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Logic as Metaphysics: A Critique of Nick Zangwill

Abstract: This paper disagrees with Nick Zangwill over the metaphysical status of logic. Using the method of critical analysis, the paper argues that philosophers have always treated the objects of the world as entities that are mind-and-language-independent. Therefore, Zangwill's description of conjunction (\wedge) and disjunction (\vee) as well as the unary operator called negation (\neg) as concrete worldly facts, is tantamount to situating them in the same metaphysical category as things-in-themselves. Raising the question whether this augurs well for the function of logic as a descriptive tool, the paper responds in the negative and argues that it gives rise to what the authors have tagged the paradox of inconsistent metaphysical categorization. The paper concludes that searching for a preconceived essence for logic should be discouraged because logic is not one but many, and because doing so forces one to locate logic or its features in a metaphysical category that generates paradoxes and undermines the function of logic as the mind's tool of description.

Keywords: Logical realism, Realism about logic, Metaphysics of logic, Logic as metaphysics, Paradox of inconsistent metaphysical categorization.

1. Introduction

In the attempt to explain how logic is metaphysics, Nick Zangwill presents a version of realism about logic that describes conjunction (\wedge) and disjunction (\vee) as:

- a) Facts that exist respectively and constitute other complex facts such as worldly entities, state of affairs and situations.

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- b) That have essences.
- c) That differ in essence from each other (Zangwill, 2015, 524).

In this regard, the traditional constants of conjunction (\wedge) and disjunction (\vee) are regarded as real concrete facts of the world. Also, negation (\neg), which is commonly understood as a unary operator in formal logic is also described by Zangwill as a worldly fact. The primary objective of this paper is to respond to the question whether describing the logical constants of conjunction (\wedge) and disjunction (\vee) and the unary operator (negation) as real concrete facts of the world augurs well for the functional role of logic as a descriptive tool. To achieve this, it will be argued in the second section that describing the logical constants of disjunction (\wedge) and conjunction (\vee) as real concretely existing facts of the world explicates the paradox of *inconsistent metaphysical categorization* (IMC). The IMC paradox will be further explained in the third section of the article. In the fourth section, it will be argued that describing the unary operator of negation (\neg) as a concrete fact of the world also explicates the IMC paradox. Further objections to Zangwill's realist metaphysical description of logic will be discussed in the fifth section. In the sixth section, the paper will conclude by arguing that situating the traditional logical constants of conjunction (\wedge), disjunction (\vee) and the unary operator of negation (\neg) within the metaphysical category that is traditionally reserved by philosophers for *mind-and-language-independent* (MLI) entities does not augur well for logic as a *mind-and-language-dependent* (MLD) tool.

2. Refuting Zangwill's Realism about Conjunction and Disjunction

Zangwill's metaphysical descriptions of the logical constants of conjunction (\wedge) and disjunction (\vee) are clearly captured below:

Not only do logical constants exist, since they are the constituents of complex facts; they also have essences, and different logical constants differ in their essences. One important respect in which they differ is in their contribution to the causal or metaphysical powers of the facts they partly constitute... They differ in their metaphysical determination relations with respect to A, for example, $A \wedge B$ determines A, whereas $A \vee B$ does not. And $A \vee B$ is determined by A whereas $A \wedge B$ is not. They also differ with respect to each other. $A \wedge B$ determines $A \vee B$, not vice versa. They also differ in their determination relations with respect to other facts (Zangwill, 2015, 254).

From the foregoing quotation, the expression " $A \wedge B$ determines A" is a realist interpretation of the classical law of conjunction-elimination or

simplification. This law allows one to infer a conjunct “A” from the conjunction “ $A \wedge B$.” Zangwill’s realist interpretation describes this as case of “ $A \wedge B$ ” determining “A” thereby creating the impression that “ $A \wedge B$ ” and “A” are real facts. The expression “ $A \vee B$ is determined by A” is also a realist interpretation of the classical law of addition. This law allows one to infer the disjunction “ $A \vee B$ ” from a single propositional variable “A” and Zangwill interprets this as the realist case of “ $A \vee B$ ” being determined by “A” also creating the impression that “ $A \vee B$ ” and “A” are worldly facts.

Obviously, Zangwill uses the classical laws of conjunction-elimination and addition to explain how conjunction (\wedge) essentially differs from disjunction (\vee), especially as it concerns the power of metaphysical determination that they supposedly have as real existing facts. However, if one must regard both logical constants as facts that have essences, then there should also be aspects of them that can be regarded as accidents.¹ But as to what constitutes these accidents is not addressed by Zangwill. Nevertheless, describing both constants as facts that have essences logically implies that all possible instantiations of them should all have the same essence. But this view can hardly be sustained where logic is regarded as many rather than one, and where the logical constants that are supposedly facts are not reducible to the ones that are commonly regarded as linguistic features of formal logic. A metaphysical interpretation that describes logical constants that are commonly understood as linguistic connectives, as real existing facts, situates them in the metaphysical category that metaphysicians situate MLI entities.

