JUSTIFICATIONS FOR RELATIVITY IN TRADITIONAL LOGIC

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Abstract
Standard responses to the question of the nature of logic can be broadly classified into two, namely: logical monists that privilege traditional logic above non-traditional logic and logical pluralists who recognize the legitimacy of many-valued logic and use same to argue for some form of logical relativity. The line of distinction appears to be fairly clear as traditional, Aristotelian, two-valued and standard logic maintains fidelity with the principle of bivalence and the traditional laws of thought while non-traditional, non-Aristotelian, many-valued, non-standard or alternative logics somehow break their fidelity to the principle of bivalence and the traditional laws of thought. It appears to be settled that relativity typically belongs only to non-traditional logics. Contrary to this understanding, this paper argued that some level of relativity Is presupposed in traditional logic by the legitimacy enjoyed by syllogistic, propositional and predicate logics as a body of systems that make up traditional logic. This paper called for the revision of monistic approaches to traditional logic. Since there is some measure of relativity among traditional systems of logic, de-emphasizing the differences among syllogistic, propositional and predicate logics while stressing their unity as 'traditional logic' leads to the fallacy of accent. This fallacy

occurs when theorists place vocal emphasis on the unity among traditional logical systems while ignoring their differences.

Keywords: traditional logic, many-valued logic, monism, pluralism, relativity

Introduction

Prior to the development of modern mathematical logic and alternative systems of logic, Aristotle's contributions to logic were taken on a note of finality. The laws of thought which he had articulated were seen to be impregnable and for this reason, Aristotelian logic gradually became absolutized as the logical canon of principles on how rational beings ought to reason. The absolutism of the Aristotelian system can be seen when Immanuel Kant says of Aristotelian logic that "it is remarkable that to the present day logic has not been able to advance a single step, and is thus to all appearance a closed and completed body of doctrine".[1] Contrary to Kant's absolutist posture, Lizzie Susan Stebbing is of the view that the science of logic does not stand still. She maintains that "during the last half-century, greater advances have been made in logic than in the whole preceding period from the time of Aristotle"[2] (ix). Elijah John and Darty, Darty have noted that "the inability of standard logic to be useful in the sphere of future contingent propositions, the problem of the logic of indeterminacy in quantum theory, the complementary nature of reasoning in African world-view all of which defy a bivalent conceptual framework have given rise to the development of alternative systems of logic".[3] Traditional logic is founded on fidelity to the traditional laws of thought and the principle of bivalence. It is important to show how traditional logic systems are all connected together before demonstrating the nature of their relativity. At this point it is necessary to look into the laws of thought and the principle of

[1.] Immanuel Kant, *Critique of Pure Reason* (London: Macmillan, 1964), 17

[2.] Lizzie Susan Stebbing, *A Modern Introduction to Logic* (London: Methuen, 1950), ix

[3.] Elijah John and Darty E. Darty, "Culture, Values and Nigeria's Political Development: Engaging Affective Logic as a Methodological Model in a Post-truth Era". *NAJOP: Nasara Journal of Philosophy*. Vol. 4, No. 1, (2019): 76.

bivalence in order to demonstrate how they are presupposed in traditional logic. These are the foundations of logical monism.

Logical Monism: Foundations for Traditional Logic

There is a relationship that exists between the premises and the conclusion of arguments. That relationship is what is referred to as the relationship of entailment or logical consequence. In other words, the conclusion of an argument is considered to be the 'consequence' of its premises if the argument is valid. Logical monism is the view that there is a single logic that correctly captures the consequence relation that exists between the premises and conclusion of arguments. Colin Caret and Teresa Kissel further elucidate this relationship when they state that:

> Logic *qua* field of study is concerned with a special relation between propositions called logical consequence or logical entailment. When the premises of an argument entail its conclusion, in this way, the argument is said to be logically valid. This relation may serve the role of preserving truth or it may serve an epistemic role such as grounding proof. Leaving aside such details for the time being, let us just say that logic is about an important relation—consequence or entailment—delineatedby its distinctive role. Logics *qua* formal systems can be understood as theories of logical consequence. Logics may disagree with one another regarding the nature or the extension of logical consequence, or both. Say that a good logic 'gets it right' in all the ways that such a theory can be measured ,i.e. it adequately describes the relation at the heart of (the field of) logic. A traditional assumption, running from Aristotle to Frege is that there is exactly one good logic in this sense. This position, known as *logical monism*, says that there is ultimately one privileged account of logical consequence that is superior to any alternative.[4]

