



TORN BETWEEN THE CONTOURS OF LOGIC: EXPLORING LOGICAL NORMATIVITY IN ISLAMIC PHILOSOPHICAL THEOLOGY

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ABSTRACT

Western contemporary logic has been used to advance the field of Islamic philosophical theology, which historically utilised Aristotelian-Avicennian logic, on grounds of there being an inherent normativity in logic. This is in spite of the surrounding controversy on the status of logic in the Islamic theological tradition. The normative authority of logic means that it influences the content of what we ought to believe and how we ought to revise those beliefs. This paper seeks to demonstrate that, notwithstanding the incompatible differences between the two systems, the underlying feature of both Western contemporary logic and Aristotelian-Avicennian logic is logical normativity. It then argues that an inherent normativity of logic in the Islamic theological/philosophical tradition is unmotivated. Instead, it proposes to reinstate logic as anti-exceptional within the Islamic theological/philosophical tradition as a viable alternative.

Keywords: *Aristotelian-Avicennian logic; Western contemporary logic; normativity; logical consequence; Islamic theology/philosophy; Wittgenstein; Kripke; anti-exceptionalist logic; Al-Ghazālī.*

1. Introduction: Controversy Surrounding the Status of Logic in Islamic Philosophical Theology

A persistent controversy has loomed over the status of logic in the Islamic theological tradition. Rescher (1964), while referring to the renowned orientalist Goldziher (1915), states, “it was inevitable that an eventual confrontation should occur between Greek logic and Muslim theology” (Rescher 1964, 40). For Rescher, hostility towards Arabic logic came about as early as 900 by *Hasan al-Naubakhtī*.¹ By the 13th and 14th century, Goldziher suggests that the opposition to logic had gained considerable strength. *Fatāwā* (religious rulings) issued by prominent Sunni scholars, such as *Ibn al-Ṣalāḥ* (d. 643/1245) and *Ibn Taymiyya* (d. 728/1328), had condemned the use of logic. For Goldziher, such *fatāwā* effectively censured the use of logic among Sunni Muslims by deeming it to be an impermissible (*ḥarām*) science (Goldziher, 1981).

El-Rouayheb (2004) has demonstrated that this view was an error on the part of Goldziher.² The matter in fact, El-Rouayheb argues, was quite the contrary:

Mainstream scholars in the Maghrib, Egypt and Turkey considered logic to be not only permissible but actually commendable or even a religious duty incumbent on the Muslim community (i.e. a *farḍ kifāyah*). (El-Rouayheb, 2004, 213)

El-Rouayheb is not rejecting that there existed a hostility towards logic from traditionalist theology. Nor is he discarding specific documented attacks on logic by erudite Sunni scholars such as *Ibn Taymiyya* and *al-*

¹ This would have been soon after Arabic logic had emerged from the Greco-Arabic translation movement in the 9th century. Although, basic logic translations from Syriac into Arabic began appearing in the latter half of the 8th century (Street 2005).

² Despite the advancement of *fatāwā* condemning the use of logic, it formed an integral part of the educational training of a Muslim scholar in the 18th century. In fact, Goldziher concedes that the hostility towards the use of logic subsided in the subsequent epoch. To the extent where he states that “up until the modern period, logic was treated in the theological curriculum as an ancillary discipline” (Goldziher 1981, 208). Though Walbridge (2000 2011) suggests this happened much earlier: “Logic seems to have become a regular subject of instruction in Islamic institutions of higher education about 1300, at least in the more sophisticated centres of learning, and it continued even in areas like Egypt and North Africa, where interest in philosophy had virtually died out” (Walbridge 2011, 122). Street (2005) makes a similar observation: “The average learned Muslim from the late thirteenth century on acquired some logic as part of his intellectual arsenal” (Street 2005, 249). Nevertheless, El-Rouayheb questions the dramatic shift from logic being considered as *ḥarām* in the 13th and 14th centuries to becoming a feature of the educational training of a Muslim scholar by the 18th century.

Suyūṭī (d. 911/1505). His aim is to demonstrate that such perspectives occupied a marginal view among scholarly circles between 1500 and 1800. In support of this claim he offers textual references that not only establish the permissibility of logic (against it being *ḥarām*) but endorse its use towards a theological and juristic end.³

The controversy surrounding the status of logic within Islamic philosophical theology has not entirely been resolved. The aim of this paper is to present an anti-exceptionalist status of logic. Prior to presenting our argument, we briefly discuss the definition of Arabic logic in section 2. In section 3, we demonstrate that despite the incompatibility between Aristotelian-Avicennian and Western contemporary logic, the common underlying feature of both logics is normativity. To circumvent the incompatibility between both systems of logic, we map out viable options expressing how an Islamic theologian/philosopher can subscribe to Arabic logic and/or different systems of Western contemporary logics. In section 4, we unpack the concept of normativity in logic and how it influences the content of what we *ought* to believe and how we *ought* to revise those beliefs. In the following sub-sections (4.1 and 4.2), we demonstrate that normativity *is* an underlying feature of both Arabic logic and Western contemporary logic. In section 5, we offer an argument against the intrinsic normativity of logic. Finally, in section 6, we conclude that the status of logic within the Islamic theological tradition ought to be an anti-exceptionalist one.

2. Defining Arabic Logic

The controversy surrounding the status of logic within the Islamic theological tradition seems to be embedded in the fundamental question of

³ *Abū Ḥāmid al-Ghazālī* (d. 505/1111) seems to be one of the most notable Sunni scholars to have endorsed the use of logic in Islamic theology and jurisprudence (El-Rouayheb 2004, 2016; Street 2004). *Al-Ghazālī's* integration of Aristotelian logic into the tradition of *kalām* is well documented. See his *The Deliverer from Error (al-Munqidh min al-dalāl)* and *The Incoherence of the Philosophers (Tahāfut al-falāsifa)* (Griffel, 2009). El-Rouayheb draws attention to a *fatwā* of *Ibn Ḥajar al-Haytami* (d. 973/1566) where he cites *al-Ghazālī's* position on logic from his *al-Mustasfā* (on the principles of jurisprudence). *Al-Ghazālī* states that “it is the preliminary to all the sciences and he who does not master it cannot be trusted in his scholarship” (El-Rouayheb 2004, 217). Although there were scholars who preceded *al-Ghazālī* in this respect, such as *al-Fārābī* (d. 339/950 or 951) (Rescher, 1963), *ibn-Sīnā* (d. 428/1037) (Sabra, 1980), and *ibn-Ḥazm* (d. 456/1064) (Chejne, 1984), it was only after *al-Ghazālī* that the reception of logic in matters of theology and jurisprudence (Karima, 2022) had started to gain serious traction (El-Rouayheb, 2004). From among the literary methodological approaches used in Islamic jurisprudence, see Karima (2021/2022).

how logic is defined and whether it is part of philosophy.⁴ To get a further sense of this, at one point in El-Rouayheb's response to Goldziher's claim, he refers to *Aḥmad al-Mallawī* (d. 1181/1767). El-Rouayheb states that

Mallawī gave the discussion an important twist by stating that the controversy concerns only the logic that was “mixed with philosophy”. In other words, it was what Ibn Hajar had called “the philosophers’ logic”—and not the logic that was studied and taught in Islamic scholarly circles—that had been prohibited by some, and permitted or commended by others. (El-Rouayheb 2004, 226)

Perhaps *Mallawī* was referring to an understanding of logic associated to *ibn-Rushd* (d. 595/1198). Where logic, for *ibn-Rushd*, was entirely integrated into metaphysics.⁵ For *Ibn-Sīnā*, it was “both an instrument and a philosophical field of study” (Gutas 2005, 61).⁶ Yet, for *Ibn-Sīnā*, attempting to determine whether logic is a standalone science or if it is inclusive of philosophy, is both false and futile-false. This is because “it presupposes a nonexistent contradiction between the two roles and futile, because to busy oneself with such matters serves no purpose” (Sabra 1980, 752).

However, we think this is an unsatisfactory answer from *Ibn-Sīnā*. The connection between Aristotelian logic and ontology cannot be easily dismissed because Aristotelian logic not only recognised the integration of metaphysical content in logic, but was based on it.⁷ Furthermore, Bertolacci (2011) states that despite *Ibn-Sīnā*'s decisive distinction of philosophical disciplines, the matter concerning the ‘ontologization’ of logic involves a conflation between the domains of logic and metaphysics.⁸

⁴ “The dispute as to whether logic was a theory or an instrument has a further significance for the historian of Islamic thought: it became part of a continuing struggle of far-reaching consequences between the champions of Arabic and Islamic learning and the followers of an imported Hellenistic tradition” (Sabra 1980, 747).

⁵ See Di Giovanni in Cameron and Marenbon (2011).

⁶ Gutas (2005) in summary of Sabra (1980), in *Logik und Theologie* (2005).

⁷ “With what he [Aristotle] writes in *Categories* 10 and 12 and elsewhere on truth and falsity, we can make sense of the semantics of the various sentences that Aristotle treats concerning their existential import. In general, in the case of existence, a sentence is true or false as, respectively, the state of affairs denoted by the sentence is the case or is not the case; in these cases there are no empty classes. In the case of non-existence, no affirmation is true because it affirms something to be the case that is not the case, and every privative, that is, every sentence with a negative operator, is true because it truly expresses what is not the case” (Boger 2004, 159).

