

# FROM BEING THROUGH MATHEMATICS TO SUBJECTIVITY

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**ABSTRACT.** *Every rational (holistic) view of the being rethinks necessarily some ontology of it in the ground. Can it be in the sign of the formula "Bio-3/4" of Biocosmology, to be true and to "release" in addition place to human subjectivity? On the line of ideas of Allen Badiou on "ontology of the multiple" or of Gilles Deleuze "on the ontology of multiplicities" we postulate a mathematical theory that meets such requirements. The matter is of a "category of potentially partitive fuzzy sets-replicators" with somewhat different notion of set in the basis than in Cantor's theory of sets.*

**KEY WORDS:** *Being, univocity, event, category, subjectivity, software*

## 1. Aristotle: (Not) Univocity of Being

Τί τὸ ὄν; ("What is being?") is something, said Aristotle, "which was raised long ago, is still and always will be, and which always baffles us" [Aristotle *bis*, 1028 b] as "there is a science which studies Being qua Being (τὸ ὄ ἢ ὄν, *ens ut sic*) and the properties inherent in it in virtue of its own nature." [Aristotle *bis*, 1003 a]. That side of it sum up in itself "the first principles and supreme causes", being the subject of "the first philosophy", *alias* "ontology" (Clauberg: *Metaphysica*, 1646), whereas in addition:

"Being" is used in various senses, but always with reference to one principle (πρὸς ἓν). For some things are said to "be" because they are substances; others because they are modifications of substance; others because they are a process towards substance, or destructions or privations or qualities of substance". [Aristotle *bis*, 1003 b].

There are ten<sup>2</sup> those different ways (κατηγοριαί, *praedicamenta*), according to him, as: *substance* (οὐσία, *substantia*), *quantity* (ποσόν, *quantitas*), *quality* (ποιόν, *qualitas*), *relation* (πρὸς τι, *relatio*), *place* (ποῦ, *locus*) and so on, as is also found that the first one in some regard is "basic" as, in fact, *quidditas* of things and beings. Here is in fact asked: "What (who) is the thing (being)", and answers like: "It is ...". Alternatively, by the words of Aristotle:

"A substance – that which is called a substance most strictly, primarily, and most of all – is that which is neither said of a subject nor in a subject ..." [Aristotle *ter*, 2a 5b] and so on.

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<sup>2</sup> The number of categories in *Metaphysics* is ten, and in *Topics* – eight.

So, from the beginning, he is not expressing himself on the being in one and only one way (uniquely), and thus does not find that it has one and only one meaning, putting it is more or less clear, but arguing in details in *Metaphysics*, carrying out different difficulties (ἀπορίαι) in the first philosophy. Namely, one of them was related to the Platonic doctrine of Being (τὸ ὄν) and One (τὸ ἓν) as supreme genera, as well as to the principles of all things and beings, and Aristotle, differently than it, finds that "it is not possible for either One or Being to be a genus of things" [Aristotle *bis*, 992 *b*]. Moreover, as genera, they would not be ones and only ones – that is unambiguously defined. In several places, which require, however, interpreting, he points out: "It is impossible ... for the species of the genus to be predicated of their own differences" [Aristotle *bis*, 998 *b* 24–26], making him in *Topics*, in the example "of a man as a reasonable animal", to come to the conclusion that: "For if animal is to be predicated to each of its differences, then many animals will be predicated to the species". [Aristotle *ter*, VI 6, 144 *a* 32 – *b* 3].

What Enrico Berti interprets in terms of conclusion:

"If the genus "animal" could be predicated of its difference "rational" ... then it would enter into the definition of "rational", and "rational" would be defined as animal with another particular difference. Now, as the genus and the differences must be both predicated of the species "man", two "animals" would be predicated of this species, i. e. the genus "animal" and the difference "animal", or – as Aristotle himself says – "many animals" (πολλὰ ζῶα). [Berti, 2001, p. 191].

Thus, only marks of genus and not of specific difference would be predicated of species, so there would not be what differ a species from a genus – if the genus can be predicated of a specific difference, according to Aristotle. Moreover, it is exactly the case with the One and Being, according to him.

But we said: "Being is used in various senses, but always with reference to one principle" [Aristotle *bis*, 1003 *b*] – and it was the case with substance and properties belonging to it. Those meaning are different and they are expressed by either different words (*synonyms*) or the same ones (*homonyms*), or by words whose meanings sometimes coincide and sometimes do not (*paronyms*). In the third of cases, we have that, for example, the word "healthy" in the phrase "healthy food" refers to a status of body to which one can come in that way, while in the term "healthy body", the word refers to an already accomplished state of organism. However, they deserve something in common – from the intersection of two senses – what British philosopher John Austin<sup>1</sup> indicates by words: "nuclear meaning". Such a common word we recognize, according to him, in the meanings of the word "Being" and it is here just the word "substance", which, in a logical sense, is a genus of being, while all other meanings are its specifications (modes).

