Is Hegel's Logic Logical?

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ABSTRACT

This paper is written in order to analyze the differences between formal logic and Hegel's system of logic and to compare them in terms of the trueness, the relations between the system and targeted objects and the methodology. Firstly, I give the terminological difference between formal logic and Hegelian logic. I claim that while formal logic is setting the 'trueness' to the center of logical thinking and the propositions specifically, Hegel's logical system is approaching to the logical objects by taking into consideration of their 'completeness'. Then, I analyze which one of these two logical systems is more overlapping with its object. I assert that 'filler material' in formal logic is lost and so the identification of the logical objects which includes determination and characterization is insufficient. Lastly, I turn back to Hegel's system of logic, more precisely his dialectics, with an attempt to clarify his motivation for this systemization. I try to structure a guide to understand Hegel's dialectics which appreciates him because of explaining the interrelation of the progress of logic with philosophy.

1. Introduction

The three parts of Hegel's *Science of Logic* were published in 1812, 1813 and 1817 respectively. It shows that Hegel's dialectical logic was established much earlier than the formalization of modern logic which coincides with early 20th century. The claim which is terminologically structured as 'the refutation of formal logic by Hegel', like I am planning to make frequently in this paper, actually refers to the rejection of the basics of formal logic by the followers of Hegel's logical tradition. The motivation behind this claim is actually the attempt of reconstructing Hegel's dialectics in a way that is positioned as an anti-formal logic after Hegel with the assertion that logic is originally and literally what Hegel did.

After this significant disambiguation about the chronology, the next move of the followers of Hegel's logical tradition is naturally proving the claim that if Hegel's system shows us how logic has to be treated truly, this will lead us to accepting formal (modern) logic as a deficient or incomplete project. According to Hegel's followers like B. C. Birchall (1980), Hegel's claim that form is not sufficient to fulfill the content is pointing out the biggest fallacy within the formalist argument which is that the form of a sentence has to be separated from its content to be the object of logic. Clearly, Hegelian logic presupposes that form cannot be separated from its content. Otherwise, the concepts or the terms in the sentence lose their essence and go out of the scope of logic. To stop such a vacuum within the scope of logic and its objects that formalization causes by separating form and content, Hegel's approach that identifies the form and content as indecomposable is necessary.

This necessity assumed as the cure of the problem of formal logic according to the Hegelian tradition seems to require to be proved. The justification of Hegelian logic in 21th century requires to finding valuable proofs against the perfection of formal logic. Hegel's

system should be made attractive also for the formalists to whom the anomalies intrinsic to the understanding of formal logic are showed.

To do my part for fulfilling this duty, I will give effort by this paper. I am firstly planning to give the terminological difference between formal logic and Hegelian logic. I will claim that while the initial is setting the 'trueness' to the center of logical thinking and the propositions specifically, the letter is approaching to the logical objects by taking into consideration of their 'completeness'. Then, I will try to analyze which one of these two logical systems is more overlapping with its object. I will assert that 'filler material' in formal logic is lost and so the identification of the logical objects which includes determination and characterization is insufficient. Lastly, I will turn back to Hegel's system of logic, more precisely his dialectics, with an attempt to clarify his motivation for this systemization. I try to structure a guide to understand Hegel's dialectics which appreciates him because of explaining the interrelation of the progress of logic with philosophy.

2. Trueness and Completeness

One of the most important laws in traditional logic is the law of non-contradiction and this principle, according to Karl R. Popper (1989), is wrongly interpreted by Hegel. Popper says that Hegel argues in his *Science of Logic* a twisted version of this law and Popper calls it as the law of contradiction. While the formal-used of law claims that contradictory statements cannot both be true at the same time, Hegelian version is allowing the existence of contradictions. Because of this violation of the law of non-contradiction, Popper says, anything and everything can be proved from the contradictions which are allowed in Hegel's logic. This principle, also called as the Principle of Explosion (Priest&Berto 2013), which allows every statements coming after a contradiction to be true is not welcomed in formal logic and is discarded by the law of non-contradiction.

The propositions which are true merely because of coming after a contradiction are reinforced truths according to formal logic and so, they cannot be used to prove something scientifically (Popper 1989, p.328). The only scientific truth which can be attributed to the propositions could be reached by referring to the preservation of truth within an argument. The arguments like "If P is true and Q is true, the outcome is correct" or "If P true and Q is false, the outcome is incorrect" could be given as examples of the formalist understanding of 'trueness'. In this sense, for instance *a and not-a* gives an incorrect outcome or creates a contradiction according to formal logic. Therefore, the numerical equivalence of *a and not-a* becomes zero (0) which means not one ($\neg 1$) or not true.