[4.] Colin Caret and Teresa Kissel"Pluralistic Perspectives on Logic: An Introduction". *Synthese*, 198 (2020): 1 doi:10.1007/s11229-019-02525-x

Traditional systems of logic share some identity with respect to their conception of logical consequence. Traditionally, it has been held that there are three laws of thought that are necessary and sufficient for correct reasoning. These laws are the laws of identity, non-contradiction and excluded middle. These laws hold true in traditional logic while non-traditional logics violate them in a consistent manner. These laws have been interpreted truth-functionally by Charles Kegley and Jacquelyn Kegley.[5] Their interpretation which we have adopted in this research is as follows:

1. The law of identity:
    (a) A is A or anything is itself.
    (b) If a statement is true, then it is true–asserts that every statement of the form p ⊃ p is true, that is, it is a tautology.

2. The law of excluded middle:
    (a) Anything is either A or not A.
    (b) Any statement is either true or false–asserts that every statement of the form p v ~p is true, it is a tautology.

3. The law of contradiction:
    (a) Nothing can be both A and not A
    (b) No statement can be both true and false – asserts that every statement of the form of p .~p is false (self-contradictory).

For many logicians, the laws of non-contradiction and excluded middle lead to the principle of bivalence and this principle has been formulated as the idea that every proposition is either true or false but not both or that given two contradictory propositions p, p, at least one of them is true, at least one of them is false (Da Costa, Beziau and Bueno;[6] Malinowski[7]).

[5] Charles Kegley and Jacquelyn Kegley. *Introduction to Logic* (New York: Charles Merill, 1978), 265.
[6] Newton Da Costa, Jean-Yves Beziau and Otavio Bueno. "Malinowski and Suszko on Many-valued Logics: On the Reduction of Many-valuedness to Two-valuedness". *Modern Logic.* Vol. 6, No. 3 (1996): 291.
[7] Grzegorz Malinowski, *Many-valued Logics*. (Oxford: Oxford University Press, 1993), 1

Traditional logic is a class of systems of logic whose defining characteristic is an allegiance to the principle of bivalence. Non-traditional logic is the complement of that class and that is why where traditional logic is defined as 'Aristotelian', non-traditional logic can be conceived as 'non-Aristotelian'.Though the principle of bivalence is related to the laws of thought, there is a distinction that must be made as they are not exactly the same. The distinction here rests on the idea that at least one of the three laws of thought is not necessary for the principle of bivalence. Da Costa, Beziau and Bueno lend support to the idea that the laws of non-contradiction and the law of excluded middle taken together lead us to the principle of bivalence. This view can be seen when they state that:

1.   p v p (law of excluded middle)
2.   (p p) (principle of non-contradiction)

1 and 2 are usually read as: given two contradictory proposition p, p:
-        at least one of them is true; (1)
-        at least one of them is false; (2)

Observe that thus interpreted, (1) and (2) together represent the logical principle of bivalence (Da Costa, Beziau and Bueno[8]). The principle of bivalence can therefore be defined as: given two propositions p, p, if one of them is true, the other necessarily would be false. This principle as a thread runs across the syllogism, propositional and quantifier logics in the sense that the possibility of a proposition possessing one out of two possible alternatives in truth-value is considered to be absolute and exhaustive. This is what informs Oliver Reiser's opinion that:

> All traditional systems of logic are two-valued. The Boole-Schroeder algebra of logic is a two-valued logic; even the Russell-Whitehead system of mathematical logic is two-valued, in the sense that propositions are considered to be either true or false. The actual business of developing a logic

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[8].   Newton Da Costa, Jean-Yves Beziau and Otavio Bueno. "Malinowski and Suszko on Many-valued Logics: On the Reduction of Many-valuedness to Two-valuedness". *Modern Logic.* Vol. 6, No. 3 (1996), 291.

in which the law is explicitly disregarded was carried through by two Polish investigators, Lukasiewicz and Tarski, who developed a three-valued logic with a trichotomy of implications, in terms of truth, falsity and uncertainty. From here, it is clear that if we define an Aristotelian logic as a two-valued logic, then any logic with more than two truth-values: three, four or n-values may be termed a non-Aristotelian logic.[9]