⁸ “Ontological considerations are, therefore, present in logic, either as a preliminary account of the more proper treatment to be found in metaphysics, or in their own right. In other words, the doctrinal overlaps between logic and metaphysics that I am going to discuss illustrate a tendency towards an ‘ontologization’ of logic, in which the domains of logic and metaphysics are apparently conflated, despite Avicenna’s clear-cut distinction of the philosophical disciplines” (Bertolacci 2011, 29-30).

Further still, *Al-Ghazālī's* endorsement and integration of Aristotelian logic in theology and jurisprudence encountered severe criticism for the reason that it could not be distilled from Aristotelian ontology. In this regard, Griffel (2009) cites prominent figures such as *Ibn al-ṣalāh al-Shahrazūrī* and *Yahyā al-Nawawī*. More relevantly, *Jalāl al-Dīn al-Suyūfī* (d. 911/1505) considered Aristotelian logic as an innovation that actively bore a formidable threat, particularly for students. This was because he thought it would make them susceptible to heretical thoughts of the *falāsifa* (philosophers). What is interesting about these perspectives is that they reveal how a change in the definition of logic determined a change in its status.

Defining Arabic logic is not an easy task. However, narrowing it down to the distinguishing features between the logicians from the *mutaqaddimūn* (early) and the *muta'akhhirūn* (later) is an intuitive place to start (see El-Rouayheb 2016). Although as Spevack (2010) notes, lumping both accounts of the *mutaqaddimūn* and the *muta'akhhirūn* together would be disregarding their distinguishing features. Such a monolithic treatment of logic was conducted by *Ibn Taymiyya* and *al-Suyūfī* in their critiques. As a result, Spevack states that it “complicates one’s ability to define logic, as they include elements in their definition of logic that others exclude, and exclude elements that others include” (Spevack 2010, 165). Sunni scholars subscribed to the logic of the *muta'akhhirūn* on the most part. This was an ‘Aristotelian-Avicennian logic’, which prospered in Sunni scholarly circles with the aid of logical handbooks during the 16th century (see El-Rouayheb 2004). These logical handbooks consisted of Aristotelian logic that had been modified by *ibn-Sīnā* and subsequent logicians. First of which were *Fakhr al-Dīn al-Rāzī* (d. 606/1210) and *Aḡḡal al-Dīn al-Khūnajī* (d. 646/1248) (see El-Rouayheb 2016). However, even if someone did manage to neatly distinguish between the *mutaqaddimūn* and the *muta'akhhirūn* logic, accounting for the distinctions within the *muta'akhhirūn* logic itself and how it evolved would not make matters any easier (see El-Rouayheb 2010, 2016). The matter is thus somewhat indeterminate.

3. Uniting Aristotelian-Avicennian and Western Contemporary Logic

An indeterminate definition of Arabic logic continues to feed the controversy surrounding the exact status of logic within the Islamic theological tradition. If this matter was left unresolved from the inception of Arabic logic (in the 9th century), right through the periods at the heights

of its advancement, then it seems unlikely to be settled after its decline (in the 18th century). This is not to suggest that the stagnation of Arabic logic renders it inept to address this issue. Nor is it a dismissal of its potential to make contributions to the broader area of philosophy of logic. However, we need to concede that

whereas the study of mediaeval Western logic is now an established field of research, contributing both to modern philosophy of logic and to the intellectual history of the Middle Ages, the study of logic in the precolonial Islamic world is still barely in its infancy. (Street 2005, 248)

Street's point becomes increasingly evident when evaluating the recent contributions in Arabic logic against developments in Western contemporary logics. We appreciate that comparing the two in many respects (and not in *every* respect) would be analogous to likening apples and oranges. The disparity between Aristotelian-Avicennian logic and different systems of Western contemporary logics is very significant indeed (see Priest 2006). Furthermore, these disparities needn't be confined to matters that strictly pertain to what is considered 'logic'. There are notable philosophical (metaphysical and epistemological) disagreements between them that may not entirely be classed as 'logical'. These are discussed under the purview of philosophy of logic. Some of the views that emerge from these disagreements may not always prove amenable to the Islamic theological tradition (see Ahsan 2017, 2018, 2019, 2020, 2021a, 2021b, 2021c).

If the disparities prove to be so stark and carry dissenting implications then why should Arabic logic be evaluated against developments in Western contemporary logic? It is particularly to determine what the status of logic ought to be within the Islamic theological tradition. We shall demonstrate that a deeper evaluation between the two reveals that despite the technical differences that sets both systems of logic apart, they have a common underlying feature of normativity.

Some theologians/philosophers who represent the Islamic tradition may appeal to Western contemporary logic(s). This might be for multiple reasons.⁹ In any case, *one* of the primary consequences of this is to adapt

⁹ These reasons needn't align with the aims and purposes of analytic Christian theology. Some underrepresented scholars from the Islamic tradition may feel academically obligated to engage in what they might refer to as 'analytic Islamic theology' in virtue of an analytic-Christian-theology-model, or

and repackage Islamic theological concepts in conformity with methods and concepts associated with analytic philosophy. More recently this attitude has been supplemented with a mounting appetite to construct, what we might call, an ‘analytic Islamic theology’—following the ongoing advancement of an ‘analytic Christian theology’ (see Crisp and Rea 2009). Engaging with contemporary modes of analytic philosophy/theology would leave little incentive to remain solely committed to the use of Aristotelian-Avicennian logic for Islamic theological ends. Considering this, let us assume that Islamic theologians/philosophers are at liberty in resorting to Aristotelian-Avicennian logic and/or different systems of Western contemporary logics. Appealing to such a combination, particularly different systems of Western contemporary logics, would fall within distinct logical camps. Each of which advocate different theories of logical consequence. These include logical monism, pluralism, and nihilism. Here are *some* of the broader possibilities that emerge when an Islamic theologian/philosopher subscribes to Arabic logic and/or different systems of Western contemporary logics:

		Arabic Logic	Western Contemporary Logic		
	Letter	A	B	C	D
Islamic theologians/philosophers	Number	Aristotelian-Avicennian logic	Logical Monism	Logical Pluralism	Logical Nihilism
	1.	✓	✗	✗	✗
	2.	✓	✓	✗	✗
	3.	✓	✗	✓	✗
	4.	✗	✓	✗	✗
	5.	✗	✗	✓	✗

more broadly an analytic-Christian-philosophy-of-religion. This obligation may be motivated by the groundwork laid, and advancements made, by Christian theologians/philosophers in those areas. The scholarly success and attention that has been achieved, thus so far, in the Christian tradition may have subtly (and perhaps even inadvertently) set the ‘standards’ of what analytic theology should look like and how it should be done. If this is the case, then it seems like whatever progress is to be made in ‘analytic Islamic theology’, or even more broadly in analytic-Islamic-philosophy-of-religion, would unfortunately be a near-enough replica of the Christian tradition in these areas. The Islamic tradition would be curbed in making any novel contributions to the field; the kind which should be developed on its own grounds. Further still, it could be due to an aspiration, or even a self-imposing commitment, to the formal nature of analytic philosophy.

	6.	x	x	x	✓
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Table 1

There are six possible combinations that are expressed in Table 1. An Islamic theologian/philosopher may subscribe to any of the following:

- I. 1A: solely subscribes to Aristotelian-Avicennian logic.
- II. 2A and 2B: subscribes to both Aristotelian-Avicennian logic and Logical Monism (Not simultaneously).
- III. 3A and 3C: subscribes to Aristotelian-Avicennian logic and Logical Pluralism (which is inclusive of Logical Monism) (Not simultaneously).
- IV. 4B: solely subscribes to Logical Monism.
- V. 5C: solely subscribes to Logical Pluralism.
- VI. 6D: solely subscribes to Logical Nihilism (which is exclusive of all other options).

Islamic theologians/philosophers who are serious about engaging with analytic philosophy/theology would initially have to decide whether they shall (continue to) subscribe to Aristotelian-Avicennian logic. If they do, it would be inclusive of either II or III. Seemingly, this may infer a kind of ‘logical pluralism’, which extends over both domains of Arabic logic and Western contemporary logic. However, we do not think extending over these domains would imply ‘logical pluralism’—at least not the kind that is understood in contemporary literature (see Weber 2017; Caret and Kissel 2020). This is because

It is a well-known fact, often ignored by philosophers (though not, perhaps, historians of philosophy) that Aristotelian logic is incompatible with classical logic in just the same way that non-Euclidean geometries are incompatible with Euclidean geometry. (Priest 2006, 166)

Conversely, if they choose to discard Aristotelian-Avicennian logic altogether, it would be inclusive of either IV, V, or VI.

Islamic theologians/philosophers would have their reasons for subscribing to any one option over the other. Irrespective of what these reasons might be, we are interested in a broad underlying feature that allows for the possible combinations expressed in Table 1. Though, we should emphasise, it would not be an underlying feature that *simultaneously* accommodates subscribing to I, II, III and IV, V, VI. Nor would it be a feature that *simultaneously* allows subscribing to VI and any one or more

options. Similarly, it would not be a feature that *simultaneously* allows subscribing to both sets of logics expressed within combinations II and III. We don't think any of these is a viable option. Instead, it would be an underlying feature that allows *individually* subscribing to each combination without simultaneity (as exhibited in Table 1). This would be inclusive of both sets of logics expressed within combinations II and III, with the exception of VI. It is evident that subscribing to logical nihilism negates all other options. Consequently, this underlying feature would allow for a viable shift from Arabic logic to different systems of Western contemporary logics (and *vice versa*) without a commitment that simultaneously combines both domains. In the following section, we shall present what this underlying feature is and how it is motivated.

