till the end, under the sun. He is fully alive and only death stops him. We can oppose the dead stones of the temple of love to the rolling stones under the steps of the escapee. "*Pierres qui roulent n'amassent pas mousse* [rolling stones gather no moss]", a French poem says, unlike the walls of the jail or… of the temple.

Besides, smells guide us to the same reflections: in the temple, we find "divine incense", a dead and artificial smell; outside, we find the "scent of the trees", alive and natural, which the escapee breathes deeply…

2.2.4. Two ways of seeing

Let's go from the sense of smell to that of sight. We have already remarked that beauty is very important, according to George Sand. Well, as reality is a mire, the beauty around us can only be due to creation, the creation of a soul like Musset's or ours… So, when we admire beauty, it is finally our work, and thus ourselves, that we admire. George Sand says to Musset that if he does what she advises, his life will be a poem so beautiful

that "[he] will reread this poem with the holy joys of pride". And, at the end of the excerpt, she adds that "here, perhaps, ultimately lies the reward". Here, that is to say, we "need never blush with shame" when we are judging our life. To blush is to look at our face in a mirror, look at what we have done, and be ashamed. It is as if the supreme goal, the "reward" was the "pride"… Love would only be a way to achieve it. The lover presented by George Sand is looking at himself in a mirror and seems finally to be in love with his reflection, his creations… himself.

What about the eyes of the escapee? Does this man admire his reflection, too (in the water)? Or his works? Or his passed time? Absolutely not. The only eyes set on him are those of the jailers, those men who shoot him. And the escapee never looks [to his] back. He only looks at what is in front of him. This is very, very important. At the end of the poem, Boris Vian makes a list of what the escapee had had time to do, before concluding that he had had time to live. What do we find at the very top of the list? "He'd had the time to fill his eyes". To fill his eyes. To see. It shows how much seeing is important. To see is, in part, to live.

Are only the eyes of the escapee wide open?

2.2.5. Fear and opened arms

In fact, we met two men in our texts, and each one lives with a fear:

(1) On one hand, we have Musset, who is afraid to suffer if he falls in love again. He knows that love is risky, that it can hurt. He would like a kind of security, to feel safe. Maybe behind the solid walls of a love temple? What is sure is that his fear motivates him to close his arms, his heart...

(2) On the other hand, there is the escapee, who is afraid too, but not to suffer. He does not care about security: he even prefers to die instead of not to live. That is why he leaves the solid walls of the jail, even if it is extremely dangerous. The only thing he needs is freedom, and (enough) time, in order to live deeply. His fear, unlike Musset's, pushes him to open his eyes, and his arms, that is to say his heart, as much as possible.

3. Conclusion: words and laughs

We have to remember that the text written by George Sand is a part of a long letter she wrote to her ex-lover: she is talking to somebody she knows very well, and she gives a lesson about life, about love, to him. To do this, as we have seen, she does not hesitate to use "big words" and long metaphors.

Boris Vian, writes a short poem in which he probably identifies himself with the escapee. (And, in fact, each of us could do it. Like the escapee, we live, until "a bee of hot copper" will interrupt our walk, our run.) Well, the escapee does not say a single word. From this man, we only hear… his laugh. Because this man, who is going to die, who has no gun, who is the target of jailers, is happy. And his happiness does not come from his pride, from his pleasure to admire himself or his life. It comes from his freedom, and his love for life. This man who does not lecture anybody, inspires us, more than George Sand, who looks like a "siren [which] sang without joy"…

Because it seems that George Sand speaks about a beautiful, grandiose love, but a conceptual love, without flesh too. She talks about life and love, but she remains nearby life, and love. Between her and life, we find words, concepts, ideas, thoughts, art… artificial things?

In contrast, the escapee is in direct touch with the elements and life. We realize it too when we consider the words chosen by the poet. When Boris Vian describes the reality – unlike George Sand who writes in a precious style, almost heavy – he uses only two adjectives: "yellow" and "soaked with sap and sun." Everything is said. The sap and the sun…, life. Yes, this is life that he picks up and brings to his lips. His words are simple and crude, but very powerful and evocative: we feel these leaves between our fingers and, like the escapee, we bring them to our mouth, we bring *life* to our mouth. That is the reason why the fire described by Vian is not the "eternal flame [which] will ignite [his] heart anew" that we find in the temple: the fire is inside ("his body like a forge").

Everything is conceptual, cold and built in Sand, everything is sensual, ardent and spontaneous in Vian. The second metaphor of the letter proves

it: Sand compares love with "a path in the mountain – a difficult one, full of pitfalls". This is the perfect contrast to the path the escapee runs on when "he hurtled down the hill". A hard ascent in the letter, a "natural slope" full of joy in the poem.

Thanks to analogical analysis, each text has been illuminated by a reading of the other. And although we could believe that George Sand and Boris Vian said the same thing (that love has to be put at the very centre of our life), we discover that, in reality, what Sand puts at the centre is words, beauty, art and, finally, artificial things and oneself, while what the escapee puts at the centre of life is, simply… life.

Yes, the escapee dies. But he is maybe the only one who really lives...

And because of it the following phrase should be recalled here after [Hart, 2009]: *Vive la différence! Vive l'abîme!*[6]

Text 1: A letter written by George Sand to her ex-lover, Alfred de Musset

[…] L'amour est un temple que bâtit celui qui aime à un objet plus ou moins digne de son culte, et ce qu'il y a de plus beau dans cela, ce n'est pas tant le Dieu que l'autel. Pourquoi craindrais-tu de te risquer ? Que l'idole reste debout longtemps ou qu'elle se brise bientôt, tu n'en auras pas moins bâti un beau temple. Ton âme l'aura habité, elle l'aura rempli d'un encens divin, et une âme comme la tienne doit produire de grandes œuvres. Le dieu changera peut-être, le temple durera autant que toi. Ce sera un lieu de refuge sublime où tu iras retremper ton cœur à la flamme éternelle, et ce cœur sera assez riche, assez puissant pour renouveler la divinité, si la divinité déserte son piédestal. Crois-tu donc qu'un amour ou deux suffisent pour épuiser et flétrir une âme forte? Je l'ai cru aussi pendant longtemps, mais je	[…] Love is a temple a lover builds to whomsoever is worthy of his or her worship to some degree or another, and the beauty of it lies not so much in the god but in the altar. Why would you shrink away from it? Whether the idol stands for a long while or is soon broken, you will have built a beautiful temple. Your soul will have inhabited this temple and filled it with divine incense, and a soul like yours must create great works. The god may change, but the temple will last as long as you live. It will be a sublime refuge where the eternal flame will ignite your heart anew – a heart that will be as rich and powerful as to find a new divinity when its predecessor has been toppled from its pedestal. Do you think one or two loves are enough to exhaust and consume a strong soul? I also used to think so, but

[6] [Hart, 2009, p. 214].

sais à présent que c'est tout le contraire. C'est un feu qui tend toujours à monter et à s'épuiser. Peut-être que plus on a cherché en vain, plus on devient habile à trouver; plus on a été forcé de changer, plus on devient propre à conserver. Qui sait ! C'est peut-être l'œuvre terrible, magnifique et courageuse de toute une vie. […] C'est un sentier dans la montagne; dangereux et pénible, mais qui mène à des hauteurs sublimes et qui domine toujours le monde plat et monotone où végètent les hommes sans énergie. Tu n'es pas de ceux qu'une fatigue vaine doit décourager ni qu'une chute peut briser. Tu n'es pas destiné à ramper sur la boue de la réalité. Tu es fait pour créer ta réalité toi-même dans un monde plus élevé, et pour trouver tes joies dans le plus noble exercice des facultés de ton âme. Va, espère, et que ta vie soit un poème aussi beau que ceux qu'a rêvés ton intelligence. Un jour tu le reliras avec les saintes joies de l'orgueil. Tu verras peut-être derrière toi bien des débris. Mais tu seras debout et sans tache au milieu des trahisons, des bassesses et des turpitudes d'autrui. Celui qui s'est toujours livré loyalement et généreusement peut avoir à souffrir, mais à rougir jamais, et peut-être que la récompense est là tout entière. Jésus disait à Madeleine : Il te sera beaucoup remis, parce que tu as beaucoup aimé. […]	now I know I was wrong. Love is a fire that will grow and wear away. It may be that the more you have searched in vain, the more likely you are to find it; the more you have had to change, the more apt you may be to keep it. Who knows! It may be the dreadful, beautiful and dauntless work of a lifetime. […] It is a path in the mountain – a difficult one, full of pitfalls, that leads to sublime heights and always towers over the flat and dull world where spiritless men languish. Vain weariness should not daunt a man of your kind; nor should a fall wreck you. You were not destined to wallow in the mire of reality. You are made to create your own reality, in a more elevated world, and to enjoy your own joys through the noblest exercise of your soul's faculties. Go full of hope, and may your life be as beautiful as the poems your intelligence has devised. One day you will reread this poem with the holy joys of pride. You may leave many debris behind you, but you will stand unsullied, amidst the betrayals, meanness and turpitudes of others. He who shows his heart candidly and generously may have to suffer, but need never blush with shame – and here, perhaps, ultimately lies the reward. As Jesus told Magdalene, 'You have loved so much that you shall be highly rewarded.' […]
Lettre de George Sand à Alfred de Musset Venise, le 15 juin 1834	George Sand, letter to Alfred de Musset Venice, 15th June 1834

[Musset, Sand, 2014, pp. 85-87], (English translation: Barbara Schmidt (Université de Lorraine, France), Review: Matthew Smith (Université de Lorraine, France))

Text 2: The poem *The Escapee*, by Boris Vian

Il a déval[l]é la colline	He hurtled down the hill
Ses pieds faisaient rouler des pierres	Rocks sent flying with every step
Là-haut, entre les quatre murs	Up high from those four walls
La sirène chantait sans joie	The siren sang without joy
Il respirait l'odeur des arbres	He breathed in the scent of the trees
Avec son corps, comme une forge	With his body like a forge
La lumière l'accompagnait	The light followed his form
Et lui faisait danser son ombre	Making his shadow dance
Pourvu qu'ils me laissent le temps	If they could just give me time
Il sautait à travers les herbes	Bounding across the grass
Il a cueilli deux feuilles jaunes	He picked up two yellow leaves
Gorgées de sève et de soleil	Soaked with sap and sun
Les canons d'acier bleu crachaient	The steel blue guns spitting
De courtes flammes de feu sec	Rapid bursts of fire
Pourvu qu'ils me laissent le temps	If they could just give me time
Il est arrivé près de l'eau	He reached the water's edge
Il y a plongé son visage	He plunged in his face
Il riait de joie; il a bu	Laughing with joy he drank
Pourvu qu'ils me laissent le temps	If they could just give me time
Il s'est relevé pour sauter	He raised himself to jump
Pourvu qu'ils me laissent le temps	If they could just give me time
Une abeille de cuivre chaud	A bee of hot copper
L'a foudroyé sur l'autre rive	Struck him down on the facing bank
Le sang et l'eau se sont mêlés	Blood and water ran together
Il avait eu le temps de voir	He'd had the time to fill his eyes
Le temps de boire à ce ruisseau	Time to drink from the creek
Le temps de porter à sa bouche	Time to bring to his lips
Deux feuilles gorgées de soleil	Two sun-soaked leaves
Le temps de rire aux assassins	Time to reach the other side
Le temps d'atteindre l'autre rive	Time to laugh at his assassins
Le temps de courir vers la femme	Time to run towards the one woman
Il avait eu le temps de vivre.	He'd had the time to live.
L'évadé, Boris Vian (1954)	*The Escapee*, Boris Vian (1954)

[Vian, 2004, pp. 133-134], (English translation: Aimee Orsini)

Bibliography

Balderston D. C., (2014), "Love", [in:] *Encyclopedia of Psychology and Religion*, [ed.] D. A. Leeming New York, Springer US Springer Science+Business Media Publisher, pp. 1042-1048.

Gan-Krzywoszyńska K., Leśniewski P., (2015), "On Non-Rationalities in the Foundations of the Humanities: A Hexagonal Analysis of the Counterrationality Principle", *Studia Metodologiczne*, No 35, pp. 167-182.

Hart J. G., (2009), *Who One Is. Book 1: Meontology of the "I": A Transcendental Phenomenology*, Springer Science + Business Media B. V.

Luther A. R., (1972), *Persons in Love. A Study of Max Scheler's „Wesen und Formen der Sympathie"*, Hague, MartinusNijhoff.

Prévert J., (1972), "Entrées et sorties (Folâtrerie)" [in:] J. Prévert, *La pluie et le beau temps*, Paris, Gallimard (Folio 90).

Thoreau H. D., *Walden*, "Where I Lived, and What I Lived For", Project Gutenberg, [http://www.gutenberg.org/files/205/205-h/205-h.htm, accessed July 22, 2016].