Wolfang Rautenberg emphasizes this point by saying that "two-valued logic is based on two-foundational principles: the principle of bivalence, which allows only two truth values, namely true and false and the principle of extensionality, according to which the truth value of a connected sentence depends only on the truth values of its parts".[10] What Rautenberg calls 'the principle of extensionality' might be seen as the idea of truth-functionality which implies that the truth-value of a compound proposition is determined entirely by the truth-values of its components and the nature of the operator or operators involved. The next point of concern is to demonstrate how two-valued logic aligns with the laws of thought and the principle of bivalence. This will be done piece-meal, from syllogistic logic to propositional logic, down to quantifier logic.

Syllogistic Logic as a System of Traditional Logic

The syllogism is often regarded as Aristotle's chief accomplishment in logic. This is why for many interested scholars; Aristotle's most important work in logic is the doctrine of the syllogism (Russell, Aristotle's Logic;[11] King and Shapiro[12]). In his *Prior Analytics*, Aristotle[13]

9. Oliver Reiser, "Non-Aristotelian Logics." *The Monist*, Vol. 45 No. 1(1935),110-111 https://doi.org/10.5840/monist19354514

10. Wolfang Rautenberg*, A Concise Introduction to Mathematical Logic* (New York: Springer-Verlag, 2006), 2. https://doi.org/10.1007/0-387-34241-9

11. Bertrand Russell "Aristotle's Logic" in*Readings on Logic,* Ed. Irving Copi and James Gould (New York: The Macmillan Company, 1972), 120.

12. Peter King and Stewart Shapiro "The History of Logic". *The Oxford Companion to Philosophy* (Oxford:Oxford University Press, 1995), 496

13. Aristotle *Prior Analytics*. Translated by A. J. Jenkinson. Retrieved from:http://www.ebooks.adelaide.edu.auDate Assessed: 13 August 2012, 5

defined the syllogism as: "a discourse in which certain things being stated, something other than what is stated follows of necessity from their being so. I mean by the last phrase that they produce the consequence, and by this that no further term is required from without in order to make the consequence necessary". Aristotle gave priority to the categorical proposition as his most fundamental statement, hence a syllogism can be seen as a form of reasoning which consists of three categorical propositions having between them exactly three terms each of which occur twice in a manner that the first two propositions jointly imply the third proposition(Darty, Categorical Syllogism[14]). Let us illustrate this with an example.

1. No men are infallible persons.
2. All priests are men.
3. Therefore no priests are infallible persons.

From the above example, it is clear that the first two propositions are premises that give necessary grounds for the conclusion. Each of the three statements that make up the syllogism must either be in standard form or be analyzable to standard form. This means that in each of the statements, the quantifier must be clearly spelt out, followed by the subject term, the copula and the predicate term. In the categorical proposition "No men are infallible persons," 'No' is the quantifier, 'men' is the subject term, 'are' is the copula and 'infallible persons' is the predicate term. Hurley writes that "after a syllogism has been put into standard form, its validity or invalidity may be determined through a mere inspection of the form. The individual form of a syllogism consists of two factors: mood and figure".[15] The mood of a syllogism consists of the sentence letters which stand for the kinds of proposition that make up the syllogism. There are four kinds of categorical propositions which are: A proposition (Universal Affirmative); E proposition (Universal Negative); I proposition (Particular Affirmative); O proposition (Particular Negative). Using the example of the syllogism which was

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[14.] Darty Darty "Categorical Syllogism" in *Argument and Evidence*, Ed. Idorenyin F. Esikot, Iks Nwankwor and Nwachukwu Anyim (Uyo: Inela Publishers, 2020), 73
[15.] Patrick Hurley, 245

presented earlier, it can be seen that the mood of the syllogism is EAE. As for the figure of the syllogism which combines with the mood to give the syllogism its form, four different arrangements are possible. They are as follows:

1		2		3		4	
M	P	P	M	M	P	P	M
S	M	S	M	M	S	M	S
S	P	S	P	S	P	S	P

(Where: P = major term; S = minor term; M = middle term)

From the discussion so far, it is clear that the form of the syllogistic argument is determined by its mood and figure. In the case of the example of syllogistic argument that was presented earlier, its form is 'EAE 1'. The validity or invalidity of the syllogism is based on whether it corresponds with valid or invalid forms, regardless of the meanings or contents of the categorical propositions.