However, in Hegel's respect, the value of *a and not a* could be read as '1' if '1' is assumed as the logical equivalence of 'completeness'. Hegel's logic signifies being whole/ being one with the other parts/ being complete in the endeavor of achieving the truth. His logical system sees the reality in itself as the universe as a whole which has to be described both as *a* and *not-a*. In the more detailed reconstruction of Hegel's dialectical logic, contradictions that are inevitable are reconcilable through the stages of his famous triad; thesis, antithesis and synthesis. The contradiction between the thesis and the negation of it, antithesis, is passed over by positing another category that is synthesis. This procedure of dialectic enables us to reach a greater knowledge that can explain the whole development of the universe, rather than having the knowledge of moments. So, according to Hegelian tradition, the knowledge coming from the traditional logic only works for taking a picture of a fixed and motionless moment which is distinctly evaluated as '1' or '0'. This type of knowledge can make us understand just one side of the thing that describes how it resembles the things that are similar to its nature. However, it does not tell anything about how it differs from other things that remain distant from its nature. For Hegel, only the application of

dialectic which allows contradictory predicates to identify the nature of things in their reality to thinking-procedure can give a two-sided description of what a thing exactly looks like.

Since *a* and *not-a* are assumed both true as the distinct parts of the truth attributed to the same thing in a way that being able to give the ultimate (or complete) truth about it, the law of non-contradiction or the law of identity and difference will not become violated. Only the metaphysical application of the law in formal logic which is that reality in itself must have one property and not another is denied (Beiser 2005, p.162). According to Hegelian logic, the determination of substance and its trueness cannot be reached through one predicate alone which is only *a* or only *not-a* in an exclusive way. If we treat the logical objects as Hegel criticizes and try to attribute a truth value to their reality like we do in each single thing (*this* is only *a* and *that* is only *not-a*), we become to end up with a deficient justification of trueness which means incomplete truth of *a* by discrediting *not-a*. So, we become to betray Hegel's claim that truth is not a thing which can justly be evaluated from the parts but rather it is something that can only be seen in the whole. In this sense, the law of non-contradiction is neglecting the opportunity to reach the 'real' truth by treating the reality as just another entity or another part of the whole while it has to be treated as a whole as Hegel's logical system tries to support.

3. The Problem of Overlapping

To decide which logical system is more appropriate to identify its object, we should come back to Birchall (1980)'s complains about the purely formal character of formal logic. The metaphysical side of a logical system which is essential to characterize the objects in the domain or to determine the objects that the system targets to explain cannot be undermined. If this fallacy is done and the metaphysical ground is trivialized, Birchall says, system ends up with an anomaly in the process of feeding the form with its content. Logical system suffers

from the inability of the form regarding its explanatory power if the system is not fulfilled by the content (1980, p.286). Therefore, the only way to create a logical system which overlaps with its object (or converges to overlap) is signifying the role of content as much as the role of form.

To decide which logical system is more successful in treating justly to the form and content, both formal and Hegelian logic has to be analyzed and evaluated. Firstly, Hegelian critic of formal logic should be stated in order to understand whether it is a just criticism or not. The claim of the followers of his logical tradition about the deficiency of formal logic can be summarized as the satisfaction of formalists at an unsatisfied truth-level for Hegelians. For them, formalists are contented with the crystalized truth of objects which stuck into motionless moments. They are deciding the nature of thing by only one determination (merely *a* or *not*-a) and excluding the difference in the identity. According to Hegelian logic, it is an insufficient trial because the real nature of things or their pure thought can only be achieved by the principle that unifies various forms of our determination with its matter rather than just one determination. They call this logical trial which does not end up at the level of formal logic as speculative reasoning (Birchall, p.287) and claim that it is what Hegel did in his *Science of Logic* by using dialectical method.

On the formalist side, arguments are made by again turning back to the discussion about the impossibility of identity in difference or the law of non-contradiction. As we mentioned, their criticism of the law of contradiction is based on the impossibility of the reconciliation of two contradictory statements; a proposition and the negation of it. Roughly, they claim that 'a is red' and 'it is not the case that a is red' are contradictory. When we replace the sentence 'a is red' with the symbol, P, the impossibility of the contradictory statements will be stated as $(P \land \neg P)$. However, this typical understanding of negation does not represent the idea of Hegel's negation. In his system, similar to term logic, negation is

used in the relations of the terms of the same type. Rather than applying the negation to whole proposition, Hegel does this to the sub-sentential units, to the terms (Redding 2012). For instance; the sentence 'a is a red thing' is not the appropriate unit to negate in accordance with the rules of Hegel's dialectical logic. Therefore, the law of non-contradiction, $\neg\,(P \wedge \neg\,P)$, is not a thing that Hegel can reject in this form. The unit that can be negated in dialectical logic is the term 'red'. Being 'red' and being 'not-red', I mean being 'blue' or 'yellow', can only have a meaning under the category of 'color'. If the opposite of the red, 'not-red', is not determinate or not intelligible, the term of the red itself cannot be intelligible.