Musset A. de, Sand G., (2014), "Ô mon George, ma belle maîtresse…", [in:] *Lettres*, [ed.] M. Reid, Paris, Gallimard (Folio 5127), pp. 85-87. (English translation: Barbara Schmidt (Université de Lorraine, France); Review: Matthew Smith (Université de Lorraine, France)

Vian B., (2004), "L'évadé", [in:] *Textes et chansons*, [ed.] N. Arnaud, Paris, Christian Bourgois Éditeur. (English translation: Aimee Orsini)

Estelle Carciofi
Institut de recherche et d'histoire des textes (IRHT)
National Center for Scientific Research (CNRS), Paris, France
carciofiestelle@yahoo.fr

STUDIA METODOLOGICZNE
NR 37 • 2016, 223–240
DOI: 10.14746/sm.2016.37.13

ALEKSANDRA GOMUŁCZAK
PIOTR LEŚNIEWSKI

Analogies and Language. A Study in Stefan Themerson's Semantic Poetry

"When I use a word," Humpty Dumpty said in rather a scornful tone,
"it means just what I choose it to mean – neither more nor less."
Lewis Carroll *Through the Looking-Glass*

Der Sinn einer Frage ist die Methode ihrer Beantwortung.
Sage mir, *wie* du suchst, und ich werde dir sagen, *was* du suchst.
Ludwig Wittgenstein *Philosophische Bemerkungen*

ABSTRACT: In this paper the concept of analogy within the framework of Semantic Poetry by Stefan Themerson is sketched. The Themersonian project is compactly described. Two analogies are presented. We call them the analogy by naturalness and the traveller's analogy, respectively. Some similarity between Semantic Poetry and the Fregean concept of reference is discussed. The Themersonian view on logic and the Kazimierz Ajdukiewicz's approach are also briefly compared.

KEY WORDS: analogy, meaning, unambiguity, semantics, poetry, Stefan Themerson

1. Introductory remarks

The concept of *closed and connected languages* was introduced by Kazimierz Ajdukiewicz [in Ajdukiewicz 1978a]. The paper – under the German title *Sprache und Sinn* – was originally published in *Erkenntnis* in 1934. Generally speaking, if L is a closed and connected language, then for each expression E of L there is an unambiguous coordination between E and its meaning.[1] Moreover, Ajdukiewicz wrote:

[1] See [Ajdukiewicz, 1978a, p. 64]. The Polish phrase *języki zamknięte i spójne* has been translated as *closed connected languages* by John Wilkinson and as *closed, connected lan-*

(a) single ambiguous word points to the existence of two languages whose sounds and words are the same and whose coordinations between word and meaning differ at one point only.[2]

Unfortunately, already in September 1936 he officially rejected this concept. It happened during a discussion at the 3rd Polish Philosophical Congress in Cracow. We say 'unfortunately' since it seems quite reasonable to treat these languages as highly idealized models of linguistic competence. The presupposition that there is an unambiguous coordination between a given expression and its meaning can be interpreted as an idealizational assumption.[3] Even though Ajdukiewicz himself called the concept of closed and connected languages a 'fictitious and superfluous' one in 1953, it is still an excellent example of a method of construction of unambiguous languages.[4]

In our paper another – unique – project towards unambiguousness in language is briefly presented, i.e. the concept of *Semantic Poetry* (S.P.) by Stefan Themerson.[5] We begin with a biographical note on Themerson. Then his project is shortly sketched. Next the use of analogies within the framework of the Themersonian approach is briefly described. At the end, some philosophical foundations of the Semantic Poetry are discussed.

Stefan Themerson is a writer, poet, thinker and film-maker born in 1910 in Płock, Poland. He was what we call today an interdisciplinary creator. Themerson and his wife Franciszka (née Weinles) were part of the Polish avant-garde during the 1930s. Their films represent an outstanding example of early Polish film-making.[6] In 1938 they moved to Paris, but unfortunately in 1939 the war started.[7] In 1942 Themerson got across Por-

---

guages by Richard Harandon. See [Ajdukiewicz, 1978a, pp. 52-53] and [Ajdukiewicz, 1995, p. 23].

[2] See [Ajdukiewicz, 1978a, p. 64].

[3] See for example [Nowak, 1980, pp. 23-38].

[4] See [Ajdukiewicz 1995, p. 23]. For further developments of Ajdukiewicz's concept of meaning, see for example [Woleński, 1989, pp. 251-260].

[5] The abbreviation "S.P." is Themerson's idea, see [Themerson, 1997, p. 54].

[6] About Themerson' s films, see for example [Reichardt, Wadley, 2007].

[7] About the life of the Themersons during Second World War and the fate of their families, see [Themerson, Themerson, 2013].

tugal to England. With his wife (who had got there in 1940) they decided to stay on permanently. In 1948 they started to run a publishing company – the Gaberbocchus Press. Themerson's thought was under the great influence of analytical philosophy, especially Bertrand Russell (with whom he developed a long and fruitful friendship). He wrote seven novels and plenty of essays on ethics, aesthetics, logics and science. He died in 1988, a few months after the death of his wife. It is worth to emphasize here that in 2006 after many trials and tribulations, a bilingual edition of *The Good Citizen's Alphabet* by Bertrand Russell was published in Poland. The book includes drawings by Franciszka Themerson.[8]

2. Brief characteristics of Semantic Poetry

Themerson developed the idea of Semantic Poetry in his early novel *Bayamus and the Theatre of Semantic Poetry*[9], published in 1949. Then he continued it in other writings.[10] S.P. was founded on the author' s reflection on the problem of communication and our knowledge about the meaning of words, or (to be more specific) the absence of such knowledge. The whole idea has its roots in Themerson's ethical ideas. But let us start from the beginning.

S.P. is a method of translating the words used in a poem into the dictionary definitions of these words.[11] Themerson calls it the *dictionary method*.[12] To be more specific, the word in a poem is replaced by the part

[8] For the history of this book, see [Sady, 2006].

[9] See [Themerson, 1997].

[10] Semantic Poetry appears in a book of comics made by his wife – *Semantic Divertissements* [Themerson, Themerson, 1962]. Themerson also adopted the Semantic Poetry into music and in 1972 wrote and composed a semantic opera *St. Francis and the Wolf of Gubbio or Brother Francis' Lamb Chops*. In 1975 he published a selection of essays *On Semantic Poetry*. A film about S.P. called *Stefan Themerson and Language* was made also in 1975 (by E. Van Zuylen). Themerson acts there himself and describes a method of S.P. For the screenplay, see [Van Zuylen, 2013]; the film is available online [http://lux.org.uk/collection/works/stefan-themerson-and-language].

[11] [Themerson, 1997, p. 52, p. 54].

[12] [Themerson, 2009, p. 15].

of the definition called *definiens*.[13] The aim of this treatment is to gain (or regain, it would be explained later) the exact, precise and most possible unambiguous meaning of the word. The main (but nameless) character of *Bayamus* says:

> Each of the S.P. words should have one and only one meaning. (…) They should be well defined. They should be washed clean of all those diverse aureolas which depend on the condition of the market.[14]

Themerson reckoned that the language of modern poetry had lost what he calls its *fundamental tone* and replaced it with *overtones*.[15] The *fundamental tone* of the word is its exact meaning. Themerson identifies the exact meaning with the reference/denotation of the word.[16] *Overtones* are identified with the associations which appear in our minds when we see the words or think about them. These associations have an individual, particular, national, emotional and political nature.[17] When we link the meaning with this kind of association, it is easier to use the words to make them have an impact on human minds by, e.g. politicians or demagogues.[18] Themerson claims that politicians know more about language than all the philosophers and logicians put together.[19] That is why he wanted to replace words' associations with knowledge. If people knew the meanings of the words they use, it would not be so easy to manipulate them.[20] Themerson emphasizes that:

---

[13] For the structure of a definition, see for example [Ajdukiewicz, 1974, pp. 57-77].

[14] [Themerson, 1997, p. 52].

[15] [Themerson, 2009, pp. 13-14].

[16] *Ibidem*.

[17] [Themerson, 1997, p. 82, Themerson, 2009, p. 9].

[18] Therefore it is worth to investigate situations of enslavement and exasperation in the foundations of the humanities. For a systematical approach to such situations and relevant assumptions of counterrationality and irrationality, see for example [Gan-Krzywoszyńska, Leśniewski, 2015, pp. 169-176].

[19] [Themerson, 2013b, p. 46].

[20] The problem of the ambiguity of language was also a field of a struggle for Socrates. After all, his maieutic method was aimed at finding the precise meaning of words.

> (...) poetry sometimes occurs to be morally wicked and intellectually dishonest, and then it is nothing else but demagogy. And when it happens, the poetry becomes a crime.[21]

Poetry must be lucid and sober:

> Semantic Poetry does not arrange verses into bunches of flowers. It bares a poem and shows the extra-linguistic data hidden behind it.[22]

The method of S.P. is inseparably linked with its specific form. Themerson claims that the form of a written text can also be a medium of meaning/sense.[23] In this particular case, the form performs a concrete and important function, since replacing a word by a definition causes big changes in the text pattern. In a place of a single word we put five, ten, or more words. The consequence is the following: we risk losing a clear picture of the text, because after the translation one sentence consists of a few different sentences (and not all words are translated, Themerson does not translate, e.g. connectives and screamers). And to put one sentence after another in such a structure produces chaos. To prevent this consequence, Themerson invents a tool which he calls *Internal Vertical Justification*.[24] It helps to arrange the structure of a poem after the semantic translation. The words of the definition are put one under another (i.e. vertically), whereas the main sentence remains horizontal (see Fig. **II** below). Vertical alignment helps to replace one word by a set of words without losing the line of a main sentence. And in this way we know where exactly is the beginning

---

[21] [Themerson, 1987, p. 352].

[22] [Themerson, 1997, p. 86]. It is interesting that there are several differences between the Polish and English versions of *Bayamus*. In the quoted sentence, in the Polish version instead of the word *data* there is *reality*, which, as we see it, changes a little the sense of this sentence. In our view, the English version better corresponds with the assumptions of S.P. And it cannot be a matter of translation because both of them were written by Themerson. And it does not happen merely in *Bayamus*, but also in other writings like *Prof. Mmaa's Lecture*. About the issue of self-translation in Themerson's writing and corrections made by him in his own works, see [Kraskowska, 1989].

[23] Themerson was fascinated with the possibilities of typographical experiments. In his writing typographical games are pervasive, especially in his books for children [Kraskowska, 1989, pp. 112- 113]; see also for example [Themerson, 1960].

[24] [Themerson, 1997, p. 55].

and the end of a definition, and when the main sentence is continued. The semantic poem is built from sets of words, and we can say that the semantic poem itself is a set of protocol-sentences.

Themerson openly refers his idea to the French Encyclopeadists who, like the later Themerson, claimed that Nature is a source of a knowledge about the world.[25] In the Themersonian philosophy naïve realism plays a fundamental role – for him it was certain that the world exists, thus we ought to study nature empirically. Themerson states that even ethics was founded on relations which exist in nature.[26]

There is also some similarity between the concept of S.P. and the theory of meaning developed by Gottlob Frege in his famous paper from 1892 *Über Sinn und Bedeutung* (*On Sense and Reference*).[27] The *fundamental tone* (*resp.* exact meaning*)* can be identified with the Fregean *Bedeutung* which is the denotation (or reference) of the word. The *overtones* (*resp*. associations) can be identified with the Fregean *Vorstellungen* (English *conceptions*). They are characterized in the following passage in [Frege, 1948]:

> The referent and the sense of a sign are to be distinguished from the associated conception. If the referent of a sign is an object perceivable by the senses, my conception of it is an internal image (...), arising from memories of sense impressions which I have had and activities, both internal and external, which I have performed.[28]

Giving a close look into S.P. we see that Themerson also distinguishes Frege's sense (German *Sinn*) in his project. The following paragraphs are aimed at an approximation of how he uses the notions of *meaning* (*reference*) and *sense* when explaining the S.P. method.

---

[25] [*Ibidem*, p. 54]. The original Fregean phrase *verknüpfte Vorstellung* was translated by Max Black as *the associated conception*, and as *the associated image* by Herbert Feigl.

[26] For Themerson's view on the significance of naïve realism, see [Themerson, 1980, Themerson, 2013a, Themerson, 2013c]. For the Themersonian ethics, see for example [Themerson, 2011].

[27] See for example [Frege, 1948]. Themerson does not refer to this theory directly, but a similarity appears to be obvious. Nonetheless, we cannot be certain that Themerson knew Frege's theory.

[28] [*Ibidem*, p. 212].

3. Semantic translation – semantic development – semantic restatement

When Themerson describes the method of S.P. he mostly uses the notion *semantic translation*. It appears everywhere in *Bayamus.* But in his letters to L.G. Hellström, he also uses the notions: *semantic development* and *semantic restatement*.[29] It is important to say a few words about this before moving to the problem of analogy. Understanding why he uses these notions provides us with what is essential for the idea of Semantic Poetry.

Semantic development is linked directly with the work of the method. It can be understood in two ways. Firstly, it is simply about a development of a form. The text is expanded, and prolonged due to using definitions. Secondly, it is about development understood more deeply. It provides us a sense/meaning which, after the semantic translation, becomes more evolved and objective since the meaning refers to denotation, and denotation is objective.

Semantic restatement is related to semantic development, obviously. Semantic development leads to a restatement of the meaning of the word, updates it by using current dictionary definition, and makes it as unambiguous as possible.