4. Madness, Inconsistency, and Normativity

Inconsistent reasoning may invoke a kind of madness. At least the kind we readily witness in Lewis Carroll's famous work *Alice's Adventures in Wonderland* (1865).¹⁰ It's the kind we are actively conditioned to avoid from early childhood. Yet, making a passing inconsistent remark, though it would be frowned upon, may not seem as bad as genuinely believing in one. Actively entertaining an inconsistent belief, which is thought to be true about any given matter, is considered ludicrous. This is because a belief has propositional content that represents reality in some way. Believing in inconsistencies would mean believing in an inconsistent representation of reality. More importantly, this propositional content stands in logical relations. Say we happen to believe in a set of propositions Γ . This set of propositions would be syntactically consistent *iff* there is no proposition φ such that both φ and $\neg\varphi$ are derivable from Γ . This set of propositions would be semantically consistent *iff* there is no proposition φ such that both φ and $\neg\varphi$ are logical consequences of Γ . Syntactic and semantic inconsistency of the same set of propositions Γ would occur if there is a proposition φ such that both φ and $\neg\varphi$ are derivable from Γ , and there is a proposition φ such that both φ and $\neg\varphi$ are logical consequences of Γ , respectively. In each of these cases the consistency and inconsistency of a set propositions Γ would be carried over to their logical implications. Thus, if some subset of our beliefs happens to be inconsistent, then at least one of our beliefs is false. This false belief cannot be an accurate representation of reality.

¹⁰ "And how do you know that you're mad?" "To begin with," said the Cat, "a dog's not mad. You grant that?" "I suppose so", said Alice. "Well, then", the Cat went on, "you see, a dog growls when it's angry, and wags its tail when it's pleased. Now I growl when I'm pleased, and wag my tail when I'm angry. Therefore I'm mad" (Carroll 1865, 90-91).

A failure to conform our belief-attitudes to logical relations that amount to consistency would be considered logically defective. To ensure this does not happen, the following two principles are prescribed:

- *Logical Implication Principle (IMP)* If *S*'s beliefs logically imply *P*, then *S* ought to believe that *P*.
- *Logical Consistency Principle (CON)* *S* ought to avoid having logically inconsistent beliefs. (Cohnitz and Estrada-González 2019, 183)

The first of these principles (IMP) demands that we believe in all the logical consequences of our beliefs. This is open to believing in consistent and inconsistent beliefs that logically follow from our initial belief. The second of these principles (CON) bars the possibility of believing in inconsistent beliefs. These are independent principles. However, in conjunction with one another, they offer what we think is a preconceived underlying feature of logic. The kind which would allow us to viably shift from Arabic logic to different systems of Western contemporary logics and *vice versa* without a commitment that simultaneously combines both domains. This underlying feature is normativity. It asserts that logic has a normative role. This means that logical consequence relation, regardless of how it is characterised, determines the content of what we *ought* to think and the process of how we *ought* to reason. In turn, this influences the content of “what we *ought* to believe and how we *ought* to revise our beliefs” (Russell 2020, 373). It is for this reason that our beliefs should conform to logical principles such as (IMP) and (COM). Complying with these principles would ensure that our beliefs are consistent. We shall briefly demonstrate that normativity *is* an underlying feature of both Arabic logic and Western contemporary logic. This would help unite both domains of logic via the possible combinations expressed in Table 1. We begin with Arabic logic (4.1) followed by Western contemporary logic (4.2).

4.1. Normativity in Arabic Logic

Labukt states that “Even if logical relations such as entailment and inconsistency can be described in non-normative terms, they could at the same time be relevant for what we ought to believe” (Labukt 2019, 4). However, logical relations that bear a *relevance* in non-normative terms are very different to logical relations that bear a *consequence relation* in normative terms. Bearing a relevance in non-normative terms to what we ought to believe would be logically (inferentially) weak. While bearing a

consequence relation in normative terms to what we ought to believe would be logically (inferentially) strong. To demonstrate this, take an Islamic theologian/philosopher who believes a set of theological claims $\alpha \vee \beta$, while also believing $\neg \alpha$.¹¹ Say that she considers the form of disjunctive syllogism as a logical relation that is non-normative, yet (somehow) *relevant* for thinking about whether we ought to believe the logical consequence, namely, $\models \beta$.¹² This would be logically weak in the sense that this type of reasoning would not be *necessarily* truth preserving. This is because this view allows that Islamic theologian/philosopher might endorse religious or other type of norms that outweigh the inferential significance of the disjunctive syllogism in a particular situation. Thus, if the form of a disjunctive syllogism only bears a *relevance* consequence relation between the premises and its conclusion, then the validity of the reasoning that takes into consideration disjunctive syllogism would not be *guaranteed*.¹³ Alternatively, say she considers the form of disjunctive syllogism as a logical relation that is normative, she will arrive at the belief in $\models \beta$ on the grounds that it is a normative logical consequence. This would be logically strong in the sense that the reasoning employed would necessarily prioritise the normativity of logic, and thus, would necessarily be truth preserving.

The Islamic theologian/philosopher seeking to convince her interlocutors would not want to opt for the *relevance* consequence relation. It might seem plausible to equate the *relevance* consequence relation to a dialectical (*jadalī/ilm al-munāzara*)¹⁴ approach in Aristotelian-Avicennian logic. However, Aristotelian-Avicennian logic is not dialectic.¹⁵ It is deductive

¹¹ This is under the assumption that truth for the Islamic theologian/philosopher is the aim of belief, and logical consequence necessarily preserves truth. Therefore, we ought to believe anything that is an obvious logical consequence of our beliefs.

¹² Harman (1986) offers an influential view of logical relations as non-normative. On this view, just because the Islamic theologian/philosopher believes α or β , and $\neg \alpha$, she is under no obligation to believe $\models \beta$. That is because, there may be some alternative theological norms which prevents the Islamic theologian/philosopher in prioritising the normativity of logic. In such a case the Islamic theologian/philosopher would consider theological norms to be stronger than logical ones.

¹³ This is because, although the Islamic theologian/philosopher might happen to believe $\models \beta$, from the set of beliefs α or β , and $\neg \alpha$, she does so in manner that is non-binding on her. Thus, although the Islamic theologian/philosopher may agree that the relation between the premises and the conclusion is valid, the reasoning that utilizes it will not necessarily be truth preserving according to the conventional understanding. Again, this is because there might be alternative theological norms that defeat the normative import of logical norms.

¹⁴ "Dialectical discourse seeks to overcome the interlocutor in the things which are known and notorious" (Street quoting Dunlop (1956), 2004, 538).

¹⁵ Though it is worth mentioning at this point that "The method, or logic, of *kalam* is thus explicitly asserted to belong to the discipline of dialectic, which is that logical discipline treated by Aristotle in the *Topics*, the Arabic translation of which was *Ġadal*" (Gutas 2005, 66). And hence the scholars of

and syllogistic (*al-istidlāl bi-l-kullī ‘alā l-juz’ī*). *Ibn-Sīnā* distinguishes between a dialectical approach (as *ghairu ḥaqqun*) from a deductive syllogistic approach (see Chatti 2019). A dialectical approach may be expressive of the same form as deductive syllogisms, and a consequence relation. Yet, it is not a logical one in the strict sense.¹⁶ This prevents a dialectical approach from being necessarily truth preserving. On the contrary, Aristotelian-Avicennian logic seems to express logical consequence relation—or at least one interpretation of it—that is necessarily truth preserving. This is articulated by *Ibn-Sīnā* with the primary term *luzūm* (necessary relation) between the premises and conclusion (see Chatti 2019).

Alternatively, it might seem plausible to equate a *relevance* consequence relation that is non-normative with a rhetorical (*khiṭāba/ādāb al-baḥth*)¹⁷ approach in Aristotelian-Avicennian logic. This approach may seek to relax the way logic prescribes what and how we ought to think. At least one implication of this approach is that logic need not be necessarily connected with rationality. On this view, a law of logic, such as the law of non-contradiction, does not bear any specific connection with rationality (see Harman 1986). Thus, a rhetorical approach in Aristotelian-Avicennian logic could involve employing a host of compositional techniques that succeed in persuading the interlocutor. Such techniques could possibly be considered rational despite entailing a contradiction. However, Aristotelian-Avicennian logic is not rhetorical in this sense. In fact, *Ibn-Sīnā* was an unwavering advocate of the law of non-contradiction (see Zolghadr 2019). Moreover, the laws of logic, for *Ibn-Sīnā*, prescribed how we ought to think. In his *al-Najāt* for instance, he states, “Logic is an instrument (*āla*) which protects (*al-āṣimah*) that intellect from error (*khaṭā*) regarding that which we conceive and give assent to; and it is that which leads to true belief by giving the reasons (*asbāb*) and methods (*nahj*) of arriving at it” (*Ibn-Sīnā*, quoted in Gyekye 1979, 5). Though this normative view of logic is not specific to *Ibn-Sīnā*.¹⁸ In sum of this eliminative assessment, the most rigorous logical method for the Islamic theologian/philosopher would be a *logical* consequence relation that is normative.

kalām, the *mutakallimūn*, are referred to by Avicenna as “the dialecticians”. See the reference in Marmura (1991/92, 197).