Philosophers often distinguish between things as they are perceived and things-in-themselves. For instance, Plato differentiated the *forms* (the real things) from the *shadows* (the pseudo-real things that are perceived with the senses). Aristotle distinguished *substance* (that which subsists) from *accidents* (the non-subsistent mutable properties). John Locke also distinguished *substance* from *qualities*, which are the properties that are available to the mind via the human senses (2007, book 2, chap. 23). Immanuel Kant distinguished *noumena* – that is, “things-in-themselves” from *phenomena*, that is, things as they are perceived (Kant, 1999, 190). These metaphysical distinctions are indicative of the philosophical thesis that the supposedly true things human beings say about reality does not necessarily mean that we have perfectly captured the metaphysical structure of reality” (Rayo, 2013, 9). One can argue that human conceptualizations and descriptions of worldly facts are cognitive representations of them, and as such they could be described as MLD representations of them (Abakedi, 2020, 129). But the facts of the world as they are as things-in-themselves are MLI (LaPointe, 2014). This is because they will still exist even in the absence of human minds to be cognitive of them (Rush, 2014, 15). Therefore, describing both logical constants as real facts that exist in the world, and that have essences, is tantamount to elevating them to the same

metaphysical status as *substance* or *noumena*. This implies describing them as MLI entities that can as well exist independently of what the human mind thinks of them. But this gives rise to what is here called the paradox of *inconsistent metaphysical categorization* (IMC).

3. Explaining the IMC Paradox

The paradox of *inconsistent metaphysical categorization* (IMC) names the ideological inconsistencies or contradictions that arise from describing the formal concepts of logic as MLI entities. As already explained, the concept of “mind-and-language-independence” is a metaphysical coinage that is traditionally reserved in metaphysics for the category of things regarded as “things-in-themselves”. This view is further defended as follows:

In metaphysics, the metaphysical category that can be described as ‘mind-and-language-independent’ is reserved for the unknown or unknowable holder of the properties that the mind attain through the senses and intuition. This standard meaning of mind-and-language-independence preserves the duality of the unknown or unknowable things-in-themselves and their knowable properties....The practice has been to describe the metaphysically superior ‘aspects’ of the dichotomy that are believed to be inaccessible by epistemic standards, as reality per excellence: while the metaphysically inferior ‘aspects’ that are thought of as being accessible by epistemic standards are regarded as somewhat pseudo-real (Abakedi, 2020, 129-130).

As mentioned earlier, describing the logical constants of conjunction (\wedge) and disjunction (\vee) as worldly facts that have essences is tantamount to elevating them to the metaphysical category that many metaphysicians believe is inaccessible by human epistemic standards. This brings to the table pairs of unresolved paradoxical instances of conjunction (\wedge) and disjunction (\vee), namely:

- i. A conjunction (\wedge) that is a MLI concrete fact of the world and a conjunction (\wedge) that is not a MLI concrete fact of the world but rather a MLD concept of formal logics,
- ii. A disjunction (\vee) that is a MLI concrete fact of the world and a disjunction (\vee) that is not a MLI concrete fact of the world but rather a MLD concept of formal logics.

Describing both constants as MLI entities without establishing how they are related to, or different from the MLD versions in formal logical systems is problematic. This creates an unresolved logical gap between logical constants that are supposedly MLI facts and those that are MLD concepts of formal

logics. This is a case of inconsistent ontological categorization that explicates the IMC paradox.

The essence “X” of a thing “A” is the essence of all “As” such that “X” is a universal that is instantiated in all “As”. Describing the constants of conjunction (\wedge) and disjunction (\vee) as having metaphysical essences implies that there are specific universals that define all possible instantiations of conjunction (\wedge) and disjunction (\vee) respectively. But this begs the question whether the supposedly MLI conjunction (\wedge) and MLI disjunction (\vee) as well as the MLD conjunction (\wedge) and MLD disjunction (\vee) of formal logics have one essence or different essences respectively. Whereas this question is not addressed by Zangwill, if one were to suppose that both realist versions of conjunction and disjunction all have the same essences respectively, this will be a difficult view to defend in the face of the IMC paradox.