Similarly to Austin, G. E. L. Owen explains Aristotle's doctrine of being in terms of its multivocalism. He finds that "nuclear meaning" of Austin should be rather replaced by "focal meaning", just as by the first of meanings of the word when

<sup>1</sup> Austin: *The Meaning of a Word*, in *Philosophical Papers*, Oxford University Press 1979, p. 71.

it offers many of them. This time it is not a common part of other meaning, but only a "term of reference" in certain relation to other words.

Therefore, Austin and Owen, along with Aristotle, expressed themselves on being in favor of its ambiguity, so that two authors Patzig and Frede, similarly, found equally that "the substance is used in many senses." These ways are according to Patzig, threefold: it appears as movable and corruptible (*the sublunar bodies*), movable and incorruptible (*the heavenly bodies*) and unmoving and incorruptible (*the prime mover*), while Frede will say: as substance sum up in itself the focal meaning of the being, so does the unmoving substance in relation to a substance at all. Therefore, the unmoving or divine substance is a farthest way of existence of being, after Frede, in relation to which all others such ways are carrying out. This ontological moment just completes the whole Aristotle's doctrine of being, precisely, the side of it on "degrees of perfection": namely, that the lower forms of existence imitate the higher ones. When, for example, living beings are born tending to be eternal too etc., and the circular motion of heavens only imitates the immobile (first) mover. But such an interpretation of Aristotle cuts into Platonism, Neo-Platonism, or into the very theology.

Besides different meanings throughout history, particularly in the analytic philosophy of twentieth century, to the words "Being" and "existence" has been attributed the same meaning too. Bertrand Russell, Martin White, W. V. O. Quine did it. Russell initially held that "the existence" in space and time is (in principle) different from "the existence" out of space and time – what physical objects, say, differ from numbers – but later he founds that they are, however, two species of the same genus, the genus of "something". In so far the same meaning is provided here using the logical operator  $\exists$  ("there is"), in the sense of:  $\exists x$  ( $x$  is a physical object) and  $\exists x$  ( $x$  is a number), when, in the above-mentioned example, two classes of objects are subsumed under the same "superclass". In that sense, Quine would say:

"In our canonical notation of quantification then, we find the restoration of law and order". [Quine, p. 131].

Aristotle, therefore, puts the question of (non)univocity of being and gives his answer to it – and, by following his footsteps, many philosophers until today (A. Badiou, G. Deleuze) make it – bringing its "parts" in a hierarchical relation of "genus and differences", which is a logical relation. Speaking, however, along with logical as well as about ontological priority of each entity over the other etc., so that those approaches of being would "release" sufficiently exact labels, in an epistemological sense, to be explored possibilities of a mathematical model of it. For the relation of "one and many", in a philosophical sense, is analogous to the relation, say, of "element and sets", in the mathematical theory of sets, as it properly "has included" all other mathematical theories too. Of course, "the most philosophical" in would be the place of "event", or rather, of subject in the being, and of its counterparts in a possible mathematical model. Because the events are characterized by an extreme complexity of factors-causes leading to them, and in the psychic sphere of unconscious elements (with those conscious), so that it is in so far difficult to be (unambiguously)

"foreseen" and presented in the being. Thereby the discourse on them imposes the most diverse partitions, when have originated too terms such as "singularity", "difference", "repetition" ... in Gilles Deleuze. This author, after all, talks about the "event" as a non-being, etc.

## 2. Gilles Deleuze and Alain Badiou: Questions On Being

The initial interest of French philosopher Gilles Deleuze in the science of Being, was the questions of univocity (*univocity*), which will help him to build up a more comprehensive ontological doctrine and, in a particular case, to perceive in that key the notion of "event". The "univocity" that finds place, say, in the theology of Duns Scotus, in opposition to the concept of "analogy", and they are owed to a different understanding of the relationship between essence and appearance (form) of things on the part of supreme being. When the essence of things is the same, but they differ in form, the matter is of an *analogous* understanding of that relation (the example of "negative theology", Thomas Aquinas), and if their forms are the same, but the essences are different ("positive theology", Duns Scotus, Spinoza), the matter is of an *univocal* understanding. In the second of cases, for example, Spinoza says: "The sequence and the order of ideas are the same as the sequence and the order of things", just when he speaks about two attributes: *thought* and *extension* of the same substance. Namely, as an idea leads to another one, in the same way a thing appears because of other thing, so that thought and extension are ontologically identical, if the ideas and things are different in form. That says Gilles Deleuze too:

"The univocity of Being signifies that Being is Voice, that it is said, and that it is said in one and the same "sense" of everything about which is said." [Deleuze, p. 210].