¹⁶ “For dialectical discussion yields opinion [and] not certainty, as you have learned in the art of logic” (*Avicenna*, The Metaphysics of *The Healing* 2005, 13).

¹⁷ “Rhetorical discourse seeks to satisfy the hearer by what will partially content his soul, without reaching certainty” (Street quoting Dunlop (1956) 2004, 538).

¹⁸ “It may be concluded from these statements on the nature of logic that the Muslim philosophers held that logic concerns itself with the methods and principles used to distinguish correct from incorrect reasoning; that it deals with the relationships between statements—thus, that it is a theory of inference; and that its business is the pursuit of truth” (Gyekye 1979, 5).

4.2. Normativity in Western Contemporary Logic

Western contemporary logic's chief concern is logical consequence. It sits at the heart of what makes logic, *logical*, so-to-say. A valid argument is necessarily truth preserving given that there is a logical consequence relation between its premises and conclusion. Thus, when a sentence is true in all models, we can say it is logically true. A is a logical consequence of a set of premises Γ ($\Gamma \models A$) if and only if, for every model M : whenever every $B \in \Gamma$ is true in M , A is also true in M . There is much philosophical controversy surrounding the exact characterisation and nature of logical consequence (see Etchemendy 1999; Caret and Hjortland 2015). Despite the existing controversy, all attempts seem to focus on accurately representing natural language inference. Different attempts in representing natural language inference via logical consequence (and how it is understood) has a direct bearing on how logic is posited by logical monists, pluralists, and nihilists. Cotnoir (2018) neatly captures this:

Logical Monism There's *exactly one* logical consequence relation that correctly represents natural language inference.

Logical Pluralism There's *more than one* logical consequence relation that correctly represents natural language inference.

Logical Nihilism There's *no* logical consequence relation that correctly represents natural language inference. (Cotnoir 2018, 302)

This has implications on how the matter of logical normativity is approached. If logical consequence and validity are taken as settled notions, one may investigate how these notions constrain our attitudes in natural language inference. If logical consequence and validity are taken as unsettled notions, then the prescriptive process of reasoning may be considered an inherent feature of logic (see MacFarlane 2004; Field 2015).

Logic in Western philosophy is, on the most part, considered to be normative (see e.g. Kant 1885; Frege 2013; Priest 1979; Beall and Restall 2006; Steinberger 2017; cf. Russell 2020). It is worth demarcating how the notion of normativity is understood by the following three logical camps: logical monism, pluralism, and nihilism. In the last decade or so, debates between logical monism and pluralism have dominated much of philosophy of logic. As we indicated above, the dispute between them, for the most part, emerges from their take on logical consequence. Proponents

of logical monism argue that there is only one logic that correctly codifies the consequence relation.¹⁹ Proponents of logical pluralism, on the other hand, argue that there is more than one logic that correctly codifies consequence relation. Since Carnap's (1937) initial proposal, logical pluralists, more recently, have approached this thesis in different ways. This has led to various forms of logical pluralism (see Cook 2010; Caret and Kissel 2020).

Logical pluralism is the view that there are a multitude of logics, each of which have an equal right to be called 'logic'. It stands in opposition to logical monism, which is the view that there is only one true logic. The notable distinction that differentiates both is the quantity of correct logics. For logical pluralism there are a multitude of correct logics. For logical monism there is one correct logic. For prominent logical pluralists, such as Jc Beall and Greg Restall (2000, 2006), logical consequence relation is central to any system of logic. They adopt the following characterisation of logical consequence: "Generalised Tarski Thesis (GTT): An argument is valid_x if and only if, in every case_x in which the premises are true, so is the conclusion" (Beall and Restall 2006, 29). Their defence of this characterisation is an unsettled one. This simply means that they argue for an indeterminate nature of logical consequence relation. This is what allows it to be admissible of equally correct precisifications; resultantly yielding a plurality of correct logics. To qualify as a correct precisification, the concept of logical consequence must meet three core features. These, they claim, are "central to the tradition [of logic], and any account of logic must take account of them" (Beall and Restall 2006, 14). These are as follows: necessity, normativity, and formality (see Beall and Restall 2006, 14–23).

Despite there being much debate between logical monism and pluralism, they both subscribe to normativity. Logical nihilism on the other hand is very different. It denies the very thing which makes logic, *logical*. Namely logical consequence. Resultantly, we are left with *no* logic.²⁰ Logical nihilism demonstrates that the very concept of logical consequence does not hold, which means that an inherent normativity of logic is redundant. There are no pairs of premise-sets Γ such that they logically entail conclusions A , irrespective of what Γ and A might be. Thus, we are left with: $\Gamma \not\vdash A$. Annihilating the concept of logical consequence would leave the *Logical Implication Principle* (IMP) superfluous and oppose the *Logical Consistency Principle* (CON). Resultantly, the content of what we *ought* to think and the process of how we *ought* to reason, would become

¹⁹ For the most recent book-length defence of logical monism, see Griffiths and Paseau (2022).

²⁰ As Russell states "Logical nihilism is the view that there is no logic" (Russell 2017, 125).

indeterminate. In turn, this would fail to influence the content of what we *ought* to believe and how we *ought* to revise those beliefs.

We have now demonstrated that normativity is an underlying feature of both Aristotelian-Avicennian logic and Western contemporary logic (with the exception of logical nihilism). It unites both systems of logic despite their notable differences via the possible combinations expressed in Table 1.

In what follows, we shall argue against the intrinsic normativity of logic. The implications of this would extend to both Aristotelian-Avicennian logic and Western contemporary logic (except for logical nihilism). One substantial implication of this is that logical consequence should not determine the content of our religious belief. That is to say, logical consequence relation is not a normative consequence-relation, which determines what we *ought* to religiously believe and how we *ought* to revise our religious beliefs. This would help establish what the status of logic ought to be within the Islamic theological tradition.

5. Argument against the Normativity of Logic

Our argument against the normativity of logic is not entirely unique, and nor do we profess it to be. We take inspiration from Ludwig Wittgenstein's 'Remarks on the Foundations of Mathematics' (RFM thereon). The idea is to project Wittgenstein's objections on 'the steps determining an algebraic formula in advance' onto inferential transitions determined by logical consequence. The result is intended to reveal that just as there is no mathematical reality which determines (the meanings of) functions of algebraic formulas in advance, there is no inferential transition possessing a reality of its own which determines the meanings offered by logical consequence. What we are then left with is a 'normative' functioning of rules that do not possess any intrinsic meaning of their own. The normativity that we commonly associate with such rules is not one that is decided by itself. Instead, it is one that we associate due to external (on the most part, pragmatic) factors. Thus, the normativity of logical consequence is not a normative consequence relation that is intrinsic/a priori. It should not be considered as an underlying feature which determines what we ought to religiously believe and how we ought to revise those beliefs.

Here is our argument:

- i. Logical consequence relation motivates the normativity of logic.
- ii. Inferential transitions determined by logical consequence are parallel to the steps determined by algebraic formulas.
- iii. Algebraic formulas do not possess an intrinsic reality and meaning of their own.
- iv. Logical consequence does not possess an intrinsic reality and meaning of its own.
- v. The normative functions by which both algebraic formulas and logical consequence are followed are due to other (external, yet quite prevalent) normative assumptions.
- vi. Therefore, logical consequence relation is not intrinsically normative.
- vii. Ultimately, the intrinsic normativity of logic is unmotivated.

We shall provide a brief explanation of each premise:

i. Logical consequence relation motivates the normativity of logic.

Logic, for the most part, is considered a normative discipline (Field 2009). As we previously mentioned, the very characterising feature of logic is logical consequence. The concept of logical consequence determines the standards of correct reasoning. It prescribes how we ought and ought not to conduct ourselves when moving from premises to the conclusion (see Williams 2015).

ii. Inferential transitions determined by logical consequence are parallel to the steps determined by algebraic formulas.

In RFM, Wittgenstein makes a parallel between how steps in an algebraic formula are determined, and inferential transitions that are governed by logical rules. He states the following:

“But then what does the peculiar inexorability of mathematics consist in?”—Would not the inexorability with which two follows one and three be a good example? (Wittgenstein 1998, 37)

and in section 5

“But doesn’t it follow with logical necessity that you get two when you add one to one, and three when you add one to two?”

and isn't this inexorability the same as that of logical inference?" —Yes! It is the same.²¹ (Wittgenstein 1998, 38)

Juliet Floyd (1991) elaborates on this by stating:

Remarks on the Foundations of Mathematics begins with an examination of our uses of the notion of algebraic determination in order to question the idea that we can make any general sense of what following an algebraic rule consists in. By analogy, Wittgenstein is thereby questioning whether we can make general sense of what inferring, understanding, or using a word in accordance with its grammar or meaning consist. His attack on a fixed sense of "determination" is an attack on the idea of necessity as a clear phenomenon, and so, a fortiori, a challenge to the idea that logic has an interesting and unique characterization. (Floyd 1991, 150)

To demonstrate this analogy, consider the following algebraic formula: ($y = x^2$) (such as $4 = 2^2$). The value of 'y' is determined by the value of 'x'. Now consider the following logical arguments:

Modus Ponens: $\varphi \rightarrow \psi, \varphi \vDash \psi$

Disjunctive Syllogism: $\varphi \vee \psi, \neg\varphi \vDash \psi$

In both of the above argument forms, the logical consequence (generally expressed by '⊨' symbol) is determined by the logical form by which we mean the syntactic structure (as opposed to surface structure) of the argument preceding it. Though one can pick out technical discrepancies between the two, the manner in which they both make inferential transitions in arriving at their respective consequences is usually considered *necessary*. That is what concerns us here.