The common and traditional practice has been to treat logical constants as descriptive tools rather than as MLI facts that have essences. Moreover different systems of logic can have different meanings for the constants of conjunction. For instance, conjunction has a different meaning in quantum logic from what is obtainable in the logic of classical mechanics. In a typical mathematical structure of quantum logic such as the Orthomodular lattice that was developed by Birkhoff and von Neumann, whereas the conjunction of two experimental propositions that is symbolized as a and b is zero-dimensional [i.e. $a \wedge b = 0$], their disjunction is one-dimensional [i.e. $a \vee b = 1$]. The expression “one-dimensional” has the realist meaning that the measurement or observation of one inertial property of a quantum mechanical system is possible. The expression “zero-dimensional” preserves the realist meaning that two inertial properties of a quantum mechanical system such as position and momentum cannot be simultaneously observed or measured. But in classical mechanics, the conjunction of two experimental propositions a and b preserves the realist meaning that two inertial properties of a classical mechanical system such as position and momentum is simultaneously measurable.²

If conjunction (\wedge) is regarded as a single constant that has an essence, then the case of the classical MLD conjunction (\wedge) and the quantum MLD conjunction (\wedge) having conflicting meanings explicates the IMC paradox. Having conflicting meanings indicates that both types of conjunction (\wedge) belong to the same metaphysical category of MLD because they are not MLI. Two conflicting meanings for two kinds of conjunction (\wedge) that belong to the same metaphysical category regarded as MLD is an indication that the theory of a single essence for conjunction (\wedge) cannot be defended in this context. Hence, conjunction (\wedge) as a constant of logic is essentially a mental construct indicating the way the mind may possibly describe two variables in different ontological contexts. This is why conjunction (\wedge) should be described as a MLD concept rather than as a MLI concrete fact.

4. Zangwill's Realism about Negation and the IMC paradox

Zangwill mentions that the existence of conjunction (\wedge) and disjunction (\vee) as real facts of the world causally explains why there are *conjunctive* and *disjunctive* complex facts (Zangwill, 2015, 517). But in the later section of his article dealing with negation (\neg), the examples of *conjunctive* and *disjunctive* facts are given as:

- i. Negative facts such as $[\sim A \wedge \sim B]$ or $[\sim A \vee \sim B]$
- ii. Hybrid facts such as $[A \wedge \sim B]$ or $[A \vee \sim B]$ (Zangwill, 2015, 541).

But if $[\sim A \wedge \sim B]$ or $[\sim A \vee \sim B]$ are examples of complex conjunctive and disjunctive negative facts respectively, and given that \wedge and \vee are the real existent worldly facts that makes these negative facts possible,³ then “A”, “ $\sim A$ ” and “ $\sim B$ ” should also be facts like \wedge and \vee .

Zangwill claims that these negative and hybrid facts are real because “being” and “nothingness” are real facts of the world (Zangwill, 2015, 541-542). However, what is not clear from Zangwill's article is whether these negative facts are instantiations of “nothingness” as a universal. This is less likely because it is quite obvious that he does not anchor his thesis of “logic as metaphysics” on Platonism. Nevertheless, negation in logic (\neg) and the metaphysical concept of “nothingness” need not be treated as synonyms. It is not the world that negates things, it is rather the human mind that conceives things as negations. For instance, *not tall* is the negation of *tall*. To say that a given thing is *not tall* presupposes that one has an idea of a *tall thing* or *tall things*. The syntax-expression “ $\sim B$ ” has the realist meaning that “B” is not the case. But this does not necessarily imply that “ $\sim B$ ” is a real existing fact of the world as deducible from Zangwill's description of $[\sim A \wedge \sim B]$ and $[\sim A \vee \sim B]$ as negative facts.

Describing “ $\sim B$ ” as a worldly fact makes it a MLI thing-in-itself that is out there. “ $\sim B$ ” cannot be said to be something out there, rather what is out there is whatever “B” names. Whereas “B” names or refers to an individual thing, “ $\sim B$ ” is the mind's judgement that what is before it is not what “B” refers to. Therefore, if “B” names or refers to a single MLI entity, “ $\sim B$ ” does not because it has the ontological meaning of the things that are not what “B” names or refers to. “B” and “ $\sim B$ ” cannot therefore be simultaneously categorized as real existent MLI facts of the world. Describing “ $\sim B$ ” in a way that implies that it is a single MLI fact is not helpful to the function of logic as the mind's linguistic tool of description. “ $\sim B$ ” should rather be described as a mental fact rather than a MLI fact, and it can in this regard be understood as

MLD. Locating the unary operator of negation (\neg) in the category of MLI when it is actually MLD explicates the IMC paradox.

5. Further Objections to Zangwill's Realism about Logic

Zangwill's view that logic is not essentially mind-dependent can be refuted because every logic, as a descriptive tool, is a product of the human mind and serves a particular context where the mind attempts to make sense of. This is why one may not be wrong to say that "there are different logics for different ontological contexts" (Bacciagaluppi, 2009, 50-51) or that different logics arise from different ontological contexts (Ijiomah, 1995, 5). As a descriptive tool, logic and its features are MLD. The metaphysical category regarded as MLI has been treated by some philosophers as a safe haven for defending the logical realist thesis of one-true-logic (Abakedi, 2020, 139). McSweeney (2018) has tried to argue for the thesis of one-true-logic by locating logic in the metaphysical category of MLI. But this too has been shown to give rise to the Independent-Dependent (ID) paradox (Abakedi, 2020, 135-7).