The syllogism has been criticized on many grounds. Stebbing for instance, holds that "it is to be regretted that Aristotle, in working out his theory of the syllogism, interpreted his definition much more narrowly, so that he excluded all propositions that are not of the subject-predicate form".[16] The import of this criticism is that a proposition stating that two things have a certain relation, has a different form from the subject-predicate form and in the opinion of Bertrand Russell, the failure to perceive this difference or to allow for it has been the source of many errors. Criticizing syllogistic logic, Russell holds that "logic in the middle Ages and down to the present day in teaching meant no more than a scholastic collection of technical terms and rules of syllogistic inference. Aristotle had spoken, and it was the part of humbler men merely to repeat the lesson after him. The trivial nonsense embodied in the syllogistic tradition is still set in examinations, and defended by eminent authorities as an excellent propaedeutic".[17]

[16.] Lizzie Susan Stebbing, 81
[17.] Bertrand Russell, "Logic as the Essence of Philosophy",in *Readingson Logic.* Ed. Irving Copi and James Gould (New York: The Macmillan Company, 1972), 75

Francis Herbert Bradley holds the opinion that since the conclusion of a syllogism does not tell us something other than the truths it depends upon then the syllogism is not a valid form of inference. For Bradley, an inference must be more than the vain repetition which syllogistic logic is known for. Bradley holds that the syllogism was "begotten by an old metaphysical blunder, nourished by a senseless choice of examples, fostered by the stupid conservatism of logicians and protected by the impotence of younger rivals".[18] Obviously, syllogistic logic may have failed to meet the expectations of Bradley; but it also appears that Bradley may have had non-syllogistic expectations from the syllogism. In this connection, Brendan Larvor gives the counsel that "syllogistic logic still retains its usefulness based on the fact that it successfully identifies those valid arguments that fall within its scope".[19] Though Aristotle's syllogism has been criticized on many points, its importance in the history of logic cannot be disputed.

At the time when Aristotle proposed the theory of the syllogism, he understood the proposition which is the unit logical thinking, as only statements which express what is either true or false. This understanding is the basis upon which categorical propositions are seen as declarative statements. This is why Don Faust, writing about traditional logic which of course begins with the syllogism states that "its two-valued semantics declare a sentence 'true' if what it says is the case and 'false' if what it says is not the case".[20] From this standpoint, one can see that the law of excluded middle is adhered to in the syllogism. Explaining the traditional orientation in the Aristotelian system, Clarence Lewis is of the opinion that "from Aristotle down, the laws of logic have been regarded as fixed and archetypal; and as such they admit of no

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[18]. Francis Bradley "A Mere Superstition" in *Readingson Logic.* Ed. Irving Copi and James Gould (New York: The Macmillan Company, 1972), 245.

[19]. Brendan Larvor "The Case for Teaching Syllogistic Logic to Philosophy Students". *Discourse* Vol. 4. No.1 (2010): 130.

[20]. Don Faust "Conflict without Contradiction: Non-contradiction as a Scientific Modus Operandi". Retrieved from https://www.bu.edu. Date accessed: 1 May 2023, 3.

conceivable alternatives".[21] Since the acceptance of the laws of thought and the principle of bivalence is definitive of traditional logic and the syllogism is founded on the acceptance of this principle, it follows that the syllogism is traditional logic. The next system that evolved out of the syllogism is two-valued propositional logic.