It is multiple and different, not one and only one, according to him, being made by *membra disjuncta*, as diverse and diverging parts of it in the way of a synthesis. However, ontological doctrines, in the tradition of Aristotle, following its definition that that science "studies" "being as such, and properties belonging to it by themselves" disagree with what Gilles Deleuze signifies as "univocity". Namely, he says: "from Parmenides to Heidegger it is the same voice that is taken up, in an echo, which itself forms the whole deployment of the univocal. A single voice raises the clamor of being." [Deleuze, p. 52]. So that the ontology would appear as a special part of the theory of univocity, according to Deleuze, etc.

"The Being is univocal" [*ibid*] is the basic proposition of this doctrine, whose paraphrase is the proposition too: "The Being is said in the same way", in the same sense, so that it remains to interpret the relation between a *proposition* and its meaning. Therefore, Deleuze speaks about *denotation* and *meaning*, taking the first to be: "a relation of a proposition toward an external state of affaires", and the other: "what proposition expresses itself". Here "the state of affairs" is something to what would "disintegrate" all the reality, according to him, including "particular bodies, mixtures of bodies, qualities, quantities and relations" [Deleuze, 1990, p. 22] – differently than in Aristotle, who divides being into substance and categories, and

quite in line with the teachings of Stoics on bodies and incorporeal events. Now we have, exactly, that "what a proposition expresses", or the notion of "meaning" in Deleuze's use, is "identical" with the "event" of Stoics, as "the logic of sense" (the title of his work) would be not other than "a logic of event". To bring this teaching of Stoics closer, Emile Bréhier uses the metaphor of knife and meat. Knife and meat, in fact, bring "mixture of bodies" – to it refers the proposition, as "denotation" – while the effect of cutting meat with knife would be an event – or meaning, this time in Deleuze. The event itself is a part of "incorporeal things", it does not belong neither to being, nor to attributes of being, unwinding on its surface, rather as "hybrid", or "problem", since it is indefinite in character.

Alain Badiou in the ontology, as well as Aristotle and Parmenides, departs from "the being as such", which rethink this time as a "pure multiplicity", and the science itself as a "presentation of presentation" (*présentation de la présentation*), or what does exist. This existing is not One, nor One is a part of Being, but it has to be *taken-as-One* (*compté-pour-Un*). One, therefore, does not exist as a presentation, but only as *operation*, that leads Badiou to accept Socrates' statement in *Parmenides*: "If One does not exist then there is nothing". In terms of *Being and event*, the concept of emptiness comes to replace everything that exists (Being), or, in the words of Badiou, in a sophisticated sense: "The emptiness is the name of Being – contradictory according to situation, in so far as its presence brings a nonrepresentable approach, and therefore, a non-approach to that approach ...". [Badiou, 1988, p. 69].

Here the term "situation" is of equal importance in the ontology of Badiou, being defined as "any presented multiplicity, becoming as such a place of event (*le lieu de l'avoir-lieu*)", of whatever the elements of that multitude would be". [Badiou, 1988, p. 32]. The situation possess some structure, realized on the way of operations over elements that comprise it, as is the case with the whole being, and the totality of its conditions, which is sufficient for the French philosopher a general theory of being to bring closer to the maximum extent to a mathematical theory. The matter is of set theory in mathematics, in terms of which all intuitive domains in this science can be successfully enough described, so that Alain Badiou boldly sets since the beginning the equation: "ontology = axiomatic set theory". With some reservations, in fact, that this branch of philosophy does not have mathematical entities for its subject, nor that the world is settled by "mathematical beings". But, that "one which is many" and "many which is one" are principles that most generally carry out the reality of both sciences, however mathematics succeeds – and it abundantly – to express itself about being, bringing by it an already realized way of thinking. More precisely, the concept of "one" is replaced here by the term "as one" (*compté-pour-Un*), which is only a construct or a name of certain complexity (of each part) of being without end. Here the empty set  $\emptyset$  is "constructed" – as  $\{ \}$  – etc., and, in general, a (sub)set  $A$  will be *constructible* if there is a function  $f(x)$  for the construction of each element  $x \in A$ .