One important difference between the algebraic formula and the argument forms is how we interpret and understand the '=' symbol and the turnstile '⊨'. Let us begin with the turnstile. Russell (2018) offers three ways to understand the turnstile. These include the *cases*, *interpretations*, and *universalist* views. In the cases view, the truth of the argument is determined in virtue of it being true in all possible worlds. In the

²¹ For example, consider the algebraic transitive axiom: If $a = b$ and $b = c$ then $a = c$. Let us infer from this that $a + 4 = b$, $b + 4 = a$ therefore $a = b$. The truth of this inference hinges on the axiom form which it is inferred. Thus, we can say that an algebraic inference is true if and only if it is a logical consequence of its axioms.

interpretations view, the truth of the argument is determined in virtue of offering syntactically appropriate interpretations to nonlogical expressions in Γ and ϕ , such that if every member of Γ is true, then so is ϕ . In the universalist approach, the truth of the argument is determined by the argument's shell (see also Williamson 2013, 2017). If the argument's shell is such that all the premises are true on every given assignment, then so is the conclusion.

Let us turn to the '=' symbol. As stated above in the algebraic case ($y = x^2$), the value of 'y' is determined by the value of 'x'. The term 'determined' is not exclusive to the algebraic case. It is a term that has been used to describe the three ways to understand the turnstile in the logical arguments also. This suggests that 'determined' is an essential term for both parallel matters, namely algebraic formulas and logical arguments.

Wittgenstein (in RFM) provides at least four different ways we might use the term 'determines'. Firstly, it might be used to signify a form of training. This may involve training students to follow a stipulated procedure of +4 to a given sequence of numbers. Conforming to this procedure, students would engage in a uniform course of action. Secondly, it might be used to signify the form of the algebraic formula. In the formula ($y = x^2$) it is clear that the value of y is determined by the value of x. However, say you happen to be working with a different formula, such as $y > x^2 + 1$. In such a case the value of y will not be determined by the value of x as it was in the first case. Thirdly, it might be used to signify a given value of y. In this case, the value of both y and x would have a stipulated value. Fourthly, it might be used to signify an expression of calculation. In this case you may refer to the entire formula $y = x^2$ to see if it is a result of a particular expression.

Wittgenstein prompts his interlocutor at this point. Suppose we are inattentive to the variations of meaning that 'determines' could possibly signify. In such circumstances, we would impose one understanding across all possible meanings. This would imply that in both cases of the algebraic formula and the logical arguments, you would take 'determine' as steps and inferential transitions (respectively) that are intrinsically contained and followed in the term itself. This would be a mistake.

iii. Algebraic formulas do not possess an intrinsic reality and meaning of their own.

In the opening remark in RFM, Wittgenstein presents us with an algebraic formula ($y = x^2$) (such as $4 = 2^2$). The arithmetic operation implied by the

formula is determined in advance. This means that all the proceeding steps we are required to take (in conformity with the formula) are already situated within the formula itself. A formula in this sense is like a pre-rolled rug, which (while rolled up) already consists of its entire length. When the rug is rolled out, it reveals its sequential (constituting) steps. Choosing to conform and proceed with a stipulated arithmetic sequence is much the same. Say we choose to proceed with +4 in any given number series. This task would require us to follow the rule by adding 4. As a result, we would end up with a series such as 16, 20, 24, 28, 32, ... The progression of this series would thus be *determined* by adding 4. Irrespective of where one might choose to begin adding 4 within the cardinal series, they will know what follows next. Say we decide to begin adding 4 to 286. What follows would seem obvious, namely, 290, 294, 298, 302, 306...

This would imply that mathematical (algebraic/arithmetic) rules possess some form of intrinsic reality. The kind which comprises of mathematical formulas that are already determined in advance. Once we tap into that reality and decide which formula we are wanting to work with, its operations are already determined. These formulas carry a predetermined meaning that fix the way sequential steps are to be taken. This allows laying down mathematical laws and axioms that are considered a priori.

Wittgenstein rejects that there is any intrinsic meaning that resides within any given formula. To grant a formula with a preconceived meaning would firstly suggest that we have epistemic access to this mathematical reality. Secondly, it would suggest, we are able to accurately derive the meaning of any given formula from this reality. If we think both tasks are achievable, how are we to make sense of the formula intrinsically; independent of anything else? Successfully importing the (intrinsic) meaning of the formula from a mathematical reality back to ontic reality, would not prove sufficient. We would need to cite examples or compare it with relevant cases. This is where making isomorphic relations between two structures would prove helpful. However, attempting to make sense of the internal meaning of the formula itself, without comparison or usage, would fail to have a meaningful import.

Wittgenstein's interlocutor then inquires whether he thinks the progression of a series, in virtue of adding any given number, is actually determined in advance. His response is an interesting, yet important one. For Wittgenstein, conforming to the progression of a series by say, adding 4, is predetermined in a way where most of us would not doubt it. The operation would be so intuitive that the act of doubting would only arise if we came to realise that we have erred somewhere along the series.

Otherwise, entertaining doubt while precisely conforming to the series would be gratuitous. This, for Wittgenstein, is where the issue lies.²² The fact that we have so routinely become accustomed to the way a series should progress by adding 4, makes us inattentive and uncritical. It almost seems like we act by a natural necessity in the way we do (almost like an analogy with Hume on causation). We become complacent and seize to doubt the way in which we should proceed with the sequence. We find it unnecessary to *actively* calculate the subsequent number in the series. This attitude implies that the very meaning, which is responsible for guiding the execution of steps, is superfluous.

The question remains as to why we act in this way. For Wittgenstein, we do so for pragmatic reasons. Reasons that are external to mathematical laws and axioms themselves. The convenience in engaging with the series in the way we usually do, has significant practical value. It assists us in living our lives in a way that cannot be ignored.²³ Nonetheless, just because

²² “The ‘must-s’ and the ‘cannot-s’ signify our commitments to forms of description and inference, on the one hand, and to the exclusion of apparent forms of description and inference on the other. Their inexorability corresponds not to necessities *in re*, but to our inexorability in cleaving to our conventions and systems of representation. For they determine what we call ‘thinking’, ‘inferring’ and ‘reasoning’. Failure to draw inferences thus is what is called ‘invalid reasoning’; failure to calculate thus is what is called ‘miscalculating’ or even ‘not calculating’. Do these conventions not correspond to reality—to what *really* follows (RFM 40), to the internal properties and relations of things (RFM 74–6)? No.” (Baker and Hacker 2009, 253)

²³ We concede that orthodox Wittgensteinians, such as P.M.S Hacker, would not agree to this. However, prioritising the practical value of mathematical laws and axioms should not be considered as a dismissal of their theoretical value. Wittgenstein’s characterisation of mathematics appears to give the impression that both theoretical and practical aspects are important (MS 124, 13–14/RFM VII §3). Yet, both aspects are to be accounted for and characterized in their own right to avoid giving a misleadingly simple account of mathematics. Kuusela (2019) explains this perspective as follows: “On the one hand, he [Wittgenstein] characterizes mathematical propositions as rules of grammar that are arbitrary in that they are not derivable from empirical reality, and do not correspond to or describe any mathematical reality either, such as the Platonists would postulate. On the other hand, he also maintains that it is essential for mathematics to have an application to reality” (Kuusela 2019, 216). To drive this point further, consider Wittgenstein’s following remark: “It is essential to mathematics that its signs are also employed in mufti. It is the use outside mathematics, and so the meaning [or significance] of the signs, that makes the sign-game into mathematics” (RFM 257). It is somewhat evident that not every mathematical proposition (laws or axioms) would have a practical application external of mathematics. Despite this, Schroeder suggests that “(...) even if the link between a given piece of mathematics is typically only indirect and often just a vague future possibility, it can be argued that if this practical dimension was removed entirely, it would be less clear that we would still be concerned with mathematics, rather than something more like a chess puzzle: the investigation of logical relations within a mere game” (Schroeder, 2015, 123). According to Schroeder (2021), mathematics, for Wittgenstein, should not be imposed upon us as true to the facts. Rather “(...) it is to be assessed as more or less practical or useful, relative to our circumstances and purposes. A deviant and bizarre piece of mathematics (such as a method of proof that leads to ‘ $4 \times 3 + 2 = 10$ ’) is not false, but only extremely unlikely to be practical” (Schroeder 2021, 246). Considering this, we obtain some sense of how an alternative interpretation (to that of P.M.S. Hacker) can be accommodated. Although such a perspective may appear as a deviation from the mainstream interpretation of Wittgenstein, it nonetheless, is a

we choose to conform to such mathematical laws and axioms for pragmatic reasons that impact our lives, does not mean the steps in a mathematical sequence are determined in advance. Mathematics is not a domain in itself which carries intrinsic meaning.²⁴ It is an integral part of our practical lives. Thus, the usage of mathematical formulas is what determines their meaning and not an intrinsic reality that has a preconceived meaning.

iv. Logical consequence does not possess an intrinsic reality and meaning of its own.