Propositional Logic as Traditional Logic

After Aristotle's syllogism, "the next major innovations in logic are due to the Megarian-Stoic school. They developed an alternative account of the syllogism and in the course of doing so, elaborated a full propositional logic which complements Aristotelian term logic"(Peter King and Stewart Shapiro[22]). It is because syllogisms depend on the precise arrangement of terms that syllogistic logic is sometimes referred to as 'term logic'. Michal Walicki elucidates this further when he writes that:

> Early followers of Aristotle introduced another form of a proposition, the conditional (if x then y). This was further developed by the Stoics who made a significant step. Instead of considering logic as 'patterns of terms', they started to investigate into logic as 'patterns of propositions'. Such patterns would use the variables standing for propositions instead of terms. The truth of compound propositions may be determined from the truth of their constituents. We thus get new patterns of arguments.[23]

The central issue in propositional logic is the relationship between a compound proposition like 'it rains and the streets are wet' and simple propositions like 'it rains' and 'the streets are wet'. Each of the two propositions has a truth-value. The truth-value of the compound proposition depends on the truth-values of the simple ones that make it up. A simple proposition is one that does not contain any other

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21. Clarence Lewis "Alternative Systems of Logic"*The Monist.* Vol. 42(1932): 481.
22. Peter King and Stewart Shapiro, 497.
23. Michal Walicki "The History of Mathematical Logic". Retrieved from http://www.citeseerx.ist.psu.edu .Date accessed: 1 May 2023, 5.

proposition as its component; while a compound proposition is one that contains other propositions as its components. Truth-functionality is applicable to compound propositions. Propositional logic deals with the validity of propositional arguments which is dependent on the truth-functions of its simple propositional components.

In propositional logic, statement variables are used as place holders for statements. Statement variables are lower case letters p, q, r, s and so on and they are used to represent statements that are being discussed in a consistent manner. Logical operators play a central role in the logic of propositions. Five operators are generally identified and these are the negation (), the conjunction (.), the disjunction (v), the conditional () and the bi-conditional (   ). Apart from the negation which is not a connective, all other operators are binary operators and they only make sense when placed between two components. In propositional logic, an argument is valid in so far as it is impossible for it to have true premises and a false conclusion. For Hausman, Kahane and Tidman, "the assumption here is that every statement must have a truth-value that is, either it is true or false".[24] Let us attempt the exacting question showing the sense in which propositional logic is considered to belong to traditional logic.

Dorothy Ucheaga has noted that "in the sphere of propositional calculus, it is assumed that every statement is either true or false, and no third possibility is admitted".[25] From this point, it is clear that propositional logic as developed by the Stoics was an extension of traditional logic. This is obvious because evidently, there is no room for the possibility of any other truth-value outside the either true or false structure. Though Aristotelian logic focused on terms and the Stoics focused on the truth-functional calculus of propositions, the affinity of propositional logic with the Aristotelian system in terms of adherence to the laws of thought and fidelity to the principle of bivalence was not broken. This is why it

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[24.] Alan Hausman, Howard Kahane and Paul Tidman. *Logic and Philosophy: A Modern Introduction* (Belmont: Thomson and Wadsworth, 2007), 21.

[25.] Dorothy Ucheaga*Rudiments of Logic*. (Calabar: University of Calabar Press, 2001), 169.

can be safely stated that the roots of propositional logic can be traced as far back as to the study of syllogisms by Aristotle. In spite of the move from the subject-predicate structure of Aristotle's logic to the truth-functional analysis of the propositions, the character of bivalence and fidelity to the laws of thought were still sustained. The next system of traditional logic to be considered is quantifier logic.

Quantifier Logic as Traditional Logic
Quantifier logic can also be called predicate logic, mathematical logic or a system of logic concerned with the interior structure of both simple and compound sentences (Hausman, Kahane and Tidman[26]). Given the nature of propositional logic; that it symbolizes whole propositions, not their internal structures, there are many valid arguments that would be dismissed as improvable by propositional logic. An illustration is necessary.
1.   All humans are mortal persons.
2.   All Nigerians are humans.
3.   Therefore all Nigerians are mortal persons.

This argument would be symbolized in propositional logic as:
1.   p
2.   q /r
Where: p = All humans are mortal, q = All Nigerians are humans and r = All Nigerians are mortal.

Though the argument is valid, it cannot be proved when symbolized in the notation of propositional logic. The same argument when represented in the symbolic notation of quantifier logic would translate as:
(1)   (x) (Hx Mx)
(2)   (x) (Nx Hx)/(x) (Nx Mx)
Where:H = Human; M = Mortal; N = Nigerian and x = Universal quantifier

[26.]   Alan Hausman et al, 16

The first line translates as: for any x, if x is human, then x is mortal. The second line translates as: for any x, if x is a Nigerian, then x is human; while the conclusion translates as: for any x, if x is a Nigerian, then x is mortal. Using the rules of inference and replacement together with quantification rules, its proof of validity can be made as shown below.