However, when such a function is missing, what escapes to the constructible, according to Badiou, is the *event* (*événement*), which makes an event "does not belong to being as such", he says. It transcends reality, and in so far the theory of

being and the theory of event complete each other. Indiscriminating in the ontology, on the border of it, the notion of event is "hybrid", a hole into being. In this way, Deleuze and Badiou reflect on the concept of "event" – in varying degree – apart from being, with a distinctive influence of science of mathematics both times, but the first one will find a stimulus for it in the manifolds of Riemann and differential calculus, and the second in the axiomatic set theory. Badiou himself finds here that the ideas of Deleuze are "organicistic", "vitalistic," "animalistic" etc., like as Gilles Deleuze speaks rather of "problematics" than "axiomatics", keeping in mind what is essential in the science of mathematics. For him the axiomatic inference is "royal" and the intuitive one – "nomadic", and he inclines to it, holding that the concept of multitude too, as he understands it, does not coincide with the notion of set, in the sense of Cantor-Badiou. It is for him "a differential multitude", always intuitively upper than "extensive multitude", or set, so any formalization of multiplicity, in the first case, as a rule, fail to attain an always superabundant in content area of their own.

Otherwise, the opposition "problematic–axiomatic" is described yet by Proclus Diadochus in his *Commentaries* on Euclid's *Elements*, as a distinction of "theorems" of "problems", when he finds that by theorems one proves certain properties contained in the figures, and by problems one constructs figures from given properties. In the first case, one proceeds from axioms and postulates, and in the second, from problems to meet the circumstances (events) that could generate solutions. The opposition got marks of: "analytic" and "synthetic", of "qualitative and quantitative", "static – dynamic" and the like, so that, for example, projective geometry of Desargues will be a synthetic science, and Descartes' geometry – analytical one and so on. The synthetic (or dynamic) would be concepts of "infinitesimal", of "continuous", of "limit" (*limes*), in the analysis – in the basis of differential and integral calculus – and the analytical ones (or static): number, set, discrete in arithmetic, algebra, and set theory.

If, therefore, during the history, axiomatic, analytic, ... approach to mathematics has been described as "royal" and was preferred, it appeared to be fruitful problematic, synthetic, or "nomadic" approach to the phenomena too, as well as a "combined" approach appeared to be extremely powerful. We have in mind a discrete interpretation of continuous (infinite) values in the set theory (Cantor, Veierstras) and its axiomatization, which was in favor of the belief that all intuitive-domain (in mathematics and other sciences) can be reduced to this theory. In this occasion, let us say that in formalisms themselves (Gödel, 1931) there are propositions as improvable together with their negations. On the other hand, the ideas of quantum physics today that the world is inhabited by discrete (discontinuous) quantities, giving impression in the multiplicity of a continuum.

Reasoning, rather problematically, Gilles Deleuze in *Difference and Repetition* holds that the elements of a multiplicity cannot be determined (to the end), as they bring virtualities that cannot be "grasped" in a notion, in a sensory picture, characteristic function. Thus they are only determinable (*déterminables*) as "singularities" in a "differential relation" of them as "problematic". The problems

point out their complexity, the complexity in terms of finding solutions, the importance of the results obtained and the like, so that some of them, for example, in mathematics, resist for centuries to solution. In the work *Capitalism and Schizophrenia*, Deleuze finds that the development of capitalism too cannot be predicated in the axioms, since its effects are most diverse and extend to all pores of life: of economy, of arts and of culture.<sup>1</sup> Then it remains to any research in the science to discretize the reality of problematic at the beginning, making always it in different circumstances, by Deleuze – differently than by Allen Badiou, where one not arrives to the initial propositions (axioms), but departs from them as given. So the truth by the first of them is contained in the problematics, and by the other one in the axioms etc., so that – along with a series of specificities – the way followed by the authors of the work *Difference and repetition*, and *Being and event* will be opposite.

In the words of Daniel W. Smith:

"Since Badiou limits his ontology to axiomatics, he is forced to reintroduce an element of transcendence in the form of the *event*, which is "supplemental" to ontology ....; there can be no ontology of the event, since the event itself introduces a "rupture" into being, a "tear" in its fabric". [Smith, p. 438].

The event dwells here on the "edge of the void", as an expression of the complexity of the world without end, and just the human *subjectivity* has the power to appoint it and to make enough distinguishing etc.

There are more notions in Gilles Deleuze, related, in varying degree, to his notion of "event", such as: singularity, differentiation, repetition, and so on. About a "singularity", for example, one speaks where "something (new) occurs", as opposed to "regularity" – the case of corners of a square as singular points and the those on its sides as regular ones. However, if the distinction between two types of points in this example is easy, in a general case, the matter is rather of different degrees of presence or of absence of certain properties on a scale from lowest to highest one.

When interpreting the notion of "event", Badiou starts from two exact relational marks, otherwise, constants in set-theoretic thinking and reasoning – that is, " $\in$ " (belonging to a set) and " $\subseteq$ " (inclusion of a part in a set). A citizen, for example, belong to a state, "sharing" by it his complete life, which is not the case with a secret agent and an (illegal) life he lives within it.