From premise 2 and 3 we can infer that just as algebraic formulas do not possess an intrinsic reality and meaning of their own, nor does logical consequence.

v. The normative functions by which both algebraic formulas and logical consequence are followed are due to other (external, yet quite prevalent) normative assumptions.

We have already mentioned how, for Wittgenstein, the meaning of algebraic formulas is derived by usage of those formulas in our practical lives. Russell (2020) makes a similar observation by resorting to a mundane example of arithmetic. By accepting $67 + 58 = 125$ as a correct arithmetical calculation is not down to it being a normative *mathematical fact*. The normativity associated with mathematics is not intrinsic. Instead, its normativity is secondary. One that is primarily motivated by external factors. For the most part, these external factors seem to have pragmatic advantages that aid us in our lives. What makes $67 + 58 = 125$ normative then, has to do with *non*-arithmetical normative facts. These are facts that are established in virtue of their practical usage. Believing, for example, that I have any more or less than 125 pence in my pocket, while knowing that I have 67 pence in one pocket and 58 pence in the other, would be

plausible one. In light of this, even though engaging in a number series may not prove to have any evident practical use, it should not prevent anyone from continuing the series for theoretical purposes. However, reducing mathematics to either one, in any strict sense, would be to misconstrue its characterisation. Yet, there is a subtle nature to how both, the practical and theoretical aspects of mathematics, are interconnected. This interconnectedness, as expressed by Wittgenstein, seemingly prioritises the practice over the theory (as demonstrated in the quotes above). If the theory appears deviant, we can ascertain this deviance by way of its practical likeliness. In this sense, it is the practical application of mathematics to reality that gives mathematical symbols meaning/significance. The same could be said for logical consequence.

²⁴ Horwich has touched on something similar. He argues that “our a priori knowledge of logic and mathematics can derive neither from the meanings of words nor from the nature of concepts. For someone may possess whatever meanings and concepts are needed to articulate our logical and mathematical convictions, and yet disagree with us about them” (Horwich 2000, 169).

plain false. Ignoring this fact would not only make life difficult but it would also prove somewhat embarrassing.

Though Wittgenstein considered propositions of mathematics as normative propositions, his construal of ‘normativity’ is unlike what Frege, Peirce, and Ramsey offered.²⁵ Instead, for Wittgenstein, normativity of mathematical propositions was not the kind which inherently resided in a body of mathematical laws and axioms which predetermined their outcomes. Of course, arithmetic/algebraic formulas are comprised of a network of base laws and axioms. However, their meaning and collective purpose lies in their empirical applications. In the absence of such applications, arithmetic/algebraic formulas would be reduced to meaningless games with vacuous signs. In this case, the complex body of axioms comprising arithmetic/algebraic formulas would serve as mathematical rules for description, which never actually do any describing.²⁶

There is fierce controversy surrounding how our current use of a term, say the mathematical symbol ‘+’, coheres with what we previously meant by it. As demonstrated, this problem is exemplified via a given rule for formulating a series of even integers. In such a series, if the mathematical symbol ‘+’ is open to novel application in virtue of practical advantages it

²⁵ “Hence, according to Frege, rules of inference (laws of thought) are akin to technical norms (i.e. means–ends rules contingent on laws of nature) such as ‘If you want to build something that floats, you must ensure that it weighs less than the water it displaces’. For example: ‘If you wish to reason truly, then you must infer q from the premise that p and the premise that $p \supset q$, because it is a law of truth that whenever it is true that p and it is true that $p \supset q$, then it is true that q ’. The rules of logical inference spell out how we *ought* to reason if we wish to attain truth in our inferences. Peirce held that ‘logic is the ethics of thinking, in the sense in which ethics is the bringing to bear of self-control for the purpose of realizing our desires’—a remark that Ramsey liked to quote (see Exg. §81). All three viewed logic as an instrumental science” (Baker and Hacker 2009, 251).

²⁶ Arguing against the normativity of algebraic formulas, and more generally mathematics, bears an integral connection with arguing against its a priori status. The reason for this is that when we assert that a given proposition is known a priori, we are making a normative claim about it, not a descriptive one. Furthermore, if propositions such as mathematical laws and axioms are a priori, then they are either deductive or self-evident, as Frege postulated. In such a case being deductive or self-evident means that inferences and proofs can be derived from them, while they themselves ‘neither need nor admit of proof’. In such scenarios these mathematical laws and axioms emphatically motivate normativity. They lay the necessary groundwork for how we ought to infer and reason. If this apriorism can be rejected, it would, at the very least, begin to undo the commonly attributed normativity to mathematics. Kitcher (1984) and Resnik (1997) are a couple of examples who have argued against the apriorism of mathematics. The advancement of such arguments against the apriorism of mathematics (and of logic) is, as Boghossian (2000) notes, reminiscent of Kripke’s discussion on Wittgenstein’s rule following. He concedes that “a powerful argument leads to a sceptical thesis that looks to be self-undermining” (Boghossian, 2000, 235). At this juncture, there at least two foundational points that are worth noting. Firstly, Kripke’s discussion on Wittgenstein’s rule following sums up arguments already made for the non-apriorism of mathematics and logic. This in turn, motivates the non-normativity of mathematics and logic. Secondly, Kripke concedes that Wittgenstein’s rule following argument bears significant weight in destabilising the apriorism of mathematics and logic.

bears to our lives, then it invokes a type of (epistemological) scepticism or even a form of semantic trivialism (the view that every form of meaning is true). The issue is aptly articulated by Wittgenstein in §201 of the *Philosophical Investigations*:

This was our paradox: no course of action could be determined by a rule, because every course of action can be made out to accord with the rule. The answer was: if everything can be made out to accord with the rule, then it can also be made out to conflict with it. And so there would be neither accord nor conflict here. (Wittgenstein 1986, 81)

Kripke (1982) offered a ‘sceptical solution’, representative of a Humean form,²⁷ to this problem. This is neatly articulated by Whiting (2007) as follows:

According to this ‘sceptical solution’, a meaning-sentence of the form ‘S means *x* by *y*’ possesses ‘assertibility conditions’ determining that it is ‘often necessary and frequently sufficient’ for its assertion that one feel confident that S appears (as a matter of brute fact) inclined to use *y* in foreseeable circumstances as one is inclined to. Crucially, the correctness of that assertion, and of the relevant inclinations, is assessed by rough-and-ready social standards. On this picture, meaning-sentences are justified pragmatically—they enable ‘us to signal to our interlocutors who is a reliable partner in various forms of interaction’. (Whiting 2007, 1133)

Baker and Hacker (1984) are notable critics of Kripke’s ‘sceptical solution’. For Baker and Hacker, Kripke’s claim that “There can be no fact as to what I mean by ‘plus’, or any other word at any time. The ladder must finally be kicked away” (Kripke 1982, 21), results in a ‘conceptual nihilism’ as opposed to a ‘classical scepticism’. ‘Conceptual nihilism’ is far more problematic than ‘classical scepticism’ because it is ‘*manifestly*

²⁷ “Kripke’s Wittgenstein is a common-sense philosopher, holding that philosophy only states what everyone admits. He resembles Hume, who wrote “*We may well ask, what causes induce us to believe in the existence of body? but it is vain to ask, whether there be body or not?* That is a point, which we must take for granted in all our reasonings”. The similarity with Hume allegedly reaches deeper, since Kripke’s Wittgenstein pursues a Humean strategy of giving a ‘sceptical solution’ to his sceptical problem, i.e., he concedes that the sceptic’s negative assertions are unanswerable, but contends that our ordinary belief is nevertheless justifiable, because it does not require the justification the sceptic has shown to be untenable. The switch from truth-conditional semantics to assertability conditions is argued to effect just this move” (Baker and Hacker 1984, 411).

self-refuting'. Thus, for them, this problem is no longer a sceptical one but an outright absurdity.²⁸ However, Kusch (2006) has offered a detailed (book-length) defence of Kripke's 'sceptical solution'²⁹ in which he has meticulously responded to Baker and Hacker.³⁰

Kusch's defence rests on the idea that Kripke's Wittgenstein does not subscribe to the thesis that 'the grasp of an expression's meaning determines how one *ought* to employ it in indefinitely many circumstances'. In substantiating this view, Kusch advocates a semantic anti-normativist account over a semantic normativist one.³¹ For Kusch, one of the problems of a semantic normativist account is as follows:

It seems that the defender of the idea of semantic normativity must think of semantic rules as regulative rules: rules of meaning are supposed to tell us what we *ought to do*, how we *ought to speak*, in order for our words to have meaning. And only regulative rules, not constitutive rules, have this prescriptive character. Unfortunately for the semantic normativist, while the regulative reading seems natural and obvious, it also creates problems. A first source of trouble is simply the existence of a long and important tradition in the philosophy of language that models rules of language on rules of games. Wittgenstein and Sellars are, of course, the outstanding figures in this tradition. And the rules of a game are constitutive. (Kusch 2006, 54)

²⁸ We shall not engage with the specifics as to how Baker and Hacker (1984) arrive at this conclusion. For doing so would lead to a digression.