The thing which determines the boundary or periphery of the object *a* is the scope out of *a* which is *not-a*. Like the negative space in art, the space where *a* or *a-like* things are not present is crucial to determine what *a* is from the outside or using the negativity. Similar to the example of 'redness', the determination of the scope out of *red* or *red-like* (different shades of red) is also important to identify redness as a sub-unit of color. In this analogy, if not-*a* is the negative space (the area out of borders) and it is useful for the determination of borders of being *a*, we also need to fulfill the area within the borders by learning details about being *a*. This positive space or the filler material could be considered as content which is necessary for the characterization of the thing. As much as the things which makes *a* not '*not-a'*, the things which makes *a* '*a'* are important. While the initial is determining the peripheral, the latter is detailing the inside and gaining a character to the object. Only in the satisfaction of both these moments, we can talk about the full identification of the logical object which comes with the synthesis.

In other words, if a thing cannot be negated, it becomes impossible to define it. The thing that makes red 'red' is not only the features of 'red'. The qualities of 'not-red' is also significant to show that red does not look like 'not-red'. Otherwise, there would be no need to define a category called color. The only determinate thing would remain as 'red' and no term

exists which has a greater context than it. Not allowing to the contradictions as formalists do results in logic's incapacity to negate terms. If it happens, reaching to more complex categories through the negation of the negation becomes impossible. Therefore, there would be no word like 'color' which is a more universal concept than 'red'. Even though the formal logic is successful in the determination level or in drawing the borders by differing being *a* from *not-a* with the help of the law of contradiction, it fails in the characterization level. Without the filler material or the character which is enhanced by the identity in difference, there would be no full identification of the logical system with its objects and so, no success in reaching the whole.

4. Interrelation of the Progress of Logic with Philosophy: Dialectics Backwards and Forwards

Hegel's dialectical method functions as a logical corrective. He lists different types of logical judgments and inferences and then categorizes them. He firstly describes their limitations. He defines the conditions that make syllogisms valid and discuss whether these conditions are characterized well. He has a suspicion about the character of the conditions which are constructed in a rigid and formal way. He suggests that the form, on its own, cannot provide a satisfactory ground to the process of explaining. For Hegel, logic is presenting a defective categorization because of the formal constraints on the terms within the propositions. To eliminate this inadequacy of logical forms, Hegel activates his dialectical method. In a more specific sense, he defines a kind of "correction" duty. He identifies the types of judgments one by one in an accumulating way. One type leads to the next and the latter is assigned to correct the former's inadequacy. He firstly constructs judgments by driving the news from the formers. Then, he checks their validity by starting from the last variation. If he detects a fault, he re-evaluates the previous judgment and corrects when it is necessary.

I will call this "correction" process as an attempt to arrive logic starting from philosophy. It starts from philosophy because he claims that logic is not simply an abstract form of validity, but rather a process of reasoning. More precisely, he treats logic firstly philosophically. He describes logic as the reasoning about reasoning. Instead of formal terminology of logic which includes propositions, references or inferences, Hegel uses the words of metaphysics like being, essence and concept. He points out the weakness of formal logic which is the lack of content and tries to strengthen the logic by correcting the inadequacies of judgments. Because these inadequacies are not originated purely from the form, he suggests a way to correct them by philosophizing. He identifies the starting point as the philosophy that he is undoubtedly talented. In more Hegelian way, this process can be named as the operation of dialectics forwards. It is forward because the need of explaining and comprehending how the objects of logic are behaving is his priority. Starting from a general curiosity, he is planning to end up with a specific or a group of specific answer. The dialectical method is representing its natural oscillation by going deep into the philosophy.