There is a considerable number of other original – often much nuanced – concepts that explain two French philosophers, such as habitat (*site*), appearance, situation, local, transcendental etc. For habitat, say, Badiou tells to be "something that arrives in its own existence to the belonging to itself ..." [Badiou 2006, p. 617].

### 3. Ontological Categories as Mathematical Ones

The words of Badiou in *Introduction* to the work *Being and Event* were:

"1. Heidegger was last widely accepted philosopher.

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<sup>1</sup> Such is the so called "Fermat's problem" in mathematics, posted 1637 and solved 1994.

2. The figure of scientific rationality is persisting as a dominated paradigm in the world today...

3. A certain post-Cartesian doctrine of development is ongoing whose origins are non-philosophical...

What is common to these three statements? Certainly, they indicate, in their own way, the end of an entire era of thought and its challenges." [Badiou 1988, p. 7].

We are "in some third era of science, after the Greek and Galilean", says Badiou, "complex, if not confused", which cannot be brought under a single language. The matter is of a constant "blending from which we can perceive the mathematical basis of rationality itself ...". As for the subject, says French philosopher, he is not farther the basic category of thought, as it was from Descartes to Sartre, since now it is "empty, split, a-substantial, irreflexive." Finally, according to him, we are also at the beginning of a new doctrine of truth ... and so on.

Here again, we have seen, the ontology is a science of being-as-such, what is it back to the Greeks, but just today, Badiou says, 'we have the way to know it." It is quite different from what we see in Russell, namely, that mathematics is the only science in which "we never know what we are talking about, nor whether what we are saying is true", Alain Badiou will find that it is "the only science which absolutely knows what it is talking about and ... the only one that offers reliability and criterion of truth of what it is spoken about, so that its truth is the only one ever known as fully transferable." [Badiou 1988, *passim* 7–15]. Because pure mathematics does clear what is expressible of the multitude, of being, owing to it the rigor it has, so that it is advisable to turn Kant's thesis of transcendental subject that makes possible its truths, in favor of thesis of possibility of the subject himself within mathematics as science of being. Multiplicity as the first sign of being, in ontology, corresponds to the highest degree to the notion of set in mathematics, and what will be said about being by a picture and metaphor, for example, in Hölderlin and Mallarmé, is less true than Cantor and Dedekind do in the way of mathematical statements.

On that way Frank Jedrzejewski stands for a reflection of a *on-topology*, or a *top-ontology*, which would embody by itself the "forgetting of the One", in favor of duality of being – even of duality of time (Chronos and Aion) – what would be extended to the duality of truth (*aletheia* and *adequatio*). Here the *topos* is a central notion, for it is recognizable in different worlds, always of different forms of complexity, but also because a series of results in the sciences pointed out that "the texture" itself of the universe (of place) determines its logic, and that the topological properties of a space are superposed to the logical relations within it. (Diaconescu). The reality of infinitely small values, say, is more complex than the reality of visible world – and knows even more dimensions (*string theory*) – so that essentially different of them would be the reality of fractal structures, with infinitely great values, parallel worlds etc. Just as a word gets its meaning in the context, or environmental conditions essentially determine the survival of an individual, and a man realizes its essence in a community of people. On the other hand, in topology



(Grotendieck) we have that the concept of an open set (the environment of a point), essentially determines the character of a topological space, etc.

Otherwise, "the topos" is a special case of another notion in mathematics, the notion of "category", and it is a special case (better: a specification) of the notion of "set", so that it would be possible now to say that in terms of category theory are properly reconstructed dozens of "classical" mathematical theories. We have in mind, with set theory, topological spaces too, vector spaces, Boolean algebra, deductive systems and so on. When it should be pointed out a request for a mathematical theory as a model of the science of being (ontology), we would have good reason to lean on such which meet requirements, exactly, of category theory, since it sum up the most general (common) lines of various mathematical branches. It would "imitate", first, the parts and the whole – one and many, in the philosophical sense – what is the case with "the set of sets" (partitive sets) in mathematics, and as to the circumstances that parts of being built complex compositions, the existing set of operations in mathematics correspond to that fact. In doing so, what set theory does not differ are combinations (wholes) of elements when they lose their properties, and the whole wins new ones. By example of hydrogen and oxygen, as gases, that, when the ratio of 2 : 1 of their atoms, give one molecule of water as a compound, this time in a different physical state – and then with different properties.