Contrary to Zangwill's view that logic is not abstract, when seen as a human conceptual/descriptive tool, logic can as well be described as abstract if the realist context is about forms of thought. Contrary to Zangwill's view that logic is not about reasoning, logic can be said to be about reasoning if reasoning is seen as a real activity of the mind about the world. Also, contrary to Zangwill's view that logic is not about truth, logic can be said to be about truth if truth as the reality of "what is" must be described, explained and communicated. Contrary to Zangwill's view that logic is not explainable by truth tables, logic can rightfully be explainable by truth-tables especially where truth-tables are seen as a logical possible world where the mind assigns unique meanings to logical constants and substitution instances.

6. Conclusion

"Being as being" does not necessarily reduce to any humanly conceptualized account of it. "Being as being" is multifaceted. It is neither exclusively classical, nor quantum nor physical nor material nor empirical. Even though human languages are real, it is paradoxical for one to suppose that certain features of human language are real MLI worldly facts and as such things-in-themselves. Logic is a linguistic tool that has been developed by human beings according to different ontological needs. Logical constants have traditionally been regarded as linguistic features of the formal languages of logic. There is no urgency about upgrading logic to metaphysics as to warrant replacing the classical metaphysical understanding of logical constants as the

products of the human mind (i.e. MLD) with Zangwill's description of them as MLI facts.

The attempt to describe logic as a single MLI structure of the world has been heavily criticized by logical pluralists. It has been pointed out that describing logic as MLI multiplies problems for philosophy of logic. For instance, where logic is regarded as single and MLI, how can it correctly describe the MLI structure of the world as well as itself as a MLI entity simultaneously? A single MLI logic that correctly describes the MLI structure of the world will require another logic to describe it since it cannot describe itself (Abakedi, 2020, 131-133). But if there is only one-true-logic that is MLI, then conceiving another MLI logic that will correctly describe the one-true-logic is contradictory. The other logical option is to admit that logic is not one but many and that there are all MLD. But if the job of describing the supposedly MLI one-true-logic is given to a MLD logic, which logic will that be – classical or quantum or some other kind? A MLD logic describing a one-true-logic that is MLI mimics Platonism on the one hand. On the other hand, it constitutes an argument for logical pluralism rather than logical monism (Abakedi, 2020, 132) because it indicates that there are different logics for different ontological contexts (Abakedi, Iwuagwu and Egbai, 2020, 21).

Like the issue of a one-true-logic that is supposedly MLI, the idea of logical constants that are MLI is less enticing to the practicing logician. How can logical constants that are MLI entities explain logical constants that are MLD and vice-versa? Does one need to discard the traditional MLD status of the common logical constants? Certainly not. But even the metaphysical claims of Zangwill about conjunction (\wedge) and disjunction (\vee) as being real and existing facts are ideas from his mind, which he communicates with language. They are in this regard MLD. However, it appears impossible that one can explain something that is supposedly MLI without collapsing mind-and-language-independence to mind-and-language-dependence. This is paradoxical and shows that the metaphysical category of mind-and-language-independence or MLI is not needed to describe logic or any of its linguistic features, and that doing so beclouds or undermines the functional role of logic as a descriptive tool. The richness of logic is better appreciated if we stop searching for a preconceived essence for logic (Klima, 2014, 175-176).

Notes

¹ In the history of western metaphysics, essences have been treated by philosophers as the metaphysical enduring definitive aspects of things that are exclusive to them and that differentiate them from other things. They are different from the accidents, the aspects of things that are regarded as subject to change. Thus, conceiving essences for logical constants also entails conceiving accidents because it is accidents that make substances as essences meaningful and vice versa. This is because one requires accidents to understand substances (see Asouzu, 2009, 149-150). Not saying exactly what constitute accidents for

both constants makes Zangwill's metaphysical description of conjunction and disjunction as things that have essences difficult to defend.

² For an elaborate discussion on how classical logic fails to explain findings in quantum mechanics, see Putnam 1979, 174-197 and Bacciagaluppi, 2009, 49-79.

³ In describing logic as metaphysics, Zangwill actually uses the symbols \wedge and \vee when referring to conjunction and disjunction respectively. He specifically describes \wedge and \vee as real existing facts of the world. This shows that it is the traditional constants of conjunction and disjunction used in formal systems of logic that is given the realist descriptions of being respectively responsible for complex conjunctive and disjunctive facts. In this paper, for the purpose of clarity, these symbols are put in brackets after the words as in conjunction (\wedge) and disjunction (\vee).

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