

The Existence of Time in Faḥr al-Dīn al-Rāzī's *al-Maṭālib al-ʿāliya*

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It is a pity that philosophers are largely unaware of the work of Faḥr al-Dīn al-Rāzī. His writings present a goldmine of clever and fascinating arguments on a wide range of philosophical topics. He may have been a theologian, but he was the sort of theologian an analytic philosopher would enjoy. Of course, there are good reasons for his absence from the canon of the history of philosophy, and major obstacles to integrating him into that canon. His highly dialectical style of writing can be off-putting, especially if one is keen to know what Faḥr al-Dīn himself thinks on a given issue. The arguments he presents need to be understood against a complex background, since he is often looking back as far as Aristotle while also engaging with Avicenna and with fellow representatives of philosophical *kalām*. Most basically, there is a lack of translations, and for several of his works, even of editions. Still, there is an increasing amount of secondary literature that makes clear his argumentative sophistication and philosophical interest.¹ My aim in this paper is to contribute, if modestly, to that trend by examining a particularly intriguing stretch of one of his latest works, the *Maṭālib al-ʿāliya* (*Exalted Topics of Inquiry*).²

I will be focusing on only the first three *fuṣūl* of the *Maṭālib*'s fairly lengthy treatment of time.³ In these sections, Faḥr al-Dīn discusses the question of whether time exists, and if so, how we know that it exists. This is a question he covers in several other texts, and I will refer occasionally to these other treatments in what follows and in the notes. But I will mostly be restricting myself to the *Maṭālib*, which I have chosen in part because it is so detailed, and in part for its explicit engagement with two previous theories of time--those of Abū Bakr Muḥammad ibn Zakariyyā' al-Rāzī and of Avicenna. I should also note that apart from some brief remarks in my conclusion, I will have nothing to say about the rest of the discussion of time in the *Maṭālib* itself, and in particular the question of what time is, or its 'quiddity'. In dividing his discussion into

1 For instance Mayer, Faḥr ad-Dīn ar-Rāzī's Critique; Shihadeh, *The Teleological Ethics*, and several studies in Hasse and Bertolacci, *The Arabic, Hebrew and Latin Reception*.

2 For the chronology of Faḥr al-Dīn's works, see al-Zarkān, *Fakhr al-Dīn al-Rāzī*; Shihadeh, *The Teleological Ethics*, pp. 7–11, and Griffel, On Fakhr al-Dīn al-Rāzī's Life.

3 Faḥr al-Dīn al-Rāzī, *Maṭālib*, vol. 5, pp. 9–49.

treatments of time's existence and of its quiddity, Faḥr al-Dīn follows the lead of Aristotle at *Phys.* IV.10, 217b31–2 ('whether it is among the things that are and that are not, and what is its nature').⁴ In the *Šifā'* Avicenna divides his discussion in the same way, as we will see shortly. In this paper, I will be concerned only with the first issue of time's existence, which will give us plenty of material to deal with.

Faḥr al-Dīn considers three broad positions concerning our question.⁵ The first option is that time does not in fact exist (section 1 below). While this may seem so implausible as to be hardly worth discussing, there are two reasons for Faḥr al-Dīn to include it. For one thing, as usual he is pursuing an exhaustive method in which all possible positions on a given topic are canvassed and evaluated. If he simply assumed the existence of time and asked how its existence becomes known, his discussion would not be exhaustive. For another thing, the denial of time's existence is not quite as radical as it sounds. The skeptic considered by Faḥr al-Dīn admits that some things are successive or persist. He simply denies that there is some *further* objectively existing thing, namely time, that would be needed to account for their succession and persistence. Still, this skeptical option is discussed in less detail than the positive views that do assert the existence of time. Here there are two kinds of theory. One theory is that of Abū Bakr al-Rāzī, who is mentioned explicitly (*Maṭālib*, vol. 5, p. 21). He held that we need not demonstrate the existence of time, since it is just obvious (section 2 below). In fact, on his view that would be putting the claim too weakly. Not only is there no *need* to demonstrate the existence of time, but it would be a *mistake* to try to prove its existence on the basis of anything else, such as heavenly motion. For time is conceptually or ontologically prior to anything that could be used to demonstrate its existence, so that such demonstrations are inevitably circular.