Therefore, one should make a distinction between the two types of statements: "Hydrogen (H) and oxygen (O) are gases" and "Two atoms of hydrogen and one atom of oxygen, under certain conditions, give one molecule of water (H<sub>2</sub>O)." It would be enough, in the second case, to introduce some function  $\sigma(H, O)$  of the two elements, as well as, in the case of the set record, one should allow the repetition of elements – not as it is in Cantor's set theory. Symbolically, if the elements  $x_1, \dots, x_m$ , having the property P, enter the set X, and  $\sigma$  is an arbitrary function of one or more elements, such a set X' could be written as:  $X' = \{x_i, \sigma(x_j, \dots, x_k) \mid x_i \in P, 1 \leq i \leq n, j, \dots, k \in \{1, \dots, n\}\}$ . Let us call such a function  $\sigma$  *singleton* of elements  $x_j, \dots, x_k$  ( $j, \dots, k \in \{1, \dots, n\}$ ), and the set X' – a *potential* of X. At the same time, the set **X** obtained if we allow one or more repetitions of elements of X, would be the *replicator* of X.

Then let  $\mathbf{X}' = \{x\}$  be an arbitrary class of objects. Denote by  $f_A: x \rightarrow [0, 1]$  the *membership function* of an object to the class  $\mathbf{X}'$ . Then the set  $A = \{f_A(x) \mid x \in \mathbf{X}'\}$  is a fuzzy set of the set  $\mathbf{X}'$ . As it is known, fuzzy sets "know" set operations on them: complement, union, intersection, as well as algebraic ones: sum, absolute difference, and product. In addition, the classical bivalent judgment within two values "true" and "false" should be replaced in this area by so-called "fuzzy logic", which takes into account the infinite scale of values (proper fractions) between 0 and 1.

Finally, in order to be found a model that should "illustrate" events when it is known (finitely many) conditions  $\mathbf{X}'$  that produce them, consider a partitive set A of the set  $\mathbf{X}'$ , as a potential of the fuzzy set-replicator of X. It would be then:

$$A = \{B \mid B \subseteq \mathbf{X}'\}$$

such an observed model. Let's call it a *model of an event*.

It is easy to conclude that the objects  $A, B, C, \dots$  as sets and morfisms  $f, g, h, \dots$ , as mappings between them, form a category, since partitive sets are special cases of sets, while sets as objects and mappings as morfisms, do a category.

Since we differ in being two kinds of becoming of something new: when elements-parts, creating mechanical compositions, do not lose the qualities they have, and for the second time, when they enter an organic whole, and do it, to that circumstance correspond in the example of model A, in the first case, the partitive sets, and in the second, the function singleton. Otherwise, the entire picture of relations between parts and whole can schematically be presented in the way of a graph [Tasić, p. 32–33], as well as through formulas of propositional (predicate) logic. Moreover, to every element-part of a whole here can be attributed a certain "power" and computed the power of the whole they make does, which makes possible an account over them.

Afterwards, there is feature of being as its functionality [Jedrzejewski], making its parts, often, to repeat the same or a related structure, that is, what can be said about any of them can also be said on the other. However, such a general (common) feature already brings here the same symbolic language (of sets, of graphs, of formulas ...), when, for example, we represent the elements-parts of being by points, and the relationships between them by arrows.

Alternatively, the relation of genera and species in the nature is analogous to the relationship between sets and subsets in mathematics, nodes and branches in the graph theory, formulas and subformulas in logic.

In category theory, finally the so-called property of "adjunction" does "whatever happens in one category induces the same echoes in the other." [Jedrzejewski, 72].

Similarly, we recognize in the being no small number of mutually irreducible (dual) concepts, such as: matter–antimatter, particle–wave, point–line and so on, so that they could replace their places in propositions, without propositions to change the value they have. The case is, for example, with the propositions: "Two straight lines intersect at a point" and "Through two points passes only one straight line". The duality principle states that time is twofold: it is *Chronos* (time of becoming) and *Aion* (time as "forever and ever"). Etc.

However, we recognize that the category theory possesses duality property too. Its axioms, for example, still meet if we replace objects (points, nodes) with morfisms (arrows, ribs), and vice versa, or even, if the direction of an arrow is replaced by opposite direction. In formulas of propositional calculus the operators "union" and "intersection" have this property and in predicate formulas – quantifiers "for each" and "there is" and so on.

We have already said that the being is strongly permeated by topological properties. The habitat (the place, the environment) in which an individual resides essentially define its habitus, just as Leibniz would say that "truths of fact" owe their truthfulness to "themselves", and not to reason. In addition, time, according to the theory of relativity, exists only locally. In terms of category theory, this particular (singular) effect of elements-conditions would be represented by singleton function

of these elements, which embodies in itself all specificities of it. Because both to the topological properties of a solid in mathematics and to the circumstances of persistence of individuals in the nature it is proper they do not "broke", but "continuously" endure, even when they are present in varying degree.