(1)   (x) (Hx Mx)
(2)   (x) (Nx Hx)/(x) (Nx Mx)
(3)   Hx Mx 1, U.I
(4)   Nx Hx 2, U.I
(5)   Nx Mx 3,4, H.S
(6)   (x) (Nx Mx) 5, UG.

Where: U.I = Universal instantiation; H.S = Hypothetical syllogism and U.G = Universal generalization.

From the above, we can see that an argument that was not provable when translated with the symbolic notation of propositional logic is provable with the symbolic notation of quantifier logic. This is why Hurley holds that "neither syllogistic logic nor propositional logic alone is sufficient to establish the validity of all arguments".[27] With its ability to analyze the internal structure of propositions, and its ability to deal with relational properties, many logicians like Michael Dummett and Bertrand Russell came to regard predicate logic as the complete development of logic. Michael Dummett holds that "Frege's discovery of quantification is the deepest single technical advance ever made in logic".[28] The question is: in what way does quantifier logic belong to traditional logic? Reiser makes a definitive statement when he holds that: "all the traditional systems of logic are two-valued (traditional) logics, even the Russell-Whitehead system of mathematical logic, which claimed to free itself from the limitations of the Aristotelian system, is two-valued in the sense that propositions are considered to be true or false".[29] Hence, the syllogism, propositional and quantifier logics belong together as

[27.] Patrick Hurley, 406.
[28.] Michael Dummett, *The Interpretation of Frege's Philosophy* (Cambridge: Cambridge University Press, 1965), xv
[29.] Oliver Reiser, "Non-Aristotelian Logics", 111.

traditional or standard logic. The problem is that these three systems are often seen as belonging together as traditional logic, in spite of acknowledged differences between them by thinkers like Bertrand Russell, Michael Dummett to mention but a few.

Logical monism is a defense of the idea that there is only one correct logic which is traditional logic. The points of agreement between traditional logics have to do with fidelity to the traditional laws of thought and the principle of bivalence. However, just as there are similarities among these systems, there are also differences among them. By conceptualizing traditional logic as 'one correct logic', this research holds that logical monism has committed the fallacy of accent, by emphasizing on the points of unity between these traditional systems and deemphasizing their points of difference. The remaining part of this research is devoted to the idea that some measure of relativity is warranted in traditional logic and this shows that logical relativity should not be seen as an exclusive characterization for non-traditional logics.

Conceptualizing the Idea of Relativity in Traditional Logic

Relativity has been defined by John Harris as "the doctrine that basic epistemological notions such as truth, evidence, reason, rationality and so on are dependent on context, frame of reference, paradigm or cognitive scheme" (xv). It is the thesis that all points of view are equally valid. Though there are many kinds of relativism, they all have two features in common. These features are: they all assert that one thing (for example moral values, beauty, knowledge, taste, meaning or in our context, logic) is relative to some particular framework or standpoint (for example, the individual subject, a culture, an era, a language, or a conceptual scheme). Secondly, relativistic theories deny that any standpoint is uniquely privileged over all others. The fact that we have different systems of logic making up traditional logic, is a prove of the fact that there is more than one sense in which arguments may be deductively valid, that these senses are equally good, and equally deserving of the name 'deductive validity'.

For Williard van Orman Quine, "mathematical [quantifier] logic differs from the traditional [syllogistic and propositional] formal logic so markedly and so far surpasses it in power and subtlety as to be generally and not unjustifiably regarded as a new science".[30] John Corcoran and Michael Scanlan have observed that "modern writers tended to look upon Aristotle's logic with jaundiced eyes, finding fault wherever possible and emphasizing differences between what they took to be Aristotle's logic and what they took to be modern mathematical logic".[31] Lizzie Susan Stebbing says that:

> A new impetus has been given to the study of logic by the work of the symbolic or mathematical logicians. It might be supposed that the science of logic thus conceived, has nothing in common with Aristotle's conception of logic. But that would be a mistake. There are considerable grounds for supposing that, in recognizing that the ideal of logic is the exhibition of form, the mathematical logicians are carrying on the work which Aristotle himself initiated.[32]

The truth is that all traditional logics obey the principle of bivalence and the laws of thought. In this sense the differences between further advancements within traditional logic are usually not be seen as differences in kind, but as differences in degree. The position of this work is that even a 'difference in degree' is some level of difference and should be recognized as such. This is why the conceptualization of traditional logic as 'one true logic' defended by logical monism is incorrect since there is a measure of relativity in traditional logic. Since logical monism is problematic, this leads to such questions as: to what extent is relativity in logic plausible? What is the extent of the logical relativist's liberty? Is it an extreme form of liberty as defended in logical pluralism?