But Themerson put the notion of *semantic restatement* in a broader context of his philosophy. He claims that:

> (*) art [including poetry] is a perpetual restatement of fundamental notions [and] problems.[30]

By this sentence he *states* that one of the main functions of art is observing the world around and re-stating problems and notions. The function of art is to keep asking questions about what we see and what is important.[31] In our view, the function of art defined in this way is similar to the

---

[29] See [Themerson 2009, p. 10].

[30] *Ibidem*.

[31] On some relations between philosophical questions see for example [Leśniewski 2013].

function of philosophy, though we are not sure if Themerson would fully agree with us.[32] Returning to S.P., the problem of meaning is one of the fundamental notions and problems which should be perpetually restated, since knowledge is evolving and the world is changing, but the problems, like communication and our understanding each other, are always present.

We can distinguish two levels of semantic restatement due to Frege's theory of sense and meaning. Firstly, we choose a definition to precise the meaning of a word. Then, when the meaning is restated, we establish that this concrete meaning should also be understood as a sense, because it is our knowledge which is replacing the associations. Themerson's requirement for sense and meaning is very restrictive. The meaning is a reference, whereas the sense is knowledge. And according to Themerson, the knowledge should always be linked with reference.[33] For Themerson the sense must refer to meaning.

There is one more thing worth to be mentioned. When Themerson criticizes the way we perceive meaning in poetry (as associations), he does not critique the associationist theory of meaning itself.[34] His remark is, rather, about the consequences of putting associations before knowledge. He agrees that we have associations, but we must not rely on them, we ought to rely on what we know instead (unless we do not *know* what we are talking about). It appears here a strong normative aspect of the Themersonian view on meaning and sense.

Above we aimed for an approximation of the assumptions and features of Semantic Poetry. This brief characteristic is merely a sketch of the idea of Themerson's project. There are plenty of interesting things which await deeper recognition e. g. the structure and role of definitions used in S.P., the question of translation, the question of the status of S.P. in the context of traditional poetry etc.

In the next page an example of Semantic Poetry is presented. Then we will move to the problem of using analogies due to explaining the method

---

[32] About the Themersonian critique of philosophy see [Themerson, 1980, Themerson, 2013a].

[33] [Themerson, 2009, p. 11, p. 14].

[34] For the associationist theory of meaning, see [Ajdukiewicz 1978b, pp. 7-18].

and significance of selected features of Semantic Poetry. Below there is a flagship example of the S.P.[35] Firstly, there is an original poem, followed by the translation:

I. The fragment of the Chinese poem *Drinking under the moon* by Li Po:

*

The wine among the flowers,
O lonely me!
Ah, moon, aloof and shining,
I drink to thee.

II. The semantic translation of the above poem:

*

The fermented
grape-
juice
among the reproductive
parts
of
seed-plants

O! I' m conscious
of
my state
of
being isolated
from
others!

[35] For further examples of semantic translations, see [Themerson, 1997, pp. 39- 42 and pp. 57- 71].

Ah! Body	attendant on the Earth	revolving about	keeping & 238,840 miles (mean) aloof	shining by reflecting the	light radiated by the sun
	into my mouth I take & swallow the liquid	while expressing the hope for thy success.			

4. Analogy as an explanation tool

On the following pages we will give an example of the direct use of analogy by Themerson. He uses analogy to explain how S.P. works with the meaning. We will also see here again, how Themerson uses the theory of meaning and sense. He does not explain how he understands the notion of analogy, but uses it to show an example. We can try to reconstitute his concept of analogy by analyzing how he uses it and by explaining what was the point of using it. There are two main examples to discuss. Both are based on a mind experiment, possible to verify empirically (though the second one would be difficult to achieve, or at least would take a lot of time to perform).

4.1. Analogy by *naturalness*

There are two main situations described. Both are based on a concept of *what is natural to us*. Themerson asks a question: What would we do, if we would like to perform an act as similar as possible to what J. Sterne did

when he took a horse-drawn carriage and went to France?[36] It seems that we should take a horse-drawn carriage. But from some standpoint it' s not what we ought to do to achieve a similarity of performance. For Sterne, a horse-drawn carriage was a natural/common vehicle. For Themerson (in 1950s) to use a horse-drawn carriage would be something extraordinary. In the 1950s the natural/common vehicle was a car or a train. Thus, from this point of view – which for Themerson is very essential – if we want to do something *as similar as possible*, we should travel by ways which are common for us in the times we live.

Themerson extrapolates this example on the problem of the meaning of the words used in poetry. He wants to show, by using analogy, how the way we understand them is changing. In Frege's terminology – how the sense of the word is changing.

In Fig. **II** we saw an example of the semantic translation of a poem by Li Po. Li Po lived during the T'ang Dynasty (i. e. partly in the VIII century). Let us suppose we want to undergo an experience as similar as possible to what Li Po's listeners went through. Should we try to understand the poem in the same way as they did? Themerson's answer to this question is negative. He argues that when Li Po used the words *moon* and *far away* he was referring to the experience and knowledge of people who lived in eighth century China.[37] Our experience and knowledge (XXI century) differs from theirs, and consequently from Li Po's. This knowledge is our natural way of experiencing and perceiving the words *moon* and *far away*. For Themerson, it is irrational to expect us to imagine experiencing the same feelings or knowledge of the moon as Li Po and his listeners did. Semantic translation restates the meaning of a word, and updates it to our contemporary knowledge. Therefore, Themerson claims, from a very essential point of view that:

> (...) semantic translation is more the same thing as his [Li Po's] original than his original itself [in XXI century].[38]

---

[36] [Themerson, 2009, p. 10].
[37] [*Ibidem*, p. 11].
[38] See [Themerson, 2009, p. 11].

There is one further important aspect linked with this analogy. While the sense of the words (i.e. our knowledge) is different for us than for Li Po's, the meaning (understood in Fregean terminology) stays the same, since, quoting Themerson:

> Li Po's moon, you can take it out of his poem and put it into Rableais (though the sentences containing it will express different statements) the word itself will refer to same thing. And you can take Rableais' moon and put it where Saint Francis says 'moon'. It will refer to the same thing.[39]

Thus the meaning is always the same. The knowledge about the meaning can change, as we develop it due to the progress of science. Therefore, the definitions can also be changing. We can imagine that in the next 50 years our knowledge of things could be much bigger or much different (which is possible), and then the definitions would be different, and with it the semantic translations. But what is interesting about the S.P. method, is its universality, since it can work as well today as in the next 50 years. And its function will not change.

As we can see above, there are two ways of using analogy here: one within these two situations, and the second one between them. The analogy within a situation is built on a concept of *naturalness*. It is based on a single essential feature which makes the situations in both stories similar. Thus, Themerson, by explaining the *analogy by naturalness* in a mind experiment with vehicles, can extrapolate it on a problem of restating a sense, which is one of the most valuable consequences of the S.P. method, since it can (and ought to) be restated perpetually. The analogy between these two situations is based on the similar structure of both cases. Of course, the structure is built by Themerson intentionally to explain how we can move from an empirically possible situation to a more abstract case and demonstrate the validity of the assumptions of the S.P.

[39] [*Ibidem*, p. 14].

4.2. *The traveller's* analogy

The mind experiment is as follows: suppose one wants to go far away from the place one is living in. The easiest way to do so is to go straight from the place one is living in and keep going. And when one keeps going farther and farther, one rounds the Earth and comes back to the very place one had left. The desire to still keep going far away brings one back to the place of departure. But Themerson remarks that it does not mean that the travelling was in vain, since:

> (...) to have been in a place and to come back to the place, are not the same thing. He [the traveler] is not the same, but experience-richer – and so the place isn't anymore the same, because now it contains at least one new person – him, himself.[40]

The situation above is extrapolated by Themerson on the following problem: let us suppose someone wants to go in search of the meaning of things. And the best way to do so is to define as unambiguously as possible the words he is using. When the defining process begins, one starts to define words, and then tries to define the words which were used in his definition and so on. Finally, one finds out that there are words which are not definable by other words, but appear constantly during the defining process. So he finds himself surrounded by vicious circles and the only thing he finds out is that:

> (...) about [the] whole process called – language – you cannot talk in the same language, you have to invent especially for the purpose a language of higher degree (…) and we find ourselves standing in the middle of a ladder, vicious circles and epicycloids below our feet, and an 'infinity' of meta-languages (Wittgenstein) above our poor tormented mind-containers.[41]

The desire to get deeper into meaning makes one turn in vicious circles. Nonetheless, claims Themerson, it does not follow that his travelling into meaning was in vain. Words taken from any private or particular vo-

---

[40] See [Themerson, 2009, p. 12].
[41] *Ibidem*.

cabulary, such words and the same words but having undergone a trial of the vicious circle variety, are not the same things any longer.[42]

This analogy seems to be a little more complicated than (4. 1), since the second case here is more complex and the similarity is less apparent and/or demonstrable. This analogy also brings us to the problem of semantic restatement. Even if, after all our struggle to do so, we cannot define every possible word, we still gain a lot of experience and knowledge about this very word and its meaning.

This analogy is also based on the similar structure of both cases. What is important is that Themerson uses a possible to achieve and imagine an empirical example, and shows that the more abstract and complex situation can be explained and understood due to the similar structure. According to the standard approach, analogy is a tool witch guides us from the known to the unknown.[43] And it helps to validate something which before seemed to be very confusing and unclear.

5. Diversification and consistency in Themerson's thought – philosophy and language

When we look at Themerson's philosophical position just from a (simply understood) point of view of S.P., the connection with analytical and scientific-oriented philosophy seems to be obvious. But the truth is, in some essential part, completely different. Themersonian thought has two sides (or maybe more) which are seemingly contradictory. Let us give a brief, but closer look into the Themersonian standpoint.[44]

On the one hand we have the problems of ambiguous language (S.P.), and Themerson is striving for precising it. On the other we have philosophy. When using language Themerson expects unambiguity. But with philosophy things are quite different. He considers unambiguity a defect if it is

[42] See [Themerson, 2009, p. 13].

[43] See for example [Biegański, 1909, p. 1].

[44] This paper shows only particularly selected issues of Themersonian thought. His philosophical position is dispersed in various writings, which still await detailed analysis.

strongly present in philosophy. His critique is aimed mainly at formal logic and the certainty present in some philosophical claims.

Semantic Poetry is built from definitions, but (as we saw above) Themerson is aware that it is not possible to give an exact definition of everything. In his essay *An Introduction to Semantic Poetry* he shows that even the word *poetry* is not definable, because all the definitions of poetry are either too narrow or too wide.[45] Themerson assumes that the *poetry* is not contained in a poem itself, but there is something in our minds which decides what is poetic (even if he does not explain what it is exactly). Thus, it is not possible to define everything; however, that does not privilege us to use unambiguous language.[46]

Moreover, Themerson claims that aiming at unambiguity is very often a defect of philosophy:

> the world is more complicated than the language we speak about it; therefore, it is also more complicated than truths which we state about it using words and sentences.[47]

In this statement he argues that our language is not capable of expressing everything we experience in the world.[48] And for Themerson the most limited language is the language of formal logicians who

> (...) dream their dreams about the world of unambiguous nouns and predicates, ruled by the rule of [the] excluded middle; about the world where everything is what it is and isn't what it isn't. And they dream their dream until the deductive conclusions, which are valid for all possible worlds except for our own.[49]

The curious thing about Themerson's philosophy is its diversification. He uses the tools of analytic philosophy to build his Semantic Poetry,

---

[45] See [Themerson, 1987a, p. 333].

[46] The question of a *description* of everything remains open.

[47] See [Themerson, 1993, p. 91].

[48] About Themerson' s attempts to explain why our language is limited and his possible solution to this problem, see for example [Themerson, 2013a].

[49] See [Themerson, 1987, pp. 352-353].

whereas he turns against one of its fundamental tools, i.e. logic. Themerson even accuses logic of demagogy.[50] He did not accept especially the inevitability of inference.[51] For him, to follow inference despite all circumstances is immoral.[52] We can argue with this standpoint. For example, Kazimierz Ajdukiewcz's view on logic was completely opposite. For him, the knowledge of logic gives a protection from dogmatism; it causes a need for the validation of the statements that are given. And more, the logic teaches that not all the methods of validation have the same demonstrative value – a lot of them provide only a probability.

6. Conclusions

The Themersonian project of Semantic Poetry remains a very good example of elaborated approaches to the problem of unambiguity. It requires further systematical research and more practical applications. Themerson's original philosophical position awaits meticuolus analysis. Undoubtedly, the detailed structures of the Themersonian concepts of analogy should be investigated carefully, especially by means of formal logic and standard set-theoretical concepts as well as concepts of category theory.

Obviously, it is arguable that the trend toward unambiguous languages even in science is unnecessary with regard to the goals of science.[53] Moreover, this has been declared openly by W. V. Quine:

> The word 'meaning' is indeed bandied as freely in lexicography as in the street, and so be it. But let us be wary when it threatens to figure as a supporting member of a theory. In lexicography it does not.[54]

Nevertheless, there is a fundamental connection between unambiguity and rationality. On the margin of a remark on rational actions Ajdukiewicz wrote in *Pragmatic Logic*:

---

[50] [*Ibidem*, p. 353].