Let us note, finally, the empty set  $\emptyset$ , which, as a rule, belongs to every partitive set, and then to the category A, just as to a potentially-partitive set of a fuzzy set-replicator. Which, in the ontological sense, would be a counterpart of the void, as the absence of something: what "remains", for example, when two forces of equal magnitude, but different directions would be "summed up".

In epistemological terms, we ascribe to a concept the values 1 and 0, when they have or do not have a property, or to a proposition the values 1 and 0, if they are true or false, but also all other values between 1 and 0, both times, when we have "degrees" of properties, or of truthfulness. An accompanying logic here would be the fuzzy logic, as appropriate, and it would be even more applicable in our category, since a fuzzy set is in its basis.

It "remains so that categories are the most general of possible conceptual relations, which reflect the modes and forms of being", says [Jedrzejewski, 112].

#### 4. Subjectivity and Category Theory in Mathematics

"The relationship of consciousness to being," in the sense of what has a primacy of one over the other, is the "basic philosophical question" for Marxists, that personalists, subjectivists solve stressing the paramount importance of personality, of subject, because they are originally irreducible to other entities.<sup>1</sup> (Being among them almost as a synonym for something unique and irreducible to the other.) Jacques Maritain will say about it:

"Whenever we say that man is a person, we mean that he is more than a mere parcel of matter, more than an individual element in nature, such as an atom, a blade of grass, a fly or an elephant ... Man is an animal and an individual, but unlike other animals or individuals." [Williams, Bengtsson, 2011].

Another opinion belongs to William Stern:

"Despite any similarities by which persons are identified as members of humankind, a particular race or gender, etc., despite any broad or narrow regularities which are involved in any personal events, a primal uniqueness always remains, through which every person is a world of its own with regard to other persons." [*ibid*].

We have so that person is not (just) an entity – one of many – worthy, say, of a scientific research, in philosophical, psychological, religious ... sense, but it belongs to it rather an exclusive place in a possible hierarchy of concepts, at its top. On the other hand, in the words of Albert C. Knudson: personalism is "the ripe fruit of more than two millenniums of intellectual toil, the apex of a pyramid whose base was laid by Plato and Aristotle." [*ibid*].

<sup>1</sup> As in etymological sense, the word *in-dividuum* means "in-divisible".

Otherwise, we may speak about person from at least three different aspects: as a physical being, as a social being and as a spiritual being, where the last aspect grasps the most of essence of man, as a generic being. For the matter is here of values and ethical norms, of ideals and personal aspirations, of what an individual knows, in what it believes and to what it tends – what is conditioned by the conscious part of its person, as well as by an unconscious one in it etc. The importance of spiritual values that an individual chooses today becomes in so far greater if we know that the world – depersonalized and desacralized – tempts the most diverse states of crisis just on the relation of humanity. However, if essentially it resists to any general-accepted definition, to a person certainly belongs the mark of "naturae rationalis individua", from Boethius' definition of it: "persona est naturae rationalis individua." Nurturing, therefore, its rational nature, a person embodies its objective persistence (ὑπόστασις, *hypostasis*) and an individual existence (πρόσωπον), just as in the Greek drama, *persons* wore in the game different *masks* – to what refer the mentioned words.

In the Eastern tradition, to this concept belongs a central place too, with different varieties in Vedanta, Buddhism, Confucianism, Zen, where, often, a certain physical condition will be a prerequisite for the full manifestation of the self-consciousness of a person. It would be an objective moment, as that "external" in respect of any individuality that has to "follow" it, and we refer to it as a possibility what is original and irreducible to be at least open to a schematic classification. We find something similar in the case of Martin Buber who looks on the person in a relationistic way: once as a relationship "I – Thou" and the other time as a relationship "I – It". So that both times the matter would be of mutually irreducible realities, within which one proceeds differently – in a way with persons, and in the other one with things.

We say this because our effort strives to recognize – in what is rational in a man – the rational concepts and their relations, and bring possibly closer them to the overall terms of category theory we have in mind. Category A of potentially partitive fuzzy sets-replicators is intended so to meet the required demand, because as the being (in general) is open to this category, all subjects do it too to the extent they share the same properties with it. Of course, with the possibility to find a place here, what is "personal", "subjective", ... and as such the one and only one and unique.