The other process -the problematic one- that I want to take attention is the reverse function of the first attempt. It is an attempt to arrive philosophy starting from logic. Since Hegel claims that logic provides the appropriate starting point for philosophy, his former books are mostly designed as philosophical books rather than logic books. However, such books that Hegel begins to systemize his logic softly is not satisfying for him. His work about logic has to be articulated by other fields of philosophy to be able to give the full picture of reasoning and Idea. He needs a more intensive and abbreviated explanation about the manifestation of Idea through dialectical reasoning and he needs to do this in a more plain and logical way. His *Science of Logic* and his pre-collected work *Encyclopeadia of the Philosophical Sciences* that includes the parts as *Philosophy of Nature* and *Philosophy of Spirit* as well as his logic are published. The emergence of *The Shorter Logic* (logic-part of

the encyclopedia) can be interpreted as an effort to systemize whole branches of philosophy by using the system of logic which is more popular after his *Science of Logic*. He claims that there is no ultimate principle to keep things in order and to explain why things are the way they are. He appeals to logic not because of the wish of finding something ideal and so stable that can reject his argument. Rather, he is looking for a pattern that can approve what he says about the impossibility of an ultimate answer and he believes that logic which uses 'change' as base can do this[1]. As he says, logic can reveal the pattern that thinking uses. The pattern that is recovered at the end does not have to be formal in abstract sense, but the form of it has to be consistent and logical in its entirety. By using the same pragmatic move that I did at the end of the previous paragraph, this attempt of Hegel –the systemization of philosophy with the help of logic- can be called as the operation of dialectics backwards.

The second move of dialectics which is backwards is problematic because what Hegel means by logic is not overlapping with the logic that we in the modern times are used to. In general, we expect from logic to follow a systematic to prove something. If this thing is disproved, it becomes false. If it cannot be disproved, it is assumed true until a refuting claim appears. The behavior of this thing is fixed to the moment when it is analyzed at the beginning in order not to allow any alteration or variation. After that moment, there would be no chance for that thing to behave differently. Otherwise, the truth value of it changes with its behavior. Even though this formal interpretation (idealized version of the objects of logic) eases the understanding of the nature of things, Hegel claims that it is insufficient to grasp the nature of the things exactly. A fixed and stationary nature cannot belong to the objects of logic, because logic has to study with the objects that are pure examples of universe. Since the nature of the universe is being characterized by taking account lots of variables, each

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[1]Popper misinterprets this attempt of Hegel and claims that Hegel created a logic which proceeds by approvals in a way that it contradicts with the normal functioning of logic (science, in general) which proceeds by rejections. (mentioned in p.4)

representatives of it shares this changing nature. Without the duality of opposites that is the engine of natural motion, the nature of the logical objects cannot be described justly. In the same way, the logic loses its describing feature because of not choosing the right domain.

One may also claim that the reverse function of dialectics which is backwards is the opposite with the nature of dialectic, because the natural oscillation of dialectics belong its forward operation. By going one step further, this person can also assume that the second interpretation of the dialectics is a constrained conceptualization in order to make Hegel look like doing logic. Since the dialectics backwards is an attempt to reach philosophy using logic, the defense of this part is crucial for the construction of a 'logical' logic. This part, I assume, is also important for Hegel's dialectics to prove that the dialectical method really works in a way that the method to operate logic becomes the logic itself. In other words, the output of the first function (dialectics forward) becomes the input of the second (dialectic backwards). The dialectical nature which is the new understanding that we arrive at the end of the philosophizing process becomes the method of logic that is used to reveal the pattern of thinking. Then, the dialectics is re-operated to free philosophy from its deficient parts. This successive operation of dialectics continues until we have enough variable to characterize the changing nature of thinking. It would be a huge mistake to think that each of these two operations of dialectics (forward and backwards) is distinctly motivated by specific needs; the former is doing philosophy and the latter is doing logic. Indeed, both of two is do-*ing* one move to unify with its component. The operation of dialectics forward is philosophiz-*ing* to unify with logic, while the other operation which is backwards is bring-*ing* a logical form to the philosophy to be the one with it.

5. Conclusion

Most of the formalist criticism of Hegelian logic misses the unification of dialectics forward and dialectics backwards. In other words, formal critics of Hegel's logical system actually do not have an accurate understanding of Hegel's framework. Since such a comprehension of Hegel's dialectics is fragmented and deficient, the criticism of it is concentrating on a false assumption which declares that Hegelian logic is conflicting with the logic in modern and formal sense. The corrected interpretation of Hegel's dialectical logic which is being done by his followers asserts the contrary. They argue that the relationship between Hegel's logical system and formal logic is not contradictory, but rather complementary. When logic gets anomalies which are too big problems that cannot be solved by the current paradigm that is presented by formalists, Hegel's dialectics can be helpful in the solution by offering some modifications of logical concepts or of logical method. Although formal logic is able to give more or less accurate answers to the questions about the nature of things and the relation of them with each other, logical methodology sometimes needs more precise and avant-garde solutions. At this point, Hegel's dialectics might take place to change the point of view to resolve the problem. If it becomes possible, we can mention about a logical mutant that binds formal and Hegelian logic in a mutually beneficial way for the solution of some specific troubles of formal logic. In this way, the progress of logic and its interdisciplinary researches might gain acceleration.

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