[51] About Themerson' s view on logic, see for example [Themerson 1987, Themerson, 2013a, Themerson 2013b].

[52] See [Themerson, 1987, pp. 364- 365].

[53] See for example [Łuszczewska-Romahnowa, 1979].

[54] See [Quine 1999, p. 83].

Hence it is evident that developing in the pupils the ability and the urge to make statements which are matter-of-fact, **unambiguous** and precise is one of the principal tasks of school education. [emphasis added][55]

Bibliography

Ajdukiewicz K., (1974), *Pragmatic Logic*, Translated from Polish by O. Wojtasiewicz, Dordrecht-Boston, D. Reidel/ Warsaw, Polish Scientific Publishers.

Ajdukiewcz K., (1978a), "Language and Meaning", Translated by J. Wilkinson, [in:] K. Ajdukiewicz, *The Scientific World-Perspective and other Essays. 1931–1963*, J. Giedymin [ed.], Dordrecht, D. Reidel, pp. 37-66.

Ajdukiewcz K., (1978b), "On the Meaning of Expressions", Translated by J. Giedymin, [in:] K. Ajdukiewicz, *The Scientific World-Perspective and other Essays. 1931–1963*, J. Giedymin [ed.], Dordrecht, D. Reidel, pp. 1-34.

Ajdukiewicz K., (1995), "My Philosophical Ideas", Translated by R. Harandon, [in:] *The Heritage of Kazimierz Ajdukiewcz*, V. Sinisi, J. Woleński [eds.], *Poznań Studies in the Philosophy of the Sciences and the Humanities*, Vol. 40, Amsterdam-Atlanta, Rodopi, pp. 13-33.

Biegański W., (1909), *O wnioskowaniu z analogii*, Lwów, Polskie Towarzystwo Filozoficzne. [Polish]

Frege G., (1948), "Sense and Reference", Translated by M. Black, *The Philosophical Review*, Volume 57, Issue 3, pp. 209-230.

Kraskowska E., (1989), *Twórczość Stefana Themersona – dwujęzyczność a literatura*, Wrocław, Zakład Narodowy im. Ossolińskich- PAN. [Polish]

Gan-Krzywoszyńska K., Leśniewski P., (2015), "On Non-Rationalities in the Foundations of the Humanities: A Hexagonal Analysis of the Counterrationality Principle", *Studia Metodologiczne*, No 35, pp. 168-182.

Leśniewski P., (2013), "Ethics and Metaphysics. On Some Practical Aspects of Erotetic Rationality", E. Nowak, D. Schrader, B. Zizek [eds.], *Educating Competencies for Democracy*, Frankfurt am Main, Peter Lang, pp. 83-95.

Łuszczewska-Romahnowa S., (1979), "Ambiguity and the Language of Science", [in:] J. Pelc [ed.], *Semiotics in Poland 1894-1969*, Translated by O. Wojtasiewicz, Dordrecht-Boston, D. Reidel/ Warsaw, Polish Scientific Publishers, pp. 148-159.

Nowak L., (1980), *The Structure Of Idealization. Towards A Systematic Interpretation of the Marxian Idea Of Science*, Dordrecht, D. Reidel.

Quine W. V., (1999), *From Stimulus to Science*, Cambridge MA-London, Harvard University Press.

Russell B. (2006), *The Good Citizen's Alphabet. Elementarz dobrego obywatela*. Translated into the Polish by M. Sady, Warszawa, BONOBO. [A bilingual edition.]

Sady M. (2006), "Afterword", [in:] B. Russell, (2006). *The Good Citizen's Alphabet. Elementarz dobrego obywatela*, Warszawa, BONOBO, pp. 55-57.

[55] See [Ajdukiewicz, 1974, p. 3].

The Films of Franciszka and Stefan Themerson, (2007), J. Reichardt, N. Wadley [eds.], London-Warsaw, LUX-CSW.
Themerson F., Themerson S., (1962), *Semantic Divertissements*, Londyn, Gaberbocchus.
Themerson F., Themerson S., (2013), *Unposted Letters 1940-1942*, Amsterdam-London, Gaberbocchus & The Harmonie.
Themerson S., (2009), *A few Letters from the 1950's: Selected correspondence with Lars Gustav Hellstöm and Bertrand Russell*, Black River Falls, Obscure Publications.
Themerson S., (1997), *Bayamus and The Theatre of Semantic Poetry & The Life of Cardinal Pölätüo with Notes on His Writings, His Times and His Contemporaries*, Boston, Exact Change.
Themerson S., (2011), *Faktor T. Część II i III*, Transl. by M. Sady, Gabberbocchus w Polsce. [Polish]
Themerson S., (1980), „Z encyklopedii wieczorów rodzinnych", [in:] S. Themerson, *Generał Piesc i inne opowiadania*, Warszawa, Czytelnik, pp. 157-185. [Polish]
Themerson S., (1987), „Katedra przyzwoitości", Transl. by A. Bikont, P. Bikont, *Literatura na Świecie*, No. 7, pp. 342-366. [Polish]
Themerson S., (2013a), „Logika, etykietki, ciało", Transl. by M. Rychter, M. Wiśniewski, *Literatura na Świecie,* No. 9-10, pp. 86-214. [Polish]
Themerson S., (2013b), „Niemodne alternatywy", Transl. by J. Fruzińska, *Literatura na Świecie*, No. 9-10, pp. 40-54. [Polish]
Themerson S., (1993), „Nim ukaże się książka", [in:] S. Themerson, *Jestem czasownikiem, czyli zobaczyć świat inaczej*, K. Kopcińska, M. Grala [eds.], Płock, POKiS. [Polish]
Themerson S., (1960), *Pan Tom buduje dom*, Warszawa, Nasza Księgarnia. [Polish]
Themerson S., (1987a), „Wstęp do poezji semantycznej", Transl. by A. Taborska, M. Giżycki, *Literatura na Świecie*, No. 7, pp. 330-341. [Polish]
Themerson S., (2013c), „Wydział Specjalny", Translated by K. Kopcińska, *Literatura na świecie*, No. 9-10, pp. 274-361. [Polish]
Themerson S., (2013d), *Wykład prof. Mmaa*, Warszawa, WAB. [Polish]
Van Zuylen E., (2013), "Stefan Themerson and Language", [in:] *Themersonowie i awangarda*, P. Polit [ed.], Łódź, Muzeum Sztuki, pp. 226-238.
Woleński J., (1989), *Logic and Philosophy in the Lvov-Warsaw School*, Dordrecht-Boston-London, Kluwer.

Aleksandra Gomułczak
Adam Mickiewicz University, Poznań, Poland
gomulczak.a@gmail.com

Piotr Leśniewski
Department of Logic and Methodology of Science, Adam Mickiewicz University, Poznań, Poland
grus@amu.edu.pl

STUDIA METODOLOGICZNE
NR 37 • 2016, 241–254
DOI: 10.14746/sm.2016.37.14

KATARZYNA GAN-KRZYWOSZYŃSKA
PIOTR LEŚNIEWSKI

Analogies in the Meta-Methodology of the Humanities

But it is not by old error that new error can be combated.
B. Russell[1]

The death of the society means a full life for the power.
L. Nowak[2]

ABSTRACT: The aim of the paper is to analyze some analogies between the analectic method by Enrique Dussel and the pragmatic methodology by Kazimierz Ajdukiewicz. Furthermore, the analogical study of these two meta-methodological approaches enables the explication of some interesting and surprising similarities between them. The article contains a brief presentation of the analogical perspective in contemporary philosophical conceptions by Dussel and Mauricio Beuchot, and Ajdukiewicz's programme and the approach to analogy based on the theory of opposition.

KEY WORDS: analogy, meta-methodology, humanities, Ajdukiewicz, Beuchot, Dussel

1. Introduction

A Plea for Excuses by J. L. Austin includes some general warning against an incorrect assumption within the framework of semantic investigations on key terms, moral ones especially. He wrote:

[1] See [Russell, 1950, p. 69].
[2] See [Nowak, 1983, p. 145].

> It seems to be too readily assumed that if we can only discover the true meanings of each of a cluster of key terms, usually historic terms, that we use in some particular field (as, for example, 'right', 'good' and the rest in morals), then it must without question transpire that each will fit into parts in some single, interlocking, consistent, conceptual scheme [Austin, 1961, p. 151].

On the margin of this premonition of the myth of such a conceptual scheme, the following query is asked by Austin:

(*) Why must there be a conceivable amalgam, the Good Life for Man?[3]

As a matter of fact, we proceed in our paper as indicated by J. L. Austin. By the term *foundations of humanities* we mean consequently a research on basic questions posed within the studies on human activities.[4] But we use the term *model* instead of the word *amalgam*. Hence let us start with some other issue:

(**) Is there a conceivable model of the so-called Good Life for Man?

One may consider three methodological positions in relation to the issue (**) at least; namely – the univocal, equivocal and analogical ones. Obviously, it could be presumed that (**) is equivalent (or just reducible) to central philosophical questions as: "How to live?" and/or "Why should I live?".[5] Nevertheless, according to the univocal standpoint there is exactly one model of the so-called Good Life for Man. From the equivocal point of view, there is a multitude of models which are incommensurate and incomparable with each other. Following the analogical approach, we are interested in the differences and similarities between many distinct models of the Good Life for Man.

---

[3] See [Austin, 1961, p. 151].

[4] See [Gan-Krzywoszyńska, Leśniewski, 2015].

[5] See [Putnam, 1996, p. 22]. The later question could be replaced by the question: *Is life worth living?*. For this question and some famous answers, see [James, 1912, p. 32]. For a brief introduction to other philosophical questions, see, for example [Kołakowski, 2007].

2. The analogical hexagon by Jean-Yves Béziau

From many characteristics of analogy, we choose Jean-Yves Béziau's hexagonal analysis of analogy, based on the theory of oppositions.[6] The starting point is the square that presents (logical) relations between the notions of opposition, identity, difference and similarity (Fig. 1). These four standard relations are given in the following table (Tab. 1).

Tab. 1.

RELATION	TRADITIONAL NAME	GRAPHIC REPRESENTATION
contradiction	**contradictio**	— — — — — — — —
contrary	**contrarietas**	————————
subcontrary	**subcontrarietas**	- - - - - - - - - - - -
subaltern	**subalternatio**	·····▶

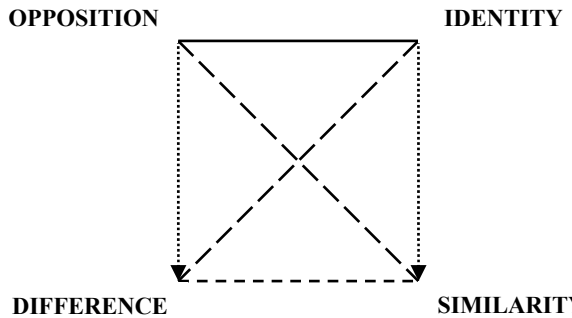


Fig. 1. Béziau's analogical square

Opposition and similarity form a contradiction that encompasses another contradictory opposition of identity and difference. Therefore, in the

[6] These figures come from his talk at the First World Congress on Analogy that took place in Puebla, Mexico, entitled *The Logical Hexagon of Analogy: Structuring the Relations between Difference, Identity and Similarity*. See [*Handbook of the First World Congress on Analogy*, 2015, pp. 12-13].

following square, opposition is contrary to identity, since two opposed things cannot be identical, but two things can neither be opposed, nor identical. Subsequently, difference is subcontrary to similarity, for two objects can be different and similar at the same time, yet they cannot be neither different, nor similar.

Following Robert Blanché, Béziau extends this square into the logical hexagon, where analogy forms a contrary triangle of opposition with opposition and identity. In the last part of the article we will modify these figures to show the difference between Béziau's and Dussel's concepts of analogy.

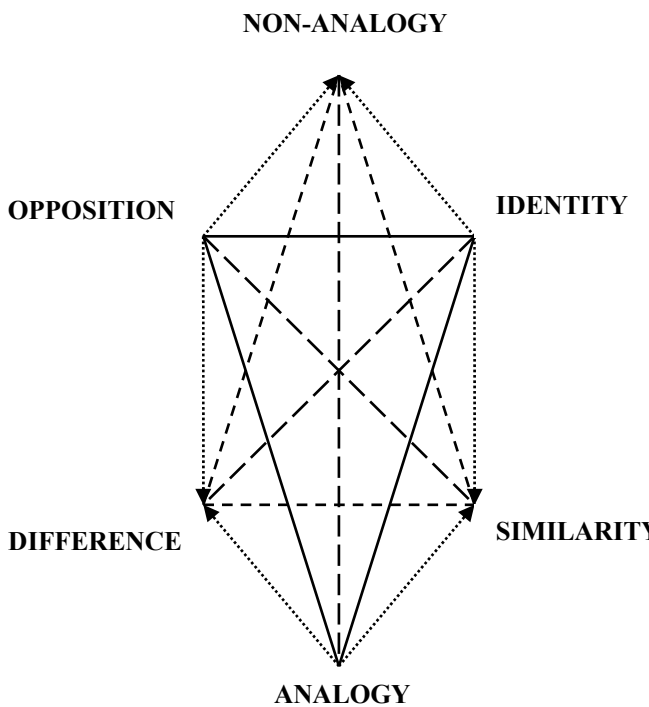


Fig. 2. Béziau's analogical hexagon

3. The analectic method by Dussel and analogical hermeneutics by Beuchot

The concept of analogy allows an optimal solution to the problem of polysemy, pervasive especially in the humanities. Of course, to say that all concepts such as *people*, *power* and *justice* are ambiguous is trivial. However, the fundamental claim that they are analogical concepts is not so widespread. Moreover, one of the most important consequences that each dialogue – and rational action in general – depends on is the acceptance of the analogy as the most relevant strategy for overcoming the problem of polysemy. Below we present a brief introduction to two approaches to analogy elaborated by Enrique Dussel and Mauricio Beuchot, respectively.