²⁹ "(...) Kusch proceeds to defend in detail the cogency of the 'sceptical attack', the coherence of the 'sceptical solution', and the exegetical accuracy of Kripke's interpretation" (Whiting 2007, 1133).

³⁰ We, the authors, would like to clarify that we do not subscribe to Kusch's (2006) ideas entirely. Our reference to Kusch is merely to appropriate an interpretation of Wittgenstein that is consistent with the exploration of an anti-exceptionalist logic as a *possible* alternative.

³¹ "Several semantic anti-normativists suggest that semantic normativists are misled by the frequency of normative-prescriptive language in teaching contexts. Teachers frequently tell their students that they "ought" to speak in certain ways; for instance, that they "ought" to use the word "*Windpocken*" in German where in English they would use the word "chickenpox". As semantic anti-normativists see it, this use of "ought" does not rely on a special semantic or lexical form of normativity. The normativity in question is prudential only: the student is told how it would be wise to speak, provided she wants to be understood in German-speaking countries" (Kusch 2006, 52).

For the reason stated above, Kusch implies that Wittgenstein should not be considered a semantic normativist.³² ‘Semantic normativity’³³ needs to be distinguished from ‘intersubjective normativity’.³⁴ Following this distinction, Kusch purports that,

The sceptical argument is an “immanent critique” of meaning determinism; it seeks to show that meaning-deterministic theories of meaning fail by meaning determinism’s very own standards. Ultimately therefore, meaning determinism must be given up in favour of the new picture of meaning scepticism. Semantic normativity does not survive into the new picture. This does not mean that all talk of “ought”, “should”, “correct” and “incorrect” concerning meaning is misplaced; but it does imply that there is no distinctively *semantic* form of normativity. (Kusch 2006, 92)

Departing from Baker and Hacker’s (2009) interpretation while appropriating Kusch’s (2006) ideas, let us return to Kripke’s (1982) formulation of the problem.

The basic point is this. Ordinarily, I suppose that, in computing ‘68 + 57’ as I do, I do not simply make an unjustified leap in the dark. I follow directions I previously gave myself that uniquely determine that in this new instance I should say ‘125’. What are these directions? By hypothesis, I never explicitly told myself that I should say ‘125’ in this very instance. Nor can I say that I should simply ‘do the same thing I always did’, if this means ‘compute according to the rule exhibited by my previous examples’. That rule could just as well have been the rule for quaddition (the quus function) as for addition. (Kripke 1982, 10-11)

³² This does not mean that for Wittgenstein or Kripke, semantic normativity is a redundant or isolated account. The utility of a normative account of meaning, as Kusch explains, only proves meaningful “against the background of broader and more comprehensive “pictures” of language and mind, the way both language and mind are embedded into the physical and social world, and the roles of truth and facts in meaning sentences” (Kusch 2006, 63).

³³ “Semantic normativity is a central assumption of meaning determinism; namely, the assumption that to mean something by a sign (to follow a rule, to possess a concept) is to have a mental state that guides and justifies one’s application of the sign” (Kusch 2006, 92).

³⁴ “Intersubjective normativity is a key idea of meaning scepticism: there is no special form of normativity based on meaning-constituting mental states; in our applications of terms we are guided by others; and we justify our uses of terms, as well as our meaning attributions, on the basis of publicly available criteria” (Kusch 2006, 92).

Kripke evaluates possible answers to this predicament. These include the dispositional and sceptical view. The dispositional view resorts to past arithmetical calculations. It seeks to determine that the meaning of ‘+’ is addition and not quaddition by falling back on previous calculations with the same form, namely, $n + m$. Kripke dismisses this view based on three objections. Firstly, our dispositional ability to perform calculations is finite.³⁵ Secondly, despite the guidance of our disposition, we are prone to making mistakes when adding large numbers. Thirdly, our disposition cannot account for a normative meaning. Our dispositions are closely tied to various circumstances that we may or may not experience. They do not determine what we ought or ought not to do.

One important point which Kripke notes is that seeking to determine the meaning of ‘+’ is not essentially an epistemic problem. The aim isn’t to pursue how we can *know* that the meaning of ‘+’ is addition and not quaddition. More fundamentally, it is whether there is any *fact* of the matter or not. Given this, the sceptic seems to have the upper hand since there is no objective way in establishing that there is a fact of the matter.

This brings us to the sceptical view. It crudely reacts by suggesting that ‘the meaning of ‘+’ is addition’ is a brute fact. It concedes that the meaning of ‘+’ is not to be reduced to dispositional states that are impacted by differing phenomena. Yet it hinges the meaning of ‘+’ as addition on primitive states such as being in pain for instance. The state of being in pain is an inner state which lacks explanation and it cannot be reduced to other states. It is an immediate, first-hand experience, which I know I am undergoing. In the same way, there is a state where ‘+’ means addition and not quaddition. This state of meaning, like the pain I experience, cannot be explained nor reduced to further states that I know I am experiencing. Kripke dismisses the sceptic’s view for good reason. It just seems absurd to think that a primitive feeling, such as pain, can help determine the

³⁵ The failure to prove Goldbach’s conjecture is perhaps an apt example here. “Secondly, it is standard to identify something as a necessary proposition independently of knowing whether it is true. Goldbach’s conjecture (every even integer greater than 2 is the sum of two primes) is widely held to be a necessary proposition whose truth-value is unknown. It is, we may be inclined to think, either necessarily true or necessarily false (one day we may discover which). Wittgenstein thought this confused. In advance of a proof, he argued, an arithmetical conjecture does not have the uses of an arithmetical proposition, and its *sense* is not determined. It is the proof that gives it its sense. Furthermore, an impossibility proof (e.g. in the case of the trisection problem) *shows* that such-and-such a mathematical conjecture is a form of words or signs excluded from the system of mathematics” (Baker and Hacker 2009, 254).

meaning of ‘+’ as addition and not quaddition. In fact, there is no way to refer to an inner state and be able to dismiss that the ‘+’ is not quaddition. If there is no fact to the matter of whether ‘+’ means addition or it means quaddition—or an infinite number of alternative functions—we end up with scepticism or semantic trivialism. That means, there is no fact of the matter whatsoever what is, and is not, meant by ‘+’. There simply cannot be, since any good enough reason for one perspective is just as good for a contradictory one. This conclusion can be extended to any other mathematical function. More importantly, it can be extended to logical functions such as logical consequence ‘ \models ’.³⁶

Dispelling a semantic form of normativity, in line with what Kusch has argued, does not imply an outright dismissal of what ‘+’ *can possibly* mean. There are no qualms with ‘+’ meaning ‘addition’. Though this meaning would have to be, what Kusch has termed, ‘intersubjective normativity’ as opposed to ‘semantic normativity’ which assumes meaning determinism. It cannot advocate any special form of normativity that is either grounded in mental states or meaning attributions. This needn’t imply that mathematical symbols such as ‘+’, as well as logical ones such as logical consequence ‘ \models ’, are categorically open to arbitrary meanings. That is not what intersubjective normativity advocates. As Kusch puts it, “in our applications of terms we are guided by others; and we justify our uses of terms, as well as our meaning attributions, on the basis of publicly available criteria” (Kusch 2006, 92). This approach bears significant relevance and value to our overall case against the inherent normativity of logic. Equipped with Kusch’s intersubjective normativity, our claim that logic is not intrinsically normative needn’t imply a rejection of normativity in any radical sense.

vi. Therefore, logical consequence relation is not intrinsically normative.

Much like mathematical functions, the meaning we attribute to logical consequence is not intrinsic either. The normative function which we commonly attribute it with, is implicitly imported from external (pragmatic) factors. Therefore, the normativity of logic is unmotivated.

³⁶ Boghossian (2000) offers four possible solutions to this predicament. The first is a sceptical solution, which argues that logic is not factual. To think that it is, is where the problem lies. The second solution is non-inferential. It states that not all beliefs require reasons to believe in them. They are ‘default-justified’. The third solution is also a non-inferential. It states that logical belief is non-inferentially justifiable if justification was considered non-factual. The fourth solution is an inferential one. It questions whether rule-circular arguments actually offer no justification.

vii. Ultimately, the intrinsic normativity of logic is unmotivated.

If logic is not intrinsically normative, then it should not be given the privilege to determine what we ought and ought not to religiously believe in. Nor should it determine how we ought and ought not to revise those beliefs. This is irrespective of how one might go about understanding the phenomena of belief. Belief in a broad sense might be considered as either binary or a graded conception of belief. The binary conception prioritises the law of excluded middle ($\varphi \vee \neg\varphi$). It presents us with taking up only two attitudes in any given case. There is no third option. In the case of disbelief, one is merely accepting the negation of the claim. Suspending judgement would fail to bear relevance to any given scenario. The graded conception of belief attempts to account for degrees of confidence which one might have in any given case.³⁷ In either conception of belief, the very application of logical consequence (irrespective of how it has been characterised) would fail to have any bearing. That is because it would not have a normative authority in governing those beliefs.