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[30]. Williard Quine, *Mathematical Logic* (Oxford: Oxford University Press, 1951), 1.
[31]. John Corcoran and Michael Scanlan "The Contemporary Relevance of Ancient Logical Theory" *The Philosophical Quarterly*, Vol. 32, No 126 (1982), 76-86, 78.
[32]. Lizzie Susan Stebbing, xi

The distinction between logical monism and logical relativity can be viewed analogically with the distinction that Paul Feyerabend draws between naive and sophisticated rationalism. He maintains that:

> *Naive rationalists* assume that there are standards and/or rules which must be obeyed, come what may and which in practice are obeyed by science at its best. *Sophisticated rationalists* assume that rules and standards are restricted to certain conditions and that no standards can be presumed to have absolute validity. Even the rules of logic may have to be changed when we move from one domain to another[33] (Rationalism 9-10)

For many thinkers, relativity is intolerable and this is because such thinkers believe that it opens the door to chaos and arbitrariness. However, such chaos and arbitrariness only manifest when contextual boundaries are not set. In moving away from the monism of traditional logic, one does not necessarily need to slide into an exaggerated or extreme form of relativity. For a logician like Carlos Gershenson[34] "propositions have no sense without a context. In many cases this context is implicit, but it is still a requirement for the sense of propositions. Therefore, context-dependent logic can contain propositions and syllogisms of any defined logic, as long as they specify their context; and manipulate propositions from different contexts and/or different logics".Hence,logical relativity is detectable both in traditional and non-traditional logic only that it is more pronounced in the latter than in the former.

Conclusion

Nicholas Rescher's idea can be used in presenting the fallacy of accent in the relationship between systems of traditional logic. For him:

> Codified systems of assertions may clash with one another in

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[33]. Paul Feyerabend, "Rationalism, Relativism and the Scientific Method" in Philosophy in Context: An Experiment in Teaching Vol. 6 (1977): 9-10.

[34]. Carlos Gershenson "Contextuality: A Philosophical Paradigm with Applications to Philosophy of Cognitive Science". Retrieved from https//:www.cogprints.org on May 9, 2023. 6

a milder and in stronger way. If one system asserts p and a second system does not assert not p, the clash is mild or weak; while if the first system asserts p and the second system asserts not p, the clash is strong. When there is a strong doctrinal conflict between two systems, they will involve in a conflict in truth claims: some thesis true according to one system will be false according to the other. As long as systems disagree in the weak mode alone, it is always possible to regard them as fragments of one single, more inclusive system, and thus as not basically in conflict at all. Consequently only the strong sort of doctrinal clash is relevant for our purpose.[35]

The above statement can be translated into practical terms with respect to the relationship that exists between systems of traditional logic. Since these systems adhere to the laws of thought and the principle of bivalence, Rescher gives the impression that they belong together as the internal clash among them is mild or weak and hence, of no consequence. The contrast between traditional and non-traditional logics on the other hand, is presented by Rescher as one that holds theoretical significance. It is true that non-traditional logic is founded on a repudiation of the principles on which traditional logic is founded. However, the fallacy of accent is evident in the tendency to emphasize the conflict between traditional and non-traditional logic while at the same time dismissing the implications of differences within systems of traditional logic. These differences indicate that logical relativity is a feature that can be found in both traditional and non-traditional logics. Hence, the monistic approach to traditional logic is faulty because it does not give a correct picture of the relationship among traditional logic systems. The idea of logical relativity gives a better description of this relationship.

References
Aristotle. *Prior Analytics*. Translated by A. J. Jenkinson. Retrieved from: http://www.ebooks.adelaide.edu.au Date Assessed: 13 August 2012, 5

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[35]. Nicholas Rescher, Many-valued Logic (New York: McGraw Hill, 1968): 216.