Dussel, a prominent Argentinian-Mexican philosopher, one of the "Founding Fathers" of the Philosophy of Liberation (Spanish: *Filosofia de la Liberación*), is also the author of the so-called *analectic method*. The name of the said method is intended to express a combination of the analogical and dialectic approaches. However, his approach consists in a critique of classic dialectics as an epistemological perspective that does not take into account colonized nations, whereas the analectic method is an *ana-logos*, alternative knowledge and an alternative platform for the creation of knowledge informed by the oppressed. It is a fundamental contribution to philosophy also because it explains how Latin America is situated "beyond" (*ano*-) the horizon of the occidental (western) totality. Inspired by Lévinas, analectics proper category and the starting point is the exteriority of the Other.[7] The so-called *analectical moment* makes possible an

[7] According to Dussel, Lévinas whom he met and knew very well personally, is a key author since he emphasized the ethical dimension of the criticism of modernity. Nevertheless, the author of *Philosophy of Liberation* claims that even Lévinas was still Eurocentric. The author of *Totality and Infinity* does not think of the Other as an African migrant, Latin American or an Asian person. This is why oppressed people cannot use colonial frameworks to fight colonialism. This is the problem that was also formulated by Elie Wiesel (*Language failed us*) and many Holocaust thinkers. To overcome or simply reflect on exterminations one cannot use the language that was used to realize the genocide. Therefore, Dussel proposes constructing new categories, new philosophy, new methods, an *ana-logos*, or *ana-lectic thinking*, to go beyond dia-lectics. See, for example [Mignolo, 2003 , p. 84].

entry into the metaphysical sphere, referring to the Other. Therefore, its principle is not that of identity, but of separation and distinction. It is worth emphasizing that Dussel criticizes Eurocentrism as the dominant ethnocentric perspective upon which the myth of modernity has been constructed. We could say that is it a certain version of the supracultural rationality myth in the very sense of Richard Rorty.[8]

The analectic method consist of passing from the ontic perspective of the self to the ontologic study of the Other; it is the disruption of the episteme from the ethical point of view. Dussel writes:

> The analectical moment of the dialectical method (ana-dialectical method) gives absolute priority to the *proyecto* of liberation of the other as new, as other, as distinct (and not only as different within the identity of the whole). In the final analysis, it can be affirmed that the analectic moment of dialectics is founded on the absolute anteriority of exteriority over totality, even to affirming the priority of the Absolute Other as creative origin over creation as a work, as a finite and therefore perfectible totality [Dussel, 1985, p. 192].

He distinguishes three basic models of approaches to the issue of polysemy: (1) the univocal (Spanish *unívoco*), (2) the equivocal (Spanish *equívoco*), and (3) the analogical one.

The first one, we characterize by two main categories: identity and difference. Within the scope of the univocal approach Dussel puts totalizing thought. In relation to the issue of polysemous expression, it is assumed that there is only one legitimate meaning and every other meaning is considered erroneous, incorrect etc. The story behind this position causes that all the dialogue is ruled out – for there are only two possibilities ("for" or "against", "same/identical" or "different"), which are very clearly – or even radically – defined from the axiological point of view. It is worth noting that Dussel includes examples of just such a univocal position not only within the positivist thinking, but also the entire western philosophical tradition – "from Ionia to Jena" (in the sense of Franz Rosenzweig). Within the univocal thinking Dussel puts all totalizing reflection (whose aim is the

[8] See [Rorty, 1991]. For the myth of supracultural rationality in occidental culture, see, for example [Gan-Krzywoszyńska, Leśniewski, 2014, pp. 183-184]. For the concept of interculturality as the so-called in-between sphere, see [Waldenfels, 2011, pp. 70-84].

mental reconstruction of the Whole, in other words – the metaphysical universe) and/or unifying reflection (i.e. those philosophical projects, in which the explanation of the elements of the universe consists in reducing them into one principle).

It is also worth noting that Dussel includes into the tradition of totalizing thinking the philosophy of Lévinas also. His fundamental opposition of "I/Other" would – according to Dussel – wear signs of a univocal opposition "identity/difference." The Other is completely different, a radical exteriority, therefore through the use of these categories this project is a part of the univocal approach.

The second important remark concerns the understanding of the concept of *consensus*. The standard concept of democratic procedures has overwhelmingly positive connotations. However, Dussel emphasizes its totalizing aspect. It is quite surprising, yet it is a consequence of the fact that consensual procedures lead to the one valid meaning, for example, of the given concept. It turns out that the concept of consensus – though usually not associated with totalizing and univocal trends – can lead, for example, to a division of the set of all the definitions of the term into at least two non-empty subsets. The first of these subsets would contain exactly one element (the current/valid definition of a term), the second – all the other definitions (considered as incorrect or even prohibited by law). Therefore, the univocal position is a radical (extreme) one that entails the reduction of all meanings to just one.

At the opposite end, Dussel places the model that is called equivocal. It allows for all the possible interpretations of a given cultural object that are at the same time completely disproportionate/incommensurable/untranslatable. But – just as in the case of the univocal position – the equivocal approach also prevents dialogue/makes dialogue impossible, since there is not any common ground. We could say metaphorically that according to this equivocal approach, each person has their own "truth", perhaps even formulated in his own untranslatable language. The extreme idiosyncrasy of some postmodern positions can serve as an illustration of this approach.

According to Dussel, we should follow the third moderate stance – the analogical one. Not without reason it is called the "golden mean". It should

be strongly emphasized that it is based on a similarity connecting – at least two – given objects. This commonality can be accompanied by any number of distinctions (Spanish *distinción*) – and not the differences. The aforementioned similarities should not be confused with identity. Thus, precisely the same approach dialogue is possible and – following Beuchot – we can even talk about *analogical rationality*.

After all, the condition for any dialogue is the existence of any, even the minimum, common ground. Such a joint/common platform enables the optimal understanding of the every nuance of meaning.[9] Both Beuchot and Dussel, emphasize the primacy of the category of *distinction*, in their view of analogy.[10] The latter, however, makes it clear that the search for similarities should be accompanied by an awareness of the case of any distinctions between the considered objects/notions/concepts – that the analectic method assumes also the diachronic aspect of this analogy. The structure of the analogy (which includes both similarities and differences between objects) may be subjected to change and the study of such transformations constitutes an equally important subject of the analectical inquiry.

Another very important question concerns the concepts of *transparency* and *clarity*. Usually, one tends to associate these notions with a specific univocal approach, as in logical positivism for instance. Nevertheless, Dussel claims that only the analogical position guarantees the fullest and the most specific semantic characteristics of a given cultural object (for example a given linguistic expression). Moreover, only within the analogical perspective can we compare various meanings and interpretations, or can we also attribute both positive and negative values.[11]

In this hexagon, analogy is in a contrary triangle with identity and difference. It is based on similarity and distinction, so therefore we do not need the quite ambiguous notion of opposition. Also it seems more natural to have the relation of subalternation between identity and similarity, and

[9] Jerzy Kmita – following Ajdukiewicz's conceptual aparatus – wrote about a common world perspective (Polish *perspektywa świata*). See, for example [Kmita, 2000, p. 6].

[10] It is worth noting that Beuchot uses the term "difference" in relation to analogy.

[11] Within the Poznań Methodological School, Włodzimierz Ławniczak called the humanities "axiological sciences".

difference and distinction, respectively. Also contradictory would be pairs: identity/distinction and similarity/difference, which is what we can see in Dussel's work. Moreover, identity implies similarity and difference implies distinction.

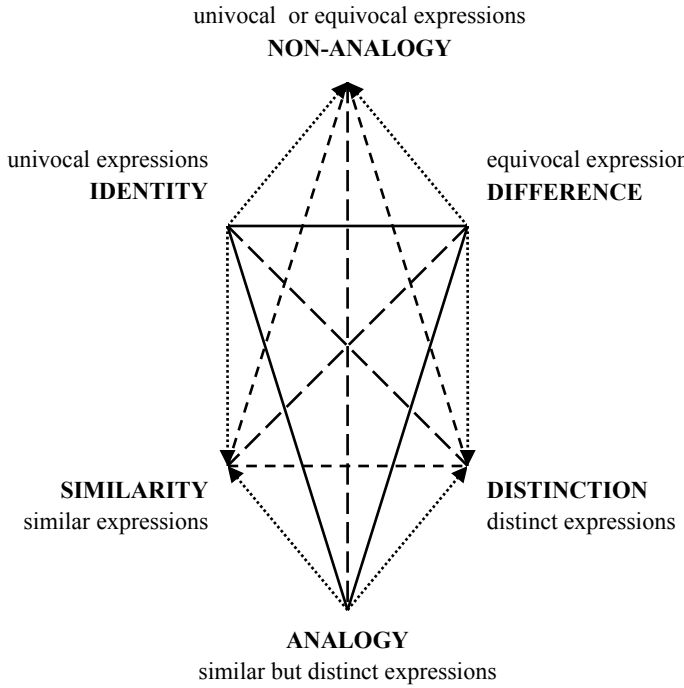


Fig. 4. Dusselian analogical hexagon

We would also like to consider here briefly the socio-political consequences of the aforementioned characteristics of these concepts. In the context of Eurocentrism, Dussel points out that the analectic method is the most accurate approach if we want to overcome the dominance of the centre to the periphery – and in every aspect of this opposition (that is, both with regard to the relationship of domination that occurs between individuals and in relation to that of the relationship between larger socio-political

groups). The crucial point is to transgress and reject the totalizing narrative (Spanish *totalidad totalizante*), which in practice gets rid of, or is used as a subordinate to, all entities that do not fit within the given vision of the metaphysical universe or which cannot be reduced to the structure organizing principle of this universe.

Likewise, Beuchot in his project of analogical hermeneutics postulates most of all the introduction of a hierarchical set of several justified interpretations. He rejects an idea of there being the exactly one right/correct interpretation as well as the radically relative (equivocal) claim that each interpretation should be considered as a valid one. Therefore, Beuchot's analogical hermeneutics is an intermediate position between the two extremes – namely the univocal approaches and the equivocal ones. On the one hand, with full methodological awareness we resign from the precision associated traditionally with a univocal interpretation, on the other hand, we also reject the certain understanding of "openness" on which equivocation is based. According to Beuchot, the main goal is to avoid the extremes to which procedures of interpretation are exposed. The above-mentioned radical approaches prevent effective dialogue and often lead to many bloody consequences. Therefore, the impact of analogy-based approaches should be considered not only from the philosophical but also from the socio-political perspective.

4. Ajdukiewicz's pragmatic methodology – towards "analogical clarity"

As we mentioned above, the use of analogy both in Dussel's analectic method as well as in Beuchot's analogical hermeneutics favours the most detailed/nuanced and fullest characteristic of the given concept (or for instance cultural artifact) as well as a philosophical pluralism and openness, that embraces many distinct world visions and/or world perspectives (in the very sense of Ajdukiewicz), yet without leading to the idiosyncrasy or relativism that paralyzes theoretical meta-reflection.

Precision and clarity constitute also the main goals of Ajdukiewicz's late project of pragmatic methodology. It may seem that he – as an analytical philosopher – was concentrated on elaborating univocal, specific meaning, but this great project of the author of *Pragmatic Logic* is very much oriented towards scientific practice and formal methods must be adapted to the real scientific practice. Especially, we could consider him as a representative of the univocal approach when we take into account for example his concept of *closed and connected languages*.[12] However, Ajdukiewicz rejected this idea already in 1936 and criticized it bluntly as a *fictitious and superfluous* one, and it is worth to emphasize that his philosophical trajectory evolved from radical conventionalism into radical empiricism.[13]

His sudden death took everyone by surprise and ended the work on his latest conceptions, and the posthumously published book *Pragmatic Logic*. This excellent work provides an example of his always innovative, profound and independent thinking, and is simply a highly original logic textbook.[14] Following Ajdukiewicz, pragmatic methodology should always aim at understanding clearly and fully what science is, by means of discovering and describing why certain attempts of scientists turn out to be successful (and valid), whereas others are considered as unsuccessful (and invalid). His article which deals with the procedures of defining is, in his own words, an example of an "insight-oriented" study. The book consists of 460 pages and it should be emphasized that only 43 are devoted to the deductive sciences and nine pages to formal logic and consequence relations. Ajdukiewicz can therefore be regarded as a precursor of the contemporary revolution in logic, namely, the so-called *practical turn*. He wrote:

> (...) pupils should be trained to make statements that are matter-of-fact, unambiguous, and precise. The knowledge of formulating one's statements so is indispensable not only in school, but in everyday life as well. Nonobservance of these three requirements may be tolerated in those cases where speech serves to express emotions or to arouse them, e.g., in poetry and in unscrupulous agitation, but never in those cases where cognition and/or rational (i.e., a cognition-based) action are at

[12] See for example [Ajdukiewicz, 1978, pp. 50-57].
[13] See [Ajdukiewicz, 1995, p. 23].
[14] *Pragmatic Logic* was edited by Halina Mortimer and Klemens Szaniawski.