6. The Status of Logic in Islamic Theology

Let us return to the Islamic theologian/philosopher, who commits to both domains of logic via the possible combinations expressed in Table 1. Firstly, the argument against the normativity of logical consequence would extend to both possible combinations expressed in Table 1. This would mean that the way normativity is understood in both Aristotelian-Avicennian logic and Western contemporary logic would be intrinsically unmotivated. This may present the Islamic theologian/philosopher with an unsettling predicament. Seemingly, it would pull the rug from under the entire edifice of Islamic theology and philosophy. It would render approximately 12 centuries of serious Islamic scholarship inaccurate. However, our conclusion needn't be conceived of in such a radical way. In fact, we don't anticipate our conclusion (12 centuries later) to exhibit something which the mediaeval Islamic theologians/philosophers were not already made aware of.

To demonstrate this point, let us resort back to *al-Ghazālī's* endorsement and integration of Aristotelian logic in the theological and jurisprudence

³⁷ Applying Bayesian epistemology is certainly one way to gauge his/her degrees of belief.

sphere. *Al-Ghazālī* upheld a necessary connection that binds premises and their conclusion. He did so, while emphasising that no exceptions could be made in such cases (endorsing a necessity). This was exclusively down to a feature of the human rational faculty (*aql*).³⁸ Despite this, Griffel (2009) suggests that for *al-Ghazali*, just as the connection between a cause and its effect of natural phenomena is habitual rather than necessary, the inferential steps from true premises to a true conclusion does not occur out of necessity also.

After explaining that any kind of proposition can form the premise of a syllogism, he clarifies in his *Standard of Knowledge* how the conclusion is derived:

Therefore, those cognitions that are verified and that one has granted assent to are the premises of a syllogism. If they appear (*ḥadara*) in the mind in a certain order, the soul (*nafs*) gets prepared for the [new] knowledge to come about (*yāḥduthu*) in it. For the conclusion comes from God. (Griffel 2009, 213)

Although for *al-Ghazālī* the connection between premises and their conclusion is a necessary one, it is ultimately subject to the Will of God. Irrespective of whether God does or does not decide to alter such matters by making exceptions, the connection itself does not possess an *intrinsic* necessity. The meaning we attribute to ‘necessity’ would not be one that possesses a reality of its own. Just as Wittgenstein argues, it would be grounded in usage and how we have, over the course of time, become routinely accustomed to its pragmatic advantages (Hume’s analogy on causation is relevant here). Though, for the Islamic theologian/philosopher meaning should primarily be sought in (divine) revelatory texts and religious teachings. Thus, it seems *al-Ghazālī* was fully aware that the

³⁸ “We regard the connection between the premises of a syllogism and its conclusion as necessary. Were we not, we could have no trust in rationality and would have to conclude it is mere conjecture. The connection between the premises and the conclusion is of the same kind as the connection that exists between causes and their effects in the outside world. Our assumption about the necessary character of the syllogistic connections in our mind suggests that all causal connections should indeed be considered necessary. This is, in fact, al-Ghazālī’s position. In all contexts where the cosmological or epistemological aspects of causal connections are irrelevant, he assumes that for us causal connections are necessary. At no point, however, does he call the connection that exists as such between the cause and its effect necessary. Only human judgments about the connections are necessary. Consistent with his criticism in the seventeenth discussion of the *Incoherence*, al-Ghazālī does not assume that causal connections in the outside world are necessary. While they will always happen just as they happen now, they are subject to God’s will and thus can be different if He decides to change His arrangement—which we know He never will” (Griffel 2009, 213).

meaning we have habitually granted ‘necessity’ and the manner we have applied it in such circumstances, is a human endeavour.

In conclusion, we think that the status of logic within the Islamic theological tradition ought to be an anti-exceptionalist one. This is the view that,

Logic isn’t special. Its theories are continuous with science; its method continuous with scientific method. Logic isn’t a priori, nor are its truths analytic truths. Logical theories are revisable, and if they are revised, they are revised on the same grounds as scientific theories. (Hjortland 2016, 632)³⁹

Anti-exceptionalism in logic is an underexplored area. It is only beginning to gain serious scholarly attention. Thus, exactly what *kind* of anti-exceptionalist logic the Islamic theologian/philosopher ought to adopt is an important question that we leave open, and which requires exploration.

There is a fundamental connection between our argument and an anti-exceptionalist view of logic. Anti-exceptionalism views about logic infers (a) rejection of purported rules and (b) logical laws and inferences are not justified a priori. It seems that Kripke’s evaluation of Wittgenstein’s rule following (in virtue of Kusch’s (2006) interpretation) corresponds to both these elements. It takes a sceptical position on rule following in the strictest sense of the term, namely, in arithmetic rules/algebraic formulas. Moreover, it calls into question the apriorism of mathematics and logic. We do not posit, in any explicit way, that Kripke’s scepticism is a sufficient condition for an anti-exceptionalist view of logic. That would be too strong of a claim. Our claim is somewhat modest. We refer to Wittgenstein’s rule following argument and Kripke’s evaluation of it, only to imply that an extension of this interpretation can potentially lay the groundwork for an anti-exceptionalist logic. More importantly, this logic needn’t imply an overt rejection of normativity in all its forms. Much of what we have drawn on rejects semantic normativity, which assumes meaning determinism, while tacitly advocating intersubjective normativity.

³⁹ This has been restated by Cotnoir (2019) as follows: “**Anti-Exceptionalism:** Logic isn’t special! It isn’t analytic, and isn’t always known a priori. According to anti-exceptionalism, basic logical laws and inferences are not generally stipulations or constitutive rules governing concepts. One can perfectly well understand the meaning of logical concepts whilst rejecting some of the purported ‘rules’ that govern its use. Basic logical laws and inferences are not typically justified *a priori*; the methods of logic are continuous with theoretical methods in science and elsewhere. As a result logic is subject to revision on the basis of abductive considerations like simplicity, explanatory power, unification, fruitfulness, non-adhocness, and fit with evidence. Logic is in principle no less open to revision than quantum mechanics or the theory of relativity (Quine 1986, 100)” (Cotnoir 2019, 510).

It is therefore crucial to restate that our argument was to demonstrate that after eliminating a form of (semantic) normativity of logic, one can adequately arrive at an anti-exceptionalist view of logic. This does not mean that it is the only position one will arrive at. Nor do we posit that it is the *only* position an Islamic theologian/philosopher should adopt. There are two reasons for this. Firstly, we acknowledge that there are substantive arguments for subscribing to an exceptionalist/normativist logic. Our aim is not to discard or refute them. In fact, the conclusions of such arguments can play an integral role in advocating an intersubjective normative role in an anti-exceptionalist view of logic. Since an anti-exceptionalist view of logic does not grant logic a special status (in the sense noted above by Hjortland (2016)), this needn't imply that it is averse to *every* normativist view. Thus, we are open to a normativist⁴⁰ and non-normativist accounts of logic in the sense that we can “justify our uses of terms, as well as our meaning attributions, on the basis of publicly available criteria” (Kusch 2006, 92). Secondly, this project is merely exploratory. We do not subscribe to Kusch's interpretation wholesale. Our appropriation of Kusch's ideas is exclusively to investigate the *possibility* of advocating an anti-exceptionalist logic on the grounds that an inherent normativity of logic is unmotivated. We are not postulating that our argument is incontrovertible, nor do we intend to impose its findings on readers. Instead, we hope it helps lay the footing, and encourage those interested in this area, to further develop this idea.

7. Conclusion

An indeterminate definition of Arabic logic continues to feed the controversy surrounding the status of logic within the Islamic theological tradition. We make the case for evaluating Arabic logic against the developments of Western contemporary logic, in spite of their technical differences. We do so by demonstrating that normativity is an underlying feature of both Arabic logic and Western contemporary logic. In Western contemporary logic, logical consequence relation motivates the normativity of logic. Inferential transitions determined by logical consequence are parallel to the steps determined by algebraic formulas. However, just as algebraic formulas do not have an intrinsic reality and meaning of their own, logical consequence does not possess an intrinsic

⁴⁰ Accommodating a semantic normativist account (namely meaning determinism) under the rubric of an anti-normativist account (namely intersubjective normativity) would amount to accepting that to mean something 'is to have a mental state that guides and justifies one's application of the sign' but only under the condition that 'there is *no special form* [or privileged status] of normativity based on meaning-constituting mental states'.

reality and meaning of its own. The normative functions by which both algebraic formulas and logical consequence are followed are due to other (external, yet quite prevalent) normative assumptions. Therefore, logical consequence relation is not intrinsically normative. Consequently, the intrinsic normativity of logic is unmotivated. The implications of this would extend to both systems of logic. One substantial implication we have drawn on is that logical consequence should not determine what we *ought* to religiously believe and how we *ought* to revise our religious beliefs. This has helped establish an anti-exceptionalist status of logic within the Islamic theological tradition. One implication of this finding suggests that for the Islamic theologian/philosopher, logical methods should not be of any more value than evolving scientific ones—ones that are subject to revision. More importantly, granting logic an anti-exceptionalist status within the Islamic theological tradition would allow it to be challenged on *theological* grounds. Particularly,

If a logical system has certain internal commitments that lead to doctrinal heresy or serious conflict with sources of evidence taken to be authoritative (e.g. councils or biblical texts), then we must be able to recognise these commitments and revise them accordingly. (Cotnoir 2019, 514)

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