Bradley, Francis. "A Mere Superstition".In *Readings on Logic,* edited by Irving Copi and James Gould, 111-116. New York: The Macmillan Company, 1972.

Caret, Colin and Teresa Kissel "Pluralistic Perspectives on Logic: An Introduction". *S y n t h e s e* , V o l . 1 9 8 (2 0 2 0) : 1 - 1 2 . https://doi:10.1007/s11229-019-02525-x

Corcoran, John and Michael Scanlan "The Contemporary Relevance of Ancient Logical Theory" *The Philosophical Quarterly*, Vol. 32, No. 126 (1982):76-86.

Da Costa, Newton, Jean-Yves Beziau and Otavio Bueno. "Malinowski and Suszko on Many-valued Logics: On the Reduction of Many-valuedness to Two-valuedness". *Modern Logic.* Vol. 6, No. 3, (1996):272-299.

Darty, Darty Emmanuel. "Categorical Syllogism".In *Argument and Evidence*, edited by Idorenyin F. Esikot, Iks Nwankwor and Nwachukwu Anyim, 73-88. Uyo: Inela Publishers, 2020.

Dummett, Michael.*The Interpretation of Frege's Philosophy*. Cambridge: Cambridge University Press, 1965.

Don Faust "Conflict without Contradiction: Non-contradiction as a Scientific Modus Operandi". Retrieved from https://www.bu.edu. Date accessed: 1 May 2023.

Feyerabend, Paul. "Rationalism, Relativism and the Scientific Method" in *Philosophy in Context: An Experiment in Teaching,*Vol. 6 (1977):9-10.

Gershenson, Carlos. "Contextuality: A Philosophical Paradigm with Applications to Philosophy of Cognitive Science". Retrieved from https//:www.cogprints.org on May 9, 2023.

Hausman, Alan, Howard Kahane and Paul Tidman. *Logic and Philosophy: A Modern Introduction.* Belmont: Thomson and Wadsworth, 2007.

John, Elijah and Darty E. Darty, "Culture, Values and Nigeria's Political Development: Engaging Affective Logic as a Methodological Model in a Post-truth Era". *NAJOP: Nasara Journal of Philosophy*, Vol. 4, No. 1, (2019):67-86.

Kant,Immanuel. *Critique of Pure Reason*. London: Macmillan, 1964.

Kegley, Charles and Jacquelyn Kegley. *Introduction to Logic.* New York: Charles Merill, 1978.

King, Peter and Stewart Shapiro. "The History of Logic" In *The Oxford Companion to Philosophy*, 496-500.Oxford: Oxford University Press, 1995.

Larvor, Brendan "The Case for Teaching Syllogistic Logic to Philosophy

Students". *Discourse* Vol. 4. No.1 (2010):130-136.

Lewis, Clarence "Alternative Systems of Logic" *The Monist.* Vol. 42, (1932):481-507.

Malinowski, Grzegorz. *Many-valued Logics*. Oxford: Oxford University Press, 1993.

Quine, Williard. *Mathematical Logic*. Oxford: Oxford University Press, 1951.

Rautenberg, Wolfang *A Concise Introduction to Mathematical Logic* (New York: Springer-Verlag, 2006). https://doi.org/10.1007/0-387-34241-9

Reiser, Oliver "Non-Aristotelian Logics." *The Monist*, Vol. 45 No. 1(1935):110-111 https://doi.org/10.5840/monist19354514

Rescher, Nicholas. *Many-valued Logic.* New York: McGraw Hill, 1968.

Russell, Bertrand "Aristotle's Logic". In *Readings on Logic,* edited by Irving Copi and James Gould, 120-125. New York: The Macmillan Company, 1972.

Russell, Bertrand "Logic as the Essence of Philosophy". In *Readings on Logic,* edited by Irving Copi and James Gould, 75-88. New York: The Macmillan Company, 1972.

Stebbing, Lizzie Susan. *A Modern Introduction to Logic*. London: Methuen, 1950.

Ucheaga, Dorothy. *Rudiments of Logic*. Calabar: University of Calabar Press, 2001.

Walicki, Michal "The History of Mathematical Logic". Retrieved from http://www.citeseerx.ist.psu.edu .Date accessed: 1 May 2023, 5.