> stake. Hence it is evident that developing in pupils the ability and the urge to make statements which are matter-of-fact, unambiguous and precise is one of the principal tasks of school education.

And also:

> The main core of elementary logic, i.e., logic in the narrower sense of the term as the discipline which lists and systematizes all the schemata of deductive inference (and the underlying logical tautologies), seems to be less important for the teacher. This is so because in everyday thinking he encounters only those cases of inference which follow very simple schemata of deduction, and then wealth of other schemata, listed in formal logic, finds application but rarely. Hence it does not seem worthwhile to burden the teacher's memory with them [Ajdukiewicz 1974, pp. 3-4].

It should be noted here that Ajdukiewicz as an outstanding organizer of scientific life in Poland, held the view that properly organized education in logic would help implement a wide social reform. This idea is based on a conviction, convergent with Dussel's opinion, that the way we express our thoughts affects our social/political/cultural life. He was the author of many popular textbooks in the field of logic and methodology intended not only for students and professional researchers, but also for public administration employees. He even wanted to introduce an obligatory course in logic for all workers in public administration. Ajdukiewicz was one of the authors of a wide-ranging and quite unique reform of the system of administration by the means of education in logic, and always emphasized the role of an education in logic in the proper functioning of a society.

Józef M. Bocheński – undoubtedly inspired by Ajdukiewicz, and whom he considered to be one of the most important analytic philosophers of the 20th century – wrote in 1954 that knowledge and reason are today at risk, and with them, all that is human is threatened, perhaps even the very existence of humankind. On the other hand, Klemens Szaniawski bluntly said during martial law in December 1982: "Supporters of rationality do not have an easy life today. First of all, because the reality around us – I mean what we can have an influence on, i.e. social [reality] – defies the requirements of rationality."

Bibliography

Ajdukiewicz K., (1974), *Pragmatic Logic*, Translated from the Polish by O. Wojtasiewicz, Dordrecht, Reidel.

Ajdukiewcz K., (1978), "Language and Meaning", Translated by J. Wilkinson, [in:] K. Ajdukiewicz, *The Scientific World-Perspective and other Essays. 1931–1963*, J. Giedymin [ed.], Dordrecht, D. Reidel, pp. 37-66.

Ajdukiewicz K., (1995), "My Philosophical Ideas", Translated by R. Harandon, [in:] *The Heritage of Kazimierz Ajdukiewcz*, V. Sinisi, J. Woleński [eds.], *Poznań Studies in the Philosophy of the Sciences and the Humanities*, Vol. 40, Amsterdam-Atlanta, Rodopi, pp. 13-33.

Austin J. L., (1961), "A Plea for Excuses", [in:] J. L. Austin, *Philosophical Papers*, [eds.] J. O. Urmson, G. J. Warnock, Oxford, Oxford at the Clarendon Press, pp. 123-152.

Beuchot M., (2009), *Tratado de Hermenéutica Analógica*, México: Facultad de Filosofía y Letras (UNAM) / Ítaca (4a ed.).

Dussel E., (1985), *Philosophy of Liberation*, Translated from the Spanish by A. Martinez and C. Morkovsky, Maryknoll NY, Orbis Books.

Dussel E., (1996), *Filosofía de la Liberation*, Bogota, Nueva América.

Gan-Krzywoszyńska K., Leśniewski P., (2014), "*The Kindly Ones* (Les Bienveillantes): Red Herrings in a Theory of Intercultural Rationality", [in:] *Philosophical Challenges of Plurality in a Global World*, D. Díaz-Soto, D. Manzanero [eds.], B. Thoilliez, Cambridge Scholars Publishing, Newcastle upon Tyne, pp. 177-198.

Gan-Krzywoszyńska K., Leśniewski P., (2015), "On Non-Rationalities in the Foundations of the Humanities: A Hexagonal Analysis of the Counterrationality Principle", *Studia Metodologiczne* 35, pp. 168-182.

Handbook of the First World Congress on Analogy, (2015), K. Gan-Krzywoszyńska, M. Leśniewska, P. Leśniewski, P. Krzywoszyński [eds.], Poznań, Kontekst.

Mingolo W. D., (2003), "Philosophy and Colonial Difference", [in:] [ed.] E. Mendieta, *Latin American Philosophy. Currents, Issues, Debates*, Bloomington & Indianapolis, Indiana University Press, pp. 80-86.

James W., (1912), *The Will to Believe and Other Essays in Popular Philosophy*, New York-London-Bombay-Calcutta, Longmans, Green & Co.

Kołakowski L., (2007), *Why Is There Something Rather Than Nothing? 23 Questions from Great Philosophers*, Translated by A. Kołakowska, New York, Basic Books.

Nowak L., (1983), *Property and Power. Towards a Non-Marxian Historical Materialism*, Dordrecht-Boston-Lancaster, D. Reidel.

Putnam H., (1996), *Pragmatism: An Open Question*, Cambridge, Blackwell.

Rorty R., (1991), "Solidarity or Objectivity?", [in:] R. Rorty, *Objectivity, Relativism and Truth. Philosophical Papers. Volume I*, Cambridge, Cambridge University Press, pp. 21-34.

Russell B., (1950), "On Being Modern-minded", [in:] B. Russell, *Unpopular Essays*, New York, Simon & Schuster, pp. 64-70.

Waldenfels B., (2011), *Phenomenology of the Alien. Basic Concepts*, Translated from the German by A. Kozin and T. Stähler, Evanston, Northwestern University Press.

Katarzyna Gan-Krzywoszyńska
Department of Logic and Methodology of Science, Adam Mickiewicz University, Poznań, Poland
katarzyna.gan-krzywoszynska@amu.edu.pl

Piotr Leśniewski
Department of Logic and Methodology of Science, Adam Mickiewicz University, Poznań, Poland
grus@amu.edu.pl

STUDIA METODOLOGICZNE
NR 37 • 2016, 255–267
DOI: 10.14746/sm.2016.37.15

PRZEMYSŁAW KRZYWOSZYŃSKI
JERZY W. OCHMAŃSKI

Basic Analogies within Direct Democracy

ABSTRACT. The aim of the paper is to present ananalogical case-study within contemporary direct democracy. In the first part, we present some standard definition of referendum, as well as its basic classification. In the second part contains analysis of the role of the main institution of direct democracy i.e. the role of referendum plays in the characteristics of basic democratic models.

KEY WORDS: analogy, direct democracy, referendum, theory of democracy

Introduction

As some previous papers in this issue of "Studia Metodologiczne" have stated, for example [Gan-Krzywoszyńska, Leśniewski, 2016 and Campos Benítez, 2016], we assume that analogy, and especially analogical analysis, enables us to provide detailed and nuanced characteristics of given concepts. Following Dussel [1985] and Beuchot [2009], we agree that analogy, as an optimal solution to the problem of polysemy – pervasive within the Humanities – makes possible also a rational dialogue and better understanding of the similarities and distinctions between cultures, nations, social groups and individuals. Dussel himself claims that the analogical analysis of such complex concepts and phenomena as we have in the Human and Social Sciences is very time consuming and that only after decades does he finally clearly understand the issues concerning the major category of "people" (Spanish *pueblo*). So this paper pretends only to sketch some preliminary analogical analysis of the concept and institution

of the referendum. Namely, we will try to answer such questions as: what is the main similarity (if any) between different types of referendum, what the basic distinctions consist of and, finally, what is the role of the referendum in the democratic systems.

Towards an analogical definition of referendum

The term "referendum" is derived from the Latin verb *re-fero* which means: to bring or carry back, return, assign/count, propose/open debate, record/enter, report (on). Primarily, the sixteenth-century concept meant both putting up into debate and putting under settlement. The term, taken from the language of diplomacy, *ad referendum* was used in the context of submission for ratifying a negotiated proposal. Permanently the notion entered the dictionary in reference to the manner of proceeding in the Swiss Confederation.[1] The classic definition of a referendum comes from Theodore Curti [1905]. Still, many researchers, including most French constitutionalists, recognize it as the starting point for their considerations.[2] All of the presented definitions are compatible in one thing only, namely, that the referendum is the procedure or form of voting, which aims to implement the direct power of the people. Other basic issues such as the scope and subject of the referendum, are a source of fundamental differences and long debates.

It should be noted here that usually the institution of the referendum is associated only with democracy, in particular with direct democracy; however, it can and is also used in non-democratic systems.

The above-mentioned definition of referendum by Curti characterizes referendum as the sum of individual votes cast in certain places/centers and at a certain time, associated with a particular issue. He calls the sum of these votes a referendum, distinguishing it at the same time from the for-

[1] See for example [Cornu, 2003, p. 752; Guillaume-Hoftung, 1994, p. 15]

[2] For instance, René Capitant, Gerard Conac, Jean-Marie Denquin, Jean-François Dobelle, Francois Hamon, André Malvardi, Henry Roussillon, Frederic Rouvillois and Serge Zogg.

mer direct voting in one place. Curti points out that in this way, we can avoid the problem of the historical understanding of the concept of immediacy, because the decision is not replaced by the consent of the individual municipalities, but precisely the sum of all individual votes.[3] On the other hand, Gérard Cornu describes the referendum as aconstitutional and legal institution, or in other words, as a form of voting in which voters express their opinion and decide about the Constitution, laws and important problems of national and public matters. In this definition, he draws attention to the fundamental nature of the issues undertaken in referendums [Cornu, 2003, p. 752]. Moreover, it is often added that a referendum is a vote which is founded on the basic principles of the electoral law and the formulation of alternatives or options.

According to David Butler and Austin Ranney the essence of the referendum consists on the broad participation of the electorate in voting on public affairs. In this sense, it is also a synonym for the plebiscite. These authors emphasize the importance of such a vote in the key moments as one of the basic requirements of a democratic system. They distinguish two forms of the referendum: optional and mandatory; whereas, from the point of view of the matters submitted to a vote they divide referendums into: on constitutional issues, on territorial and other problems [Butler, Ranney, 1994, pp. 1-3]. On the other hand, Lawrence T. Farley defines referendum as a kind of elections in which the specific proposal is either approved or rejected [Farley, 1986, pp. 25-26]. Wolf Linder emphasizes that the referendum is a constitutional guarantee for the power of the people, because it forces the federal government to undergo major laws and treaties under universal suffrage [Linder, 1996, pp. 33; 2007, pp. 2-3; Steiner, 1993, p. 237].

---

[3] [Curti, 1905, p. 70]: *Aujourd'hui nous ne trouvons pas difficile la transition de ce mode de votation populaire qui ne réunit pas le souverain sur un seul point, mais sur pluisieurs, et fournit un résultat par l'addition des majorités constatées dans les différentes assemblées, à l'institution du « référendum », tel qu'il existe actuellement, dans laquelle le vote a lieu dans de petits districts, et même le plus souvent dans les communes, mais sans que ces petits districts soient comptés pour une ou plusieurs voix, et la majorité décisive étant obtenue en comptant les citoyens qui votent dans toute l'étendue du pays pour ou contre le project de loi.*

Giovanni Sartori considers the referendum as a specific procedure, which does not have the character of "pure" direct democracy. He indicates that a referendum may be regarded as an institution of direct voting only in terms of decision-making. Immediacy is in this case consists of the lack of intermediary bodies. In so far as the debate before the vote, and all the same vote, go, the referendum fully resembles the elections, that is the representative democracy. Consequently, according to Sartori, we are dealing with the third model of democracy – the so-called *referendum democracy* [Sartori, 1994, pp. 145-146].

In the system of representative democracy, one of the most important questions is the relation of this institution to the parliament. Concerning this issue we can distinguish two main positions. Following the first one, the referendum aims to balance or counteract/prevent the parliament monopoly of power. In contrast, according to the representatives of the second position there is no threat from the representation, nor the conflict of both parties. The first view is supported, among others, by Raymond Carré de Mahlberg, who defines the institution of a referendum as the opportunity of the participation of the people, that balances the dominant (absolute) position of the Parliament. At the same time it is worth noting that the role of direct voting should consist of complementing and not on a systematic opposition to the decision of the legislative authorities. Similarly, André Malvardi, who formulated a broader definition of the referendum, that included also specific interventions of the people (French *intevention du peuple*) regarding the law-making process, emphasized that people may counterbalance legislative authorities by, among others, a referendum of ratification, or consultative and citizen-initiated referendums [Malvardi, 1935, pp. 41-45]. Against the domination of Parliament, René Capitant – following Rousseau's esprit – claimed that frequent use of the institution of the referendum also helps to reduce political particularism. Frédéric Rouvillois, similarly to Mahlberg and Capitant, sees the complementary role of the referendum in the parliamentary representative that moves towards the semi-democratic model. Therefore, the referendum is a kind of moderator

between state authorities and in consequence his definition includes also the consultative referendum.[4]

A quite radical stand is represented by Charles Frederic Strong who calls the referendum an *ultra-democratic device,* since it extends the law-making process over elected legislature and in consequence reduces the power of Parliament. In extreme cases, it can even lead to the reduction of the legislators' term [Strong, 1964, pp. 222, 225-226]. Likewise, Serge Zogg introduced "mixed" systems – semi-direct and half-representative democracy – according to the criterion of the use of the referendum [Zogg, 1996, p. 19].