Besides it, the hardware and software possibilities today are still far away from some thoughtful ideas to be in the service of individual aims, even though they far exceed the scope of factors, which an individual could ever appreciate, as well as the speed and the manner of dealing with them. On the same side are – supported by developed means in mathematics – simulations and models, that with sufficient accuracy would meet individual requirements. We have in mind that each of the following areas: personal life, family life, community, ... or, in more detail, of upbringing, education, action, ... are open to sufficiently clearly determinable (baseline) concepts and principles (of arriving to) complex concepts from simple ones. What, equally, is accompanied by the possibility each of them to carry from the

beginning some subjective (personal) marks, which would be "transferred" after to the realized wholes. That would make the inference of truths from other truths to be "graded" in the same sense, and so on, and, finally, to be "portrayed" in that way the personal sphere of education of an individual in the community of people.

In a possible singular case of an individual and of its habit, it would in general be as follows.

At the level of concepts and their intuitive marks, it will defer to some of them. It would have in this case to reflect the meaning of words themselves, what would order a proper understanding of concepts of man, society, ethics, ... Do a human will be and to what extent a being created for an eternal life in paradise, a social being, devoted to work, to game ... and, above all, a rational being that follows moral values, altruism, ... or he finds in our lives also a place to what is unreasonable – that is what he has to win through alone. Not in a diffuse, provisional and, therefore, unclear way, but, on the contrary, by making each of these marks to take, precisely, numerically expressed, "scope", "quantity" ... of a property, as some value between 0 and 1: of what is absent, or present in the highest degree. Because, usually, the people are not "to the end", say, atheist or "to the end" theists, but rather they respect some, and neglect other of religious dogmas, as in every man there are elements of both good and evil. Etc. Again, the point is that we should recognize that the entire material and spiritual reality is open to mentioned (self) evaluation, as the allocation of "weights" to each of elements entering into relationships of interaction, so that such numerical values would be equally received in the result of such actions. What makes possible too in every occasion to construct a model of a particular treatment of an individual in a given situation, and it would be "subjected" after by a process of optimization, through one of either mathematical, or software methods.

It would be a "final cause calculated" of in individual in the sphere of freedom.

### *References*

- Aristotle, *semel*. 1984. *Categories*. In The complete works of Aristotle. Johnatan Barnes. Princeton, NJ: Princeton University Press.
- Aristotle, *bis*. 1984. *Metaphysics*. In The complete works of Aristotle. Johnatan Barnes. Princeton, NJ: Princeton University Press.
- Aristotle, *ter*. 1984. *Topics*. In The complete works of Aristotle. Johnatan Barnes. Princeton, NJ: Princeton University Press.
- Adkins, Brent. 2012. *Deleuze and Badiou on the Nature of Events*. Philosophy Compas. Vol. 7 / 8, p. 507–516.
- Badiou, Alain. 1988. *L'être et l'événement*. Editions de Seuil. Paris.
- Badiou, A. Corcoron, S. Bosteels, B. 2003. *Diacritics*. Vol. 33, No. 3–4, p. 140–150. New Coordinates. The Johns Hopkins University Press.
- Badiou, Alain. 2006. *Logiques des mondes*. Editions de Seuil. Paris.

- Berendregt, H. W. Freek. 2005. *The Challenges of Computer Mathematics*. Philosophical Transactions. Vol. 363, No. 1835, p. 2351–2375.
- Berti, Enrico. 2001. *Multiplicity and Unity of Being in Aristotle*. Proceedings of the Aristotelian Society, New Series. Vol. 101, p. 185–207.
- Deleuze, Gilles. 1969. *Logique du sens*. Éditions de Minuit. Paris.
- Deleuze, Gilles. 2000. *Différence et répétition*. Presses universitaires de France. Paris.
- Hammer, Taylor. 2007. *The Role of Ontology in the Philosophy of Gilles Deleuze*. The Southern Journal of Philosophy. Vol XLV. Stony Brook University, p. 57–77.
- Jedrzejewski, Franck. 2011. *Ontologie des catégories*. L' Harmattan. Paris.
- Rotman, Brian. 2003. *Will the Digital Computer Transform Classical Mathematics?* Philosophical Transactions. Vol. 361, No. 1809, p. 1675–1690.
- Quine, Willard Van Orman. 1960. *Word and Object*, Cambridge Massachusetts.
- Smith, Daniel W. 2003. *Mathematics and the Theory of Multiplicities: Badiou and Deleuze Revisited*. The Southern Journal of Philosophy. Vol. XLI, p. 411–449.
- Tasić, Milan. 2012. *Biocosmology and Category Theory in Mathematics*. Biocosmology – Neo-Aristotelism. Vol. 2, No. 1–2, p. 27–43.
- Williams, Thomas D. & Bengtsson, Jan Olof. 2011. Personalism, The Stanford Encyclopedia of Philosophy. Edward N. Zalta. URL: <http://plato.stanford.edu/archives/sum2011/entries/personalism/>