The other sort of positive theory does try to prove time's existence. One might think of this as a compromise or middle view: this view rejects skepticism concerning time's objective existence, but accepts the need to prove it exists. Within this branch, Faḥr al-Dīn considers four attempted proofs. The first is, unsurprisingly, the theory found in Avicenna's *Nağāt* and *Šifā'* (also cited explicitly, *Maṭālib*, vol. 5, p. 33). This tries to establish time in relation to the possibility of something's moving a certain distance at a certain speed (section 3.1 below). Next, Faḥr al-Dīn treats a proof that points to the 'before-

4 For Aristotle's treatment of time in the *Physics* see Coope, *Time for Aristotle*.

5 Cf. Abū l-Barakāt, *Mu'tabar*, vol. 3, p. 36, who mentions the following possible views about time: It is a 'word with no meaning'; an object of sensation, namely motion; an object of the intellect, namely the measure of motion; a substance; an accident; neither substance nor accident; existent; non-existent; integrally existent (on this see further below); non-integrally existent. For the list of questions cf. vol. 2, p. 70.

ness and afterness' of things. The proof attempts to show that beforeness and afterness must be something above and beyond the things that are before and after, for instance a father and son (section 3.2 below). Both this argument and Avicenna's are subject to a battery of objections which remain unanswered, suggesting that Faḥr al-Dīn does not deem these proofs to be successful. A third proof receives no similar refutation, but on the other hand Faḥr al-Dīn does not explicitly affirm its efficacy. The argument asserts that when we make temporal divisions, for instance by distinguishing years or months from one another, there must be some extended thing that we are dividing (section 3.3 below). This divided thing is a kind of 'vessel' or 'receptacle' (*ḡarf*) for time-segments like years and months. Finally, Faḥr al-Dīn mentions a traditional *kalām* theory of time, which seems to win his approval. According to this proof, time is needed as a third existing thing to which we refer when we draw a link between two events (section 3.4 below). For instance, if I say I will meet you when the sun rises, this makes sense only if time exists, since it provides a means by which to link the meeting to the sunrise.

In what follows, I will examine each of these negative and positive positions in turn. I will not have space to discuss every single argument and counter-argument (for instance, the second *faṣl* on the self-evidence of time has no fewer than twenty-one arguments). However an outline of this entire section of the *Maṭālib* is provided as an appendix to the paper. In the outline I have numbered the arguments and counter-arguments, and will refer to these numbers throughout in addition to giving page references. For instance, §3.2.1.4 refers to the third *faṣl*'s second proof, first (positive) section of arguments for this proof, fourth argument.

1 The Denial of Time's Existence

As already explained, the first view canvassed by Faḥr al-Dīn is that time does not exist--a contention supported by twelve arguments.⁶ It seems that with this thesis, the skeptic means that time does not exist, as Avicenna would say, 'in external reality'. (Faḥr al-Dīn follows Avicenna in using the expression *fī l-a'yān* for this notion, which I will translate 'among objectively real things' or, for economy of expression, 'objectively'.) At least, in the penultimate proof (§1.11, *Maṭālib*, vol. 5, p. 18), the skeptic argues that if there were any such thing as time, it would be the measure of motion; but motion has no objective existence, so neither does time. This leaves open the possibility that time has at

6 In *Mabāḥiṭ*, pp. 755–61, he contents himself with five negative arguments; at *al-Risāla al-kamāliyya*, p. 67, only two skeptical proofs are given, namely a regress argument and the argument that past and future time do not exist now, and the present can be neither divisible nor indivisible so it cannot exist either.

least mental (*dīhnī*) existence, and it seems the skeptic has no stake in denying this. Correspondingly, the anti-skeptical theories to come in *fuṣūl* 2 and 3 aim to prove that time has objectively real existence and *not* only existence in the mind or imagination (this point is made, for instance, in §2.1.7, *Maṭālib*, vol. 5, p. 25). In light of this, we can be more precise about the issue being discussed in this whole stretch of the *Maṭālib*: Faḥr al-Dīn is asking whether time has existence in objective reality, as opposed to merely mental existence; and furthermore asking, if it does exist, whether that is something known immediately (the contention of §2) or established by proof (as argued in various ways in §3).

The proponent in §1 is, then, a skeptic who thinks that time has, at most, mental existence. This is rather surprising, given that Faḥr al-Dīn's discussion is based on that in the *Šifā'* of Avicenna. There, when Avicenna lays out the views people have taken on time, he says:

Avicenna, *Healing: Physics* II.10.1: Some people have denied that time has any existence, while others believed that it has an existence, but not at all as [existence] occurs among external, objectively real things (*fī l-a'yān al-hāriġa*), but as a product of the estimative faculty. Still others believed that, although it does exist, it is not a single thing in itself; rather, it is in some way a relation that certain things (whatever they might be) have to other things (whatever they might be) ... Others have given time a certain existence and subsistent reality, while others yet even made it a substance subsisting in its own right.⁷

These are the possibilities Avicenna goes on to discuss in the rest of section II.10 of his *Physics*.⁸ Why then does Faḥr al-Dīn not likewise divide his treatment of skeptical views on time into two parts, one in which the skeptic denies all existence to time, and another in which mental existence is conceded to it? One explanation might be that Avicenna goes on to present the mental existence option as a natural corollary of the first battery of skeptical arguments. He writes:

Avicenna, *Healing: Physics* II.10.5: Due to these skeptical puzzles and the fact that time must have some existence, many people felt compelled to give time some other manner of existence--namely, the existence that is the activity in the estimative faculty (*fī l-tawahhum*).

7 Section numbers and translation from Avicenna, *The Physics of The Healing*. I quote using McGinnis' translation, with very occasional modifications.

8 No existence at all: II.10.2–4; existence only in *tawahhum*: II.10.5; relational account: II.10.6, refuted at II.10.10; objective existence and subsistence: II.10.8; self-subsisting: II.10.7.

Here it may be relevant to note that in Avicenna, the faculty of *wahm* or *tawahhum* is mentioned as a source of spurious, if irresistible, belief.⁹ Thus, Faḥr al-Dīn would be on relatively firm ground in assimilating the 'no existence' view to the 'only mental existence' view.

The skeptic of *faṣl* 1 begins his case by asserting a distinction between two kinds of entities, one that exists successively, the other continuously:

Maṭālib, vol. 5, p. 9: Those whose endurance is on account of their isolated constituents (*afrād*) and the succession of their units, without these being continuously successive (*mutaʿāqiba mutatāliya*), so that each of them exists after non-existence and then does not exist after existing ... and those that endure in the sense that their being is constantly persisting as objective realities (*bi-aʿyānihā*).

But in neither case do we need to posit time as some additional entity to explain how things manage to exist successively or continuously. The first skeptical argument then calls on this distinction, to argue that time itself could (if it existed) be neither successive nor continuous. Since these are the only two options, time therefore does not exist at all. Against the possibility that one and the same time exists continuously, the skeptic argues that in that case everything would happen simultaneously--for instance today would be the same as the day of the great flood. And against the idea of time as successive--that is, made up of lapsing time-parts which come in and out of existence--the skeptic points out that a further, second-order time would be needed to explain the sequence of these time parts. This would yield an infinite regress.

This is a first taste of a dilemma that will arise repeatedly in Faḥr al-Dīn's discussion of time's existence. On one horn of the dilemma, time is itself a temporal entity, in the sense that its parts happen at a time. In that case another time is needed to account for the occurrence of these time-parts. The other horn says that time is not constituted by such lapsing parts. But in that case, it exists without lapsing, so that there is only ever one time and everything happens at that time, i.e. simultaneously. A similar dilemma is presented in the fourth argument of this *faṣl* (§1.4). The skeptic assumes that the proponent of time's existence is imagining that there must be some 'container' (*zarf*) for occurrent events. Suppose, for instance, that yesterday you went for a walk, and today you are reading a book. The walking can only be 'prior' to the reading in light of some framework--the *zarf*--which provides a basis for priority and posteriority. This would be time. But if so, then shouldn't the same rationale go for time itself? Time also existed yesterday and exists today. If it can pull off that trick without a further, second-order time as a framework, then the walking and reading could already exist yesterday and today without first-order

9 See on this Black, Estimation in Avicenna.

time. If on the other hand first-order time cannot exist without second-order time, then we have a regress. A suggested escape would be to ‘posit infinite times, containing one another’, as Faḥr al-Dīn puts it--so that we have mutually overlapping first-order parts of time, instead of a regress. But then an infinite number of times would be happening right now, which is absurd. Furthermore, the aggregate of first-order, overlapping times that existed yesterday would be temporally prior to the aggregate of times that exist today. So we still need a second-order time to make sense of the priority of one aggregate to the other.

This strategy of ‘aggregation’ might put us in mind of the famous proof for God’s existence given by Avicenna, and perhaps it brought the same thing to mind for Faḥr al-Dīn. The next three arguments (§1.5–7) all invoke Avicenna’s conception of God as the Necessary Existent. Of course a fundamental part of Avicenna’s philosophical theology is that there is only one such existent--not only is God necessary, but nothing other than God can be necessary in itself.¹⁰ Faḥr al-Dīn would of course accept this claim, even if he might raise doubts about Avicenna’s attempt to establish God as the Necessary Existent.¹¹ So he would himself take seriously the next several arguments, which show that the existence of time would compromise God’s status as the unique Necessary Existent. The skeptic asserts that God Himself is temporally prior to ‘daily events’ (*al-ḥawādīṭ al-yawmiyya*) (§1.5, *Maṭālib*, vol. 5, p. 13). If time must exist in order for God to be prior in this way, then God is in a sense dependent on time--and therefore not necessary. But if time does not need to exist in order for God to be prior to things, then neither does it need to exist in other cases of priority (e.g. my having existed prior to my children). The next argument (§1.6, *Maṭālib*, vol. 5, p. 14) applies the same reasoning to God’s being eternal: either He needs time in order to be eternal, or He doesn’t, yielding the same two consequences that His necessity is compromised or that time’s existence is superfluous to explain the temporal properties of things.

A further argument (§1.7, *Maṭālib*, vol. 5, pp. 15–16) poses a different kind of challenge, by suggesting that if time existed, it would have to exist necessarily. First, we are given reason to think that time should be contingent: as a whole, it stands in need of its parts in order to exist, and its parts are in turn transient and thus obviously contingent. Thus, all time segments and the aggregate of all time are contingent. Yet if this is the case, we could suppose that time itself exists after not existing. But how can time exist *after* not-existing? That would mean that there was a time at which time did not yet exist--obviously a contradiction. So time is after all necessary in itself. Here there are, in fact, two threats being posed. First, within this argument itself we’ve seen reason to think that time, if it existed, would need to be both contingent and necessary.

10 For his argument to this effect see Adamson, *From the Necessary Existent to God*.

11 See on this Mayer, *Faḥr ad-Dīn ar-Rāzī’s Critique*.

To avoid this contradiction we should say that it doesn't exist at all. Second, if time is necessary then God would not after all be unique in having necessary existence. That this would itself be a sufficient objection to the existence of time is clear from the next argument (§1.8, *Maṭālib*, vol. 5, pp. 15–16) which simply argues in another way that time, were it to exist, would be necessary.

God's relationship to time comes to the fore again in the tenth argument of this first *faṣl* (§1.10). Here, Faḥr al-Dīn comes for the first time to consider a broadly Aristotelian understanding of time, according to which it is one of the 'concomitants (*lawāḥiq*) of motion' (*Maṭālib*, vol. 5, p. 17). Speaking again for the skeptic, he proceeds by way of a classic dilemmatic argument: if it exists, either time is such a concomitant or not, but both possibilities are excluded, therefore it doesn't exist. One reason it cannot be such a concomitant is that God, as we have seen, has temporal features, such as existing before something He creates. Likewise, there is the non-existence that precedes the existence of created things. Neither God nor non-existence move, though. In fact, he puts the point rather more strongly: God is 'beyond' (*munazzah 'an*) motion, which I think means that the application of motion to Him is a category mistake. We could take this to be a version of an ancient objection against the link between time and motion, which cites the fact that unmoving and indeed immovable things (like the center of the universe) still fall under time.¹² Nonetheless, there is a case to be made that time *is* a concomitant of motion, namely that we can conceive of before and after only thanks to motion. At the end of the next argument (§1.11), which deals similarly with the question of whether time is specifically the *measure* of motion, Faḥr al-Dīn rather surprisingly makes the authority of Aristotle the sole reason to accept this definition (*Maṭālib*, vol. 5, pp. 18–19).

At the end of this first *faṣl*, Faḥr al-Dīn remarks that the arguments he has offered are good and powerful ones (*Maṭālib*, vol. 5, p. 19). Given that he himself will be endorsing a version of the third view, that time does exist but stands in need of proof, this remark too seems rather surprising. Probably, though, he means simply that they pose a genuine challenge for those who uphold the existence of time. If we step back from the individual arguments and think about the nature of this challenge, we will see that the skeptic is invoking a principle of parsimony. At both the beginning of the *faṣl* and now here again at the end, the skeptical view is described as the denial that time could be 'anything other than the fact that some existents are eternally existent in their objective reality, while others are originated, successive and consecutive items' (*Maṭālib*, vol. 5, p. 19). As we already saw, the skeptic is happy to describe things in 'temporal' terms, by calling them 'eternal' or 'successive'. Indeed some of the skeptical arguments presuppose this. For instance §1.5 and

12 See Adamson, Galen and Abū Bakr al-Rāzī on Time.

§1.6 assume that God has the temporal properties of being ‘before’ things and of being ‘eternal’. The skeptic’s guiding thought, then, is that there is no need to posit any further existing thing that would be called time, above and beyond the temporal properties that belong to eternal and successive existents. We can see this particularly clearly in the arguments that pose the threat of a ‘second order time’, that is, a time at which time itself would occur. In this context Faḥr al-Dīn has the skeptic say things like ‘if there is no need [for second order time] then the same holds for all other occurrences’ (§1.4, *Maṭālib*, vol. 5, p. 12)--in other words, if time doesn’t need a further time, then nothing needs time in the first place. And, by our principle of parsimony, if there is no need for time, we should assume there is no such thing.

These skeptical arguments, therefore, have in part the function of placing a burden of proof on those who assert the existence of time--the skeptic insists that in the absence of proof, the default view would be to reject time’s existence (and as we have seen this would mean objective existence, not just mental existence). The positive proofs offered in the third *faṣl* would constitute an adequate response to this skeptical challenge. On the other hand, the skeptical *faṣl* also includes arguments that would establish something stronger: that the notion of objectively existing time is incoherent. A number of the arguments have the form of a *reductio*: for instance in §1.10 we are told that absurdities arise if time is concomitant to motion, but also if it is *not* concomitant to motion.¹³ This yields not a skeptical conclusion that there is no need to posit time’s existence, but rather what in discussions of ancient skepticism is called a ‘negative dogmatic’ claim: as Faḥr al-Dīn himself puts it, ‘both options are false, so the claim that [time] exists is false (*bāṭil*)’ (*Maṭālib*, vol. 5, p. 17). A similar result is obtained without *reductio* in the final argument (§1.12), which is rather ingenious. The suggestion here is that originated things are preceded by their non-existence; to put this another way, non-existence is ‘before’ what is originated. But then the ‘beforeness’ is a property of what doesn’t exist, and a property of the non-existent likewise does not exist (*Maṭālib*, vol. 5, p. 19). It must be said that this doesn’t look like an airtight proof. After all, beforeness would also belong to things that *do* exist, such as God, as we have already learned in previous arguments. Still, it is interesting that Faḥr al-Dīn doesn’t feel the need to demonstrate the failure of these negative dogmatic proofs.

13 Other proofs in this *faṣl* show that the assumption of existing time would yield unwanted implications, in particular (as we have seen) that God is not necessary (§1.6), or that He is not unique in being necessary (§1.7). I would classify these also as *reductio* arguments in that the implied conclusions are taken to be absurd, even if they are not straightforward contradictions.

2 Time as Epistemically Immediate

The same thing happens in the next *faṣl*, which is devoted to the epistemic immediacy of time: a large number of arguments for this notion are offered, and left to stand unrefuted. At the end, Faḥr al-Dīn says that the *faṣl* was a 'report' or 'confirmation' (*taqrīr*) of the position, and he apparently feels no pressure to assess the arguments just surveyed. Rather, it would seem that he is undertaking the more neutral task of mapping the terrain of arguments for and against the existence of time as completely as possible. Obviously the section of the *Maṭālib* being considered in this paper is too small to warrant any general conclusions, but it is worth noting that this raises a question about Faḥr al-Dīn's intentions in this text. As I mentioned above, his usual method seems to be that of an exhaustive survey--one would expect to get refutations of all but one possible view, which is thus revealed as the truth. Here, he seems closer to having the exhaustive survey as an end in itself, though as we will see he does ultimately express a preference for an argument given in the third *faṣl*.

The second *faṣl* raises a further issue of methodology: how and how often is Faḥr al-Dīn drawing on previous sources? He routinely says that he is reporting on arguments he has come across, for instance at the end of the first *faṣl* (*al-dalā'il ... allatī stanbatnāhā*, *Maṭālib*, vol. 5, p. 19). In that *faṣl* no names are attached to the skeptical view of time, though the inspiration of the section of course derives ultimately from the skeptical arguments offered by Aristotle in *Physics* IV.10, and more proximately from Avicenna, as mentioned above (*Healing: Physics* II.10.2–5). By contrast, the second *faṣl* names its protagonist, namely the earlier philosopher of Rayy, Abū Bakr al-Rāzī (d. 925). The beginning of the *faṣl* reads as follows:

Maṭālib, vol. 5, p. 21: You should know that there are two groups of people who accept duration (*mudda*): those who hold that the knowledge of its existence is immediate (*badīhī*) and necessary, with no need for proof or demonstration; and those who do think it is established by proof and demonstration. The first group includes Muḥammad b. Zakariyyā' al-Rāzī, among others. Even though you will find them doing nothing but asserting immediacy and necessity, nonetheless we will set out their remarks as well and completely as possible. I say that they do present arguments that their claim is right, in the following ways.

There follow twenty-one arguments, first to the effect that time is self-evident, then against the notion that time is known through motion (for instance, through the motion of the sphere). Notice that Faḥr al-Dīn is scrupulous here in saying that none of these arguments are meant to *prove* the existence of time. That would, of course, conflict with the central claim of this *faṣl* which is that there is no need to give any such proof and that indeed doing so would be a

mistake, since it would inevitably involve trying to prove something immediate from something less immediate (or at best, from something equally immediate). Rather, these are arguments whose function would be to call our attention to the epistemic immediacy of time.

To what extent is Faḥr al-Dīn actually drawing on the earlier al-Rāzī in this section, as opposed to inventing arguments to put into Abū Bakr al-Rāzī's mouth? This is of some importance, because Abū Bakr's infamous theory of time as one of five eternal principles is known only through later testimonies. So we would like to know whether Faḥr al-Dīn's discussion can be taken as evidence for the way Abū Bakr developed and defended his theory. A reason for pessimism is that Abū Bakr apparently features as a protagonist here simply because Avicenna has alluded to his theories in the context of the *Physics* of the *Šifā'*. As we saw, Avicenna's list of views on time includes the claim that time is 'a substance subsisting in its own right' (ḡawhar qā'im bi-dātihī) (*Healing: Physics* II.10.1). This is well attested as the view of Abū Bakr al-Rāzī,¹⁴ as is the further point Avicenna mentions later in connection with this view, that 'the necessity of [time's] existence is such that it does not need to be established by proof (*dalīl*)' (*Healing: Physics* II.10.7).¹⁵

As I have argued elsewhere, Abū Bakr al-Rāzī's view probably evolved out of an engagement with the lost *On Demonstration* of Galen.¹⁶ In his *Doubts about Galen*, he informs us that Galen called time a 'substance' (ḡawhar)¹⁷. We know that in the same work, Galen had argued against Aristotle's definition of time as 'the number of motion in respect of before and after' on the basis that this definition is circular. After all, what could 'before and after' (πρωτέρον τε καὶ ὑστέρων) mean here, if not temporal priority and posteriority? Thus, Galen had suggested that time is 'defined through itself' (ἀφορίζεσθαι δι' αὐτοῦ)¹⁸. It is not clear whether, in addition to this epistemic claim, Galen really made the further metaphysical claim that time is self-subsisting, an idea associated with his name in various Arabic but no Greek sources. Certainly Abū Bakr al-Rāzī made both claims, though: for him time, 'eternity' (*dahr*) or 'duration' (several sources confirm Abū Bakr's use of the word *mudda*) is both a fundamental ontological principle, subsisting through itself rather than being caused by anything else, and epistemically fundamental, in the sense that we can grasp it immediately, with no need for proof. Abū Bakr supported this contention with a thought experiment: suppose that the heavens were suddenly to vanish.

14 See for instance Abū Bakr al-Rāzī, *Rasā'il falsafīyya*, pp. 193, 266 and 269.

15 Ibid., p. 198.

16 See again Adamson, Galen and Abū Bakr al-Rāzī on Time.

17 Abū Bakr al-Rāzī, *Kitāb al-Šukūk 'alā Ġālīmūs*, p. 8.

18 Themistius, *In Phys.*, p. 149.

Wouldn't time continue to pass? He went so far as to present this question to ordinary folk, and they answered that time would indeed continue.¹⁹

Now back to Faḥr al-Dīn and the question of whether we can use him as evidence for Abū Bakr al-Rāzī. I have said that his mention of Abū Bakr in this context is presumably occasioned by Avicenna's allusion. But Faḥr al-Dīn is well informed about Abū Bakr; indeed elsewhere in the *Maṭālib* he preserves evidence about him that is otherwise unknown.²⁰ In fact, even in our present context it is he who identifies as Abū Bakr's the view that time is immediately known (Avicenna does not name his source). Furthermore, Faḥr al-Dīn explicitly says that the arguments in *faṣl* 2 are drawn from Abū Bakr and like-minded people. Of course, it is highly unlikely that all twenty-one arguments in this *faṣl* were offered separately and in this form by Abū Bakr. Probably Faḥr al-Dīn has done quite a bit of work in building up a case for the view. We should also make allowance for his caveat that other people besides Abū Bakr have been proponents of time's immediacy.

Still, I think that at least the first argument has a good chance of deriving from Abū Bakr himself:

§2.1.1, *Maṭālib*, vol. 5, pp. 21–2: Let us postulate an individual who was unaware of the existence of the celestial spheres and stars, and their rising and setting, being unsighted and sitting in a dark house, and suppose he resolves not to move at all, even by blinking or breathing. So this man would perceive duration as something flowing²¹ that occurs, and passes constantly without ceasing or finishing. The knowledge of this is necessary, such that if he considered this situation from early morning until mid-morning, and then from mid-morning until noon, then even though he was unaware of the motion of the sun, the moon and the other stars and spheres, he would immediately know that what elapsed from early morning until mid-morning is half of what elapsed from early morning until noon. He will know immediately that his knowledge of what he is considering does not depend on his knowledge that a sphere or star is moving. These considerations prove that the knowledge of the existence of duration and time is immediate and primary, with no need for proof or demonstration.

19 Abū Bakr al-Rāzī, *Rasāʾil falsafīyya*, p. 264, cf. p. 199. There seems to be a reminiscence of this in the *Maṭālib*: §2.2.8 argues that the general run of people would acknowledge that were God to destroy the heavens in the last judgment and then wait before restoring them, then time would pass in between these two events and could be shorter or longer.

20 See Rashed, Abū Bakr al-Rāzī et le *kalām*, and Rashed, Abū Bakr al-Rāzī et la prophétie. The evidence in question appears at *Maṭālib*, vol. 4, pp. 401–19.

21 This image of the 'flow' of time is a consistent feature of the position presented in this second *faṣl*. A vivid description comes at the end of §2.2.9 (*Maṭālib*, vol. 5, p. 30): 'in a situation where we are unaware of the heavenly sphere, the sun, the moon and the other stars, we would in our intellects perceive something passing and elapsing, with something coming after something, like water running and flowing, or like a thread placed against the tip of a sword and then pulled along. The thread would pass across the edge of the sword part by part; it's like that here [with time]'. This image of the sword is taken from Abū l-Barakāt, *Mu'tabar*, vol. 2, pp. 78–9, where he also speaks of time as 'flowing'.

It is not only the characteristic inventiveness of the thought experiment that might encourage us to see it as authentic, but also its similarity to a different thought experiment ascribed to Abū Bakr al-Rāzī by another source, the Ismāʿīlī thinker Nāṣir-e Ḥusraw, who is highly critical of the earlier Rāzī's theory of five eternal principles. According to the latter, when discussing pleasure Abū Bakr asked us to consider someone sitting in a house that is neither particularly hot nor particularly cold. Such a person, he argued, would have no awareness of the temperature at all.²² (The point of this was to show that we do not get pleasure from our natural state, but only from perceptible return to that state.²³) Furthermore, our thought experiment reappears in the second half of this *faṣl*, and this time is combined with the otherwise attested scenario mentioned above, in which Abū Bakr encourages us to imagine that the heavens are eliminated and to realize that time would nonetheless continue (§2.2.1, *Maṭālib*, vol. 5, pp. 26–7). The linking of these two thought experiments, the second of which is securely tied to Abū Bakr by other sources, is strong evidence that the house scenario is his brain child. The same probably therefore applies to a third scenario, which is added in §2.2.1 for good measure: imagine a person born deaf and blind, who has never become aware of the sun or stars. If he concentrated on stilling his breath and blinking, like the unsighted man in the house, he would continue to perceive time's passing.

What are these thought experiments intended to show us? At first the answer seems obvious from the context: that the (objective, not merely mental) existence of time is something we grasp immediately, with no need for proof. In particular, we do not get to know about time via motion. Hence the envisioned scenarios present people who experience no motion, but nonetheless are aware of time passing.²⁴ Notice that in the first version of the house thought experiment, the man is even able to compare *amounts* of time, considering that one span of time is half of another even without motions that these time spans could measure. All of this makes good sense, since as we have seen, Abū Bakr is known to have taught that there is no need to prove the existence of time. Also, it fits well with what we know about his five eternal theory, in the sense that time as such is (epistemically) prior to any motion. As several sources tell us, he

22 Abū Bakr al-Rāzī, *Rasāʾil falsafīyya*, pp. 151–2.

23 On this see Adamson, *Platonic Pleasures*.

24 It is perhaps worth noting how reminiscent this is of the more famous 'flying man' thought experiment devised by Avicenna, in which sensory deprivation does not prevent self-awareness, as opposed to the awareness of time. The main difference in set-up is that Abū Bakr's man in the house still has the opportunity to touch things, such as the floor he is sitting on, whereas Avicenna's flying man is in midair with his limbs stretched out. Abū Bakr's less radical thought experiment is sufficient for his purpose, since his sense of touch is not giving him access to motion (and in particular to heavenly motion; see immediately below).

believed that we know before and after through time, not vice-versa.²⁵ We can then measure off 'relative' motions, like days, with the help of motions such as the sun's supposed orbit around the earth. This relative sort of time would in fact depend on motion for its existence.²⁶ The same point is made in one of the arguments listed by Faḥr al-Dīn (§2.1.6, *Maṭālib*, vol. 5, p. 24).

On the other hand, it's striking that in all three scenarios described by Abū Bakr, or at least in Faḥr al-Dīn's presentation of those scenarios, there is a specific reference to *heavenly* motion. In the second scenario the heavens are imagined to vanish (or in one version, to come to rest²⁷), and in the other two scenarios sensory deprivation is said to prevent awareness of the motion of the sun, moon and stars, but not the passage of time. This suggests that Abū Bakr was actually offering not so much (or not only) a positive case for time's immediacy, as a critique of a rival theory of time. According to this rival theory, time would be linked to heavenly motion rather than to motion in general. Abū Bakr might have had in mind the *Timaeus*, of course, but another relevant text would be Alexander of Aphrodisias' *On Time*. It proposes that 'time is the number of the movement of the [outermost] heavenly sphere'²⁸. Alexander hoped to head off a potential objection, namely that various motions would have various uncoordinated times.²⁹ Since the outermost sphere's motion is the fastest, it could be used as a baseline against which to compare all other motions.

So it would seem that Abū Bakr's thought experiments had a fairly narrow target, namely the claim that time is the number not just of any motion, but of celestial motion. Nonetheless, Faḥr al-Dīn introduces the house thought experiment at the beginning of a series of more general arguments for the epistemic immediacy of time. Given its mention of the heavens, its rightful place is in the second series of arguments in this *faṣl*, which (taking up the issue of Abū Bakr's original polemic) refute the association of time with celestial motion. Faḥr al-Dīn marks the transition between the two series of arguments as follows: 'having established that the knowledge of the existence of duration and time is immediate and primary, we say: this duration cannot be asserted on the basis of the motion of the sphere or of any attribute having to do with the motion of

25 Abū Bakr al-Rāzī, *Rasā'il falsafīyya*, pp. 195 and 200.

26 *Ibid.*, p. 198.

27 *Ibid.*, p. 199.

28 Sharples, Alexander of Aphrodisias, *On Time*, p. 62 (Sharples' translation). Cf. Aristotle, *Phys.* IV.14, 223b18–23 on this possibility.

29 Apparently Abū Bakr made this objection himself. Nāṣir-e Ḥusraw reports: 'the sect of philosophers who said that matter and place are eternal also affirmed that time is a substance. And they said that time is an extended and eternal substance. They rejected the statement of those philosophers who said that time is the number of the motions of the body, and said that if this were so, then it would be impossible for moving things to move at the same time with different numbers' (Abū Bakr al-Rāzī, *Rasā'il falsafīyya*, pp. 166–7).

the sphere' (*Maṭālib*, vol. 5, p. 26). In keeping with this structure, most of the arguments in the first series (§2.1) do indeed argue positively and on general grounds for the immediacy of time to the intellect.

Particularly noteworthy for our purposes are the last two arguments of the first, general series (§2.1.9–10, *Maṭālib*, vol. 5, pp. 25–6), which argue that we need time in order to compare motions one to another.³⁰ In §2.1.9 we consider pairs of motions that begin simultaneously, or in which one motion begins before the other. We have immediate or 'necessary' knowledge of this simultaneity, beforeness or afterness, and these immediate notions involve time (since to know that motion A is simultaneous to motion B is just to know it happens at the same *time*). Similarly, in §2.1.10 it is argued that we have necessary knowledge of one motion being slower than another, and that this too 'presupposes the existence of time'. The language of 'necessary (*ḍarūrī*) knowledge' used here and indeed throughout *faṣl* 2 is *kalām* terminology.³¹ It indicates that notions like simultaneity are, so to speak, inevitably forced upon us rather than being reached through some indirect process of reasoning. Since an explanation of these notions inevitably contains reference to time, it turns out that time too is known 'necessarily'.

It's worth dwelling on these two arguments, because they look ahead to the Avicennan theory of time that will be presented in *faṣl* 3. Avicenna thought he could prove the existence of time by referring to motions that begin at different times, or have different speeds. This leaves us with something of a puzzle: why should reflection on the same scenarios yield in *faṣl* 2 the result that time's existence is immediate with no need for proof, and in *faṣl* 3 a proof of time's existence? Since Faḥr al-Dīn does not provide critical remarks in this second *faṣl*, we cannot be sure how he would answer this question. But he may well be anticipating an Avicennan objection, namely that this supposed 'necessary knowledge' is in fact nothing more than the operation of *wahm*, which as mentioned above is a faculty subject to powerfully attractive, but sometimes misleading, beliefs. It is not enough that we naturally or even inevitably think about time when we compare motions.³² Rather, what is called for is proof that these

30 Cf. Abū l-Barakāt, *Mu'tabar*, vol. 2, p. 73: 'those who say that someone unaware of motion is unaware of time have it backwards. We say to them that on the contrary, someone who is unaware of time is unaware of motion! For someone who is aware of motion is aware of the before and after in respect of the interval, and he does not put together the before and after in [the interval], but rather in