Hamon, the author of the most descriptive and detailed definition distinguishes three types of referendum: (1) the consultative referendum, which does not force the governing body to undertake specific actions; (2) the informative referendum (French *référendum orientatif*), which determines the aim, leaving to the rules the choice of means; (3) the decisive (binding) referendum which formulates a binding legal result [Hamon, 1995, pp. 15-16]. Regarding the third type, for many researchers this is the only valid kind of referendum, since it leads to sure legal consequences that must be respected and implemented by the authorities. However, for the rest of them, the referendum is every popular form of voting on the basic issues.[5]

There are many classifications and divisions of types of referendum, according to many criteria of a legal, political and sociological nature.[6] As the most commonly used criteria of the classification of referenda we should mention: (1) the extent (if the vote concerns the citizens of part or all of the territory); (2) a matter of necessity (mandatory or optional);

---

[4] [Rouvillois, 2005, p. 201ff; see also Denquin, 1976, p. 79ff]. Cornu radically distinguished/separates the institution of consultations from referendum [Cornu, 2003, pp. 218-219].

[5] The first stance is represented by Leon Duguit, Francis Hamon, David Butler, Austin Ranney; the second one – by René Capitant, Frédéric Rouvillois and Gérard Cornu.

[6] See for instance [Hamon, 1995, pp. 17-29; Guillaume-Hofnung, 1994; Denquin, 1976; Zogg, 1996; Butler, Ranney, 1994, pp. 2-4].

(3) initiative; (4) the effects of binding; (5) the time (the time of voting in relation to the subject that is to be adopted or approved); (6) the object, and (7) other consequences (including for example taking into account the political consequences, for instance the aim or circumstances of the vote).

Political systems and referendum

Aristotle distinguished three correct and three deviant systems of government [*Politics* III.7] that can be presented in the following scheme. As we know, democracy is considered here a deviant system.

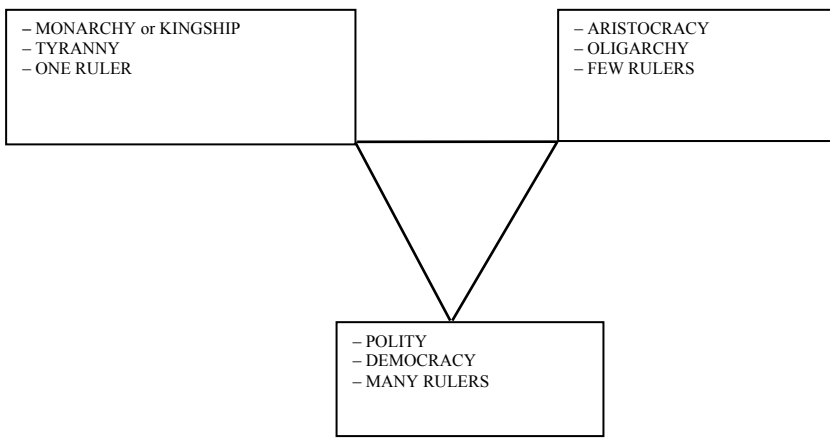


Fig. 1. Three systems according to Aristotle

Some different approach of government systems distinguished by Montesquieu should be mentioned here. Following his own description of civic virtues and the spirit of the laws, we can firstly place the three main regimes in the following diagram:

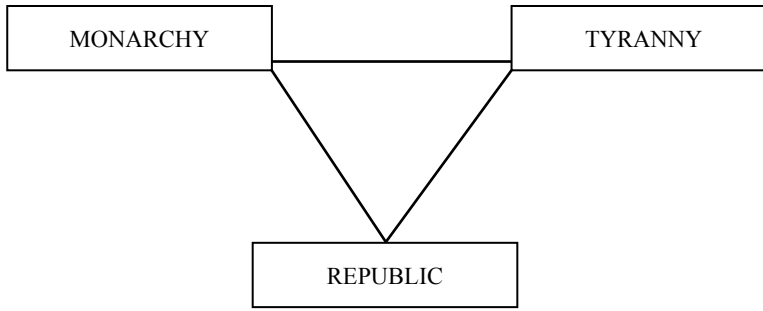


Fig. 2. Three systems according to Montesquieu

Turning to the contemporary democratic constitutional models, we have two basic forms of democracy, usually presented as opposed to each other, namely: direct democracy and representative democracy. However, it should be recalled that at the nationwide level both forms of democracy should be regarded as idealizational models. Nowadays, there is not even one country where we can observea pure variety of direct democracy. On the other hand, when it comes to representative democracy – a system that is closest to the ideal is considered to be the federal one in The United States of America. Therefore, below, this simple diagram describes the basic opposition.

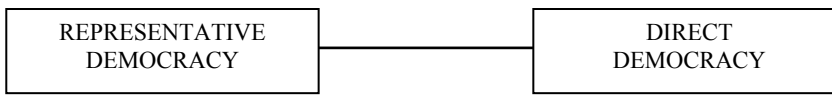


Fig. 3. Basic opposition

The next two figures (i.e. Fig. 4 and Fig. 5) present the transitions from theoretical models to the actual functioning democratic systems, which have been distinguished according to the use of the institution of the referendum. The system of mixed democracy consists of taking into account the referendum, but only the facultative one.

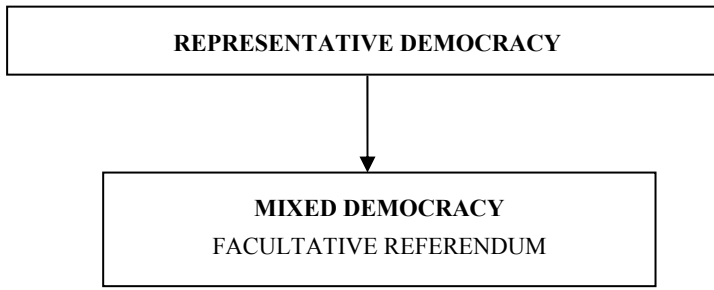


Fig. 4.

From direct democracy derives the so-called semi-direct democracy, in which the citizen-initiative referendum is obligatory, i.e. constitutionally guaranteed.

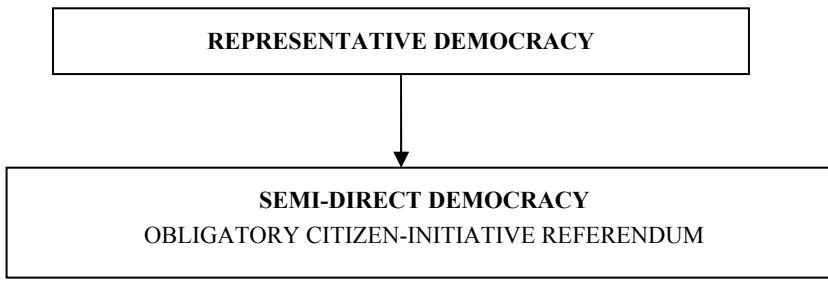


Fig. 5.

With in the contemporary constitutionalism, the most dominant opinion says that the institution of the referendum constitutes the foundation of direct democracy, for it makes possible the realization of the sovereignty of the people. There are three basic forms (modalities) of this government: directly, through representatives, and the most common "mixed" form that also has three variants. Following Zogg, according to the type of referendum, we have three options: the so-called semi-direct, half-representative (French *semi-répresentative*) and the Westminster model. Once again, the

type of referendum decides on the form of the democratic system [Zogg, 1996, pp. 15-24]. In a semi-direct democracy, (also called a *referendal democracy*), the referendum is obligatory, whereas in a half-representative democracy referendum is facultative (optional both citizen-initiative and parliament-initiative), while in the Westminster model, there is only the facultative parliament-initiative referendum.[7]

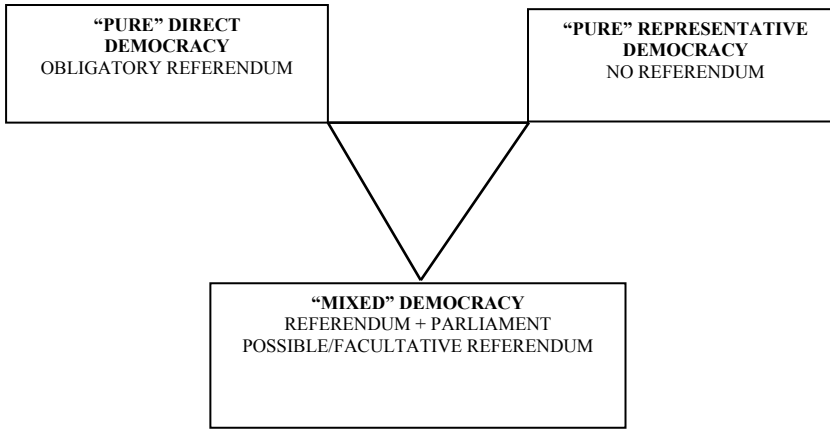


Fig. 6.

It is worth noting that the Westminster model is functioning not only in Great Britain, but also in Belgium, Netherlands and Germany, where there are many restriction concerning the use of the referendum, and in consequence only the parliament can initiate one [Zogg, 1996, pp. 15-17]. Moreover, semi-direct democracy (French *démocratie semi-directe*), which is a synthesis of representative and direct democracy, allows both parliament and citizen-initiative obligatory referendums, usually with the preference for the former. In this system, citizens can participate not only through elections, but also via the institutions of direct democracy, i.e. popular initiatives and referenda. Therefore, they vote on a subject ad-

[7] See for example [Dahl, 2000; Sartori, 1994; Tilly, 2008, Rouvillois, 2006; Denquin, 1976, p. 149ff; Morel 1996]. For referedal democracy, see [Auer, 1996; Linder, 2011, p. 10ff; Vatter , 2011, pp. 40ff].

dressed both by rulers and by people. However, the lawmaking process is largely in the hands of parliament. This model is fully represented most of all in Switzerland, but also in Denmark, Ireland, Italy and Lichtenstein [Zogg, 1996, pp. 17-18]. The system of half-representative democracy consists of the junction of a mechanism of representative democracy with the possibility of the application of a facultative citizen-initiative referendum. Therefore, the people participate not only in the voting for Parliamentary members, but also can decide upon the choice of members of the government's cabinet and even the head of the country. In Europe, the half-representative democracy is quite popular, since it is the current system, according to Zogg, in Austria, Spain, Finland, France, Greece, Iceland, Luxemburg, Norway, Portugal and in Sweden [Zogg, 1996, pp. 18-19]. We could also include the following countries from central Europe, such as Poland, Czech Republic, Slovakia, Hungary and Romania. However, we must remember that recent referenda in Greece (2015) and in Great Britain (2016) changed drastically both the half-representative and the Westminster model.

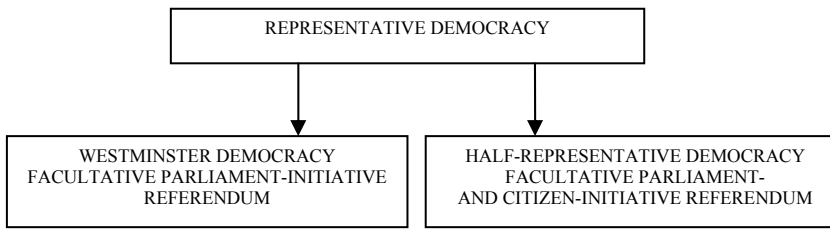


Fig. 7.

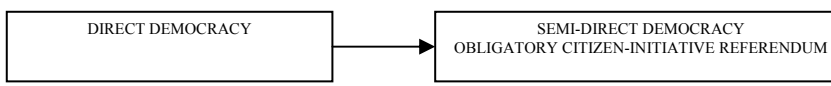


Fig. 8.

Therefore, following Zogg, we can encapsulate systems of "mixed" democracy, into the following scheme:

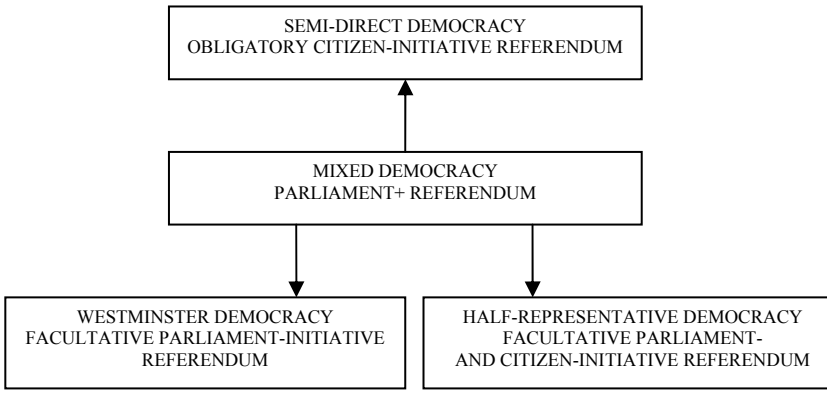


Fig. 9.

We would like to propose the following scheme illustrating the relations between democratic systems, according to criterion of general reports/proportions parliament/referendum. We have included both theoretical and practical models of democracy.

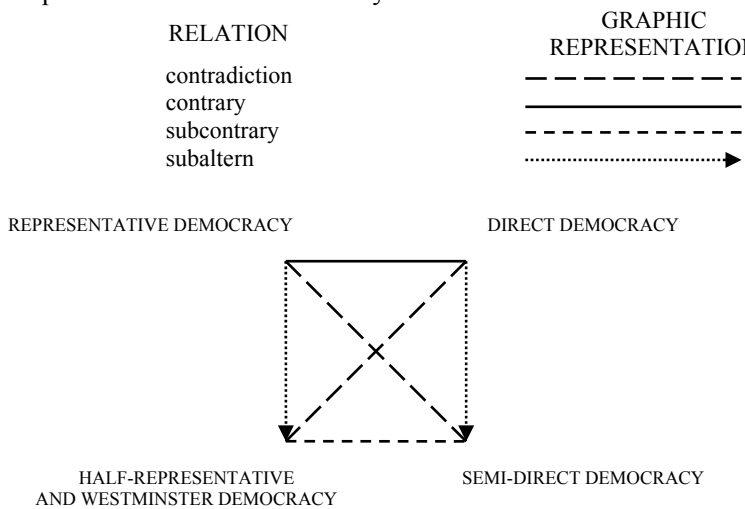


Fig. 10

The status and type of the referendum decides about the form of the contemporary democratic systems. Ranney and Butler not only agree with this opinion, but also indicate the crucial role of the referendum in the formation of the new political map of Europe after 1989. Obviously, the distinct division into liberal and young post-communist democracies is now much more vague, especially in the current time of crisis of democracy or even, as many have called it nowadays, the post-democratic epoch. Nevertheless, the referendum still is quite a remarkable gauge of the system of government.[8]

Bibliography

Aubert J.-F., (1996), "Leçons suisses", *Pouvoirs*, 77, pp. 123–136.

Beuchot M., (2009), *Tratado de Hermenéutica Analógica*, México, Facultad de Filosofía y Letras (UNAM) / Ítaca, (4a ed.).

Butler D., Ranney A., (1994), "Practice", [in:] *Referendums around the World: The Growing Use of Direct Democracy*, [eds.] D. Butler, A. Ranney, Washington, American Enterprise Institute.

Campos Benítez J. M., (2016), "Analogy and the Square of Opposition", *Studia Metodologiczne*, 37, pp. 57-72.

Capitant R., (1972), *Démocratie et participation politique dans les institutions françaises de 1875 à nos jours*, Paris, Bordas.

Cornu G., (2003), *Vocabulaire juridique*, Paris, Presses Universitaires de France.

Curti T. (1905), *Le référendum: histoire de la législation populaire en Suisse*, Paris, V. Giard & E. Brière.

Dahl R.A., (2000), *O demokracji*, Kraków, Znak. (transl. M. Król).

Denquin J.-M., (1976), *Référendum et Plébiscite*, Paris, Librairie générale de droit et de jurisprudence.

Dussel E., (1985), *Philosophy of Liberation*, Translated from the Spanish by A. Martinez and C. Morkovsky, Maryknoll NY, Orbis Books.

Farley L.T., (1986) *Plebiscites and Sovereignty*. *The Crisis of Political Illegitimacy*, London, Westview Press, Boulder, Mansell Publishing Limited.

Gan-Krzywoszyńska K., Leśniewski P., (2016), "Analogies in the Meta-Methodology of Humanities", *Studia Metodologiczne,* 37, pp. 241-254.

[8] See for example [Butler, Ranney, 1994; Morel, 1996, pp. 21-23; Krzywoszyński, 2011b, p. 181ff]. Let us also recall one classic division of democratic systems, following Sartori, who distinguishes: representative, direct and referendum democracy [Sartori, 1994, 147, 151ff].

Guillaume-Hofnung M., (1994), *Le référendum*, Paris, PUF, Que sais-je?
Hamon F., (1995), *Le référendum. Étude comparative*, Paris, LGDJ.
Krzywoszyński P., (2011), „Rola referendum w transformacjach ustrojowych",*Zeszyty Prawnicze USKW*, n. 11.3, pp. 181-199.
Linder W., (2011), „Blaski i cienie demokracji bezpośredniej", [in:] *Demokracja bezpośrednia. Szwajcarska demokracja modelem dla XXI wieku?*, [eds.] M. Góra, K. Koźbiał, Warszawa, Wydawnictwo Naukowe Semper, pp. 11 – 27.(transl. B. Andrunik).
Linder W., (1996), *Demokracja szwajcarska. Rozwiązywanie konfliktów w społeczeństwie wielokulturowym*, Rzeszów, Wydawnictwo Wyższej Szkoły Pedagogicznej. (transl. Z. Pucek).
Malvardi A., (1935), *Le Référendum et le Plébiscite*, Toulon, Impriméries Toulonnaises.
Morel L., (1996), "La pratique dans les démocraties libérales", *Pouvoirs*, n.77, pp. 21–40.
Rouvillois F., (2005), *Droit constitutionnel. 1. Fondements et pratiques*, Paris, Flammarion.
Rouvillois F., (2006), *L'avenir du référendum*, Paris, F.-X. Guibert.
Steiner J., (1993), *Demokracje europejskie*, Rzeszów, Wydawnictwo Wyższej Szkoły Pedagogicznej. (transl. E. Gawron).
Sartori G., (1994), *Teoria demokracji*, Warszawa, Wyd. Nauk. PWN. (transl. P. Amsterdamski, D. Grinberg).
Strong C. F., (1964), *A History of Modern Political Constitutions*, New York, Capricorn Books.
Tilly Ch., (2008), *Demokracja*, Warszawa, Wydawnictwo Naukowe PWN. (transl. M. Szczubiałka).
Vatter A., (2011), „Demokracja bezpośrednia w Szwajcarii: historia, debaty, skutki", [in:] *Demokracja bezpośrednia. Szwajcarska demokracja modelem dla XXI wieku?*, [eds.] M. Góra, K. Koźbiał Warszawa, Wydawnictwo Naukowe Semper, pp. 29-71, (transl. B. Andrunik).
Zogg S., (1996), *La démocratie directe en Europe de l'ouest*, Paris, Arles, Actes Sud.

Przemysław Krzywoszyński
Adam Mickiewicz University, Poznań, Poland
krzywoszynskip@gmail.com

Jerzy W. Ochmański
Adam Mickiewicz University, Poznań, Poland
jwo@amu.edu.pl

Instruction for Authors

The paper should be submitted to:

studmet@amu.edu.pl or rzepinskit@wp.pl

Each text sent to the editorial office of *Methodological Studies* should be compiled according to the following guidelines.

1) Each article, including its bibliography, should contain a maximum of 36,000 characters (20 standard text pages).
2) Authors are required to send a separate file including the following information:
   a) Name and surname of the Author(s);
   b) Title;
   c) Maximum 5 key words;
   d) Abstract including 300 to 500 characters;
   e) Affiliation of each Author;
   f) Correspondence address;
   g) E-mail address and phone number of the first of the listed authors. (All information will be sent to first listed e-mail address)

The two files should be send both in Word 7 (or previous versions) and in an RTF file format.

3) Tables, figures and pictures should be sent in a separate file. The main text should contain only relevant tags.
4) We request authors to use the Word Equation Editor.
5) Authors are obliged to obtain a permission to reproduce and use pictures, figures and drawings taken from other sources in their publication.
6) References to literature both in the body of the text and footnotes should be in the following form:
   a)….. [Kowalski, 2002, pp. 22-34].
   b) if several publications of the same Author were published in the same year: [Kowalski, 2002a, p. 20].
7) Footnotes should be placed at the bottom of the page.
8) Bibliography should be included at the end of the text in alphabetical order according to the following guidelines:

Czarnocka M., (2006), „O niemożliwości naturalizowania epistemologii", *Przegląd Filozoficzny – Nowa Seria*, 2(58), pp. 137-153.

Wigner E., (2002), „Niepojęta skuteczność matematyki w naukach przyrodniczych", [w:] *Współczesna filozofia matematyki*, red. R. Murawski, Warszawa, PWN, pp. 293-309.

Wójcicki R., (1982), *Wykłady z metodologii nauk*, Warszawa, PWN.

After the Authors receive positive reviews, they are obliged to sign consent forms for publication of the article in *Methodological Studies* and for publication in an electronic form on the web site of the Journal.

List of Reviewers in 2016

JERZY A. BŁOSZYK, (Uniwersytet im. Adama Mickiewicza w Poznaniu, Poland)

JAROSŁAW BORUSZEWSKI, (Uniwersytet im. Adama Mickiewicza w Poznaniu, Poland)

KRZYSZTOF BRZECHCZYN, (Uniwersytet im. Adama Mickiewicza w Poznaniu, Poland)

JUAN MANUEL CAMPOS BENÍTEZ, (Benemérita Universidad Autónoma de Puebla, Mexico)

ADAM CHMIELEWSKI, (Uniwersytet Wrocławski, Poland)

STANISŁAW CICHOCKI, (Uniwersytet Warszawski, Poland)

BOGUSŁAW CZARNY, (Szkoła Główna Handlowa, Warszawa, Poland)

ADAM CZERWIŃSKI, (Uniwersytet Opolski, Poland)

VIVIANA MIRTA MARTÍNEZ DOMÍNGUEZ, (Universidad de Mendoza, Argentina)

KATARZYNA GAN-KRZYWOSZYŃSKA, (Uniwersytet im. Adama Mickiewicza w Poznaniu, Poland)

MICHAŁ GOLIŃSKI, (Szkoła Główna Handlowa, Warszawa, Poland)

ADAM GROBLER, (Uniwersytet Opolski, Poland)

JURAJ HALAS, (Uniwersytet Komeńskiego w Bratysławie, Slovakia)

ALEKSANDRA KOŁTUN, (Uniwersytet Marii Curie-Skłodowskiej w Lublinie, Poland)

PRZEMYSŁAW KRZYWOSZYŃSKI, (Uniwersytet im. Adama Mickiewicza w Poznaniu, Poland)

TOMASZ KWARCIŃSKI, (Uniwersytet Ekonomiczny w Krakowie, Poland)

WITOLD KWAŚNICKI, (Uniwersytet Wrocławski, Poland)

MAREK KWIEK, (Uniwersytet im. Adama Mickiewicza w Poznaniu, Poland)

SŁAWOMIR LECIEJEWSKI, (Uniwersytet im. Adama Mickiewicza w Poznaniu, Poland)

PIOTR LEŚNIEWSKI, (Uniwersytet im. Adama Mickiewicza w Poznaniu, Poland)

ANDRZEJ ŁUKASIK, (Uniwersytet Marii Curie-Skłodowskiej w Lublinie, Poland)

MATEUSZ MACHAJ, (Uniwersytet Wrocławski, Poland)

MACIEJ MALCZEWSKI, (Uniwersytet Łódzki, Poland)

JOSÉ MARTÍN CASTRO-MANZANO, (Universidad Popular Autónoma del Estado de Puebla, Mexico)

ELŻBIETA MĄCZYŃSKA, (Szkoła Główna Handlowa, Warszawa, Poland)

ROMAN MURAWSKI, (Uniwersytet im. Adama Mickiewicza w Poznaniu, Poland)

MACIEJ MUSIAŁ, (Uniwersytet im. Adama Mickiewicza w Poznaniu, Poland)

LESŁAW NIEMCZYK, (Uniwersytet Rzeszowski, Poland)

ANDRZEJ W. NOWAK, (Uniwersytet im. Adama Mickiewicza w Poznaniu, Poland)

EWA NOWAK, (Uniwersytet im. Adama Mickiewicza w Poznaniu, Poland)

MAGDALENA OSIŃSKA, (Uniwersytet Mikołaja Kopernika w Toruniu, Poland)

PAWEŁ POLAK, (Uniwersytet Papieski Jana Pawła II, Poland)

PIOTR PRZYBYSZ, (Uniwersytet im. Adama Mickiewicza w Poznaniu, Poland)

MARCIN J. SCHROEDER, (Akita International University, Japan)

DANUTA SOBCZYŃSKA, (Uniwersytet im. Adama Mickiewicza w Poznaniu, Poland)

ANTONI SZCZUCIŃSKI, (Uniwersytet im. Adama Mickiewicza w Poznaniu, Poland)

BARBARA TUCHAŃSKA, (Uniwersytet Łódzki, Poland)

HALINA ZBOROŃ, (Uniwersytet Ekonomiczny w Poznaniu, Poland)

PAWEŁ ZEIDLER, (Uniwersytet im. Adama Mickiewicza w Poznaniu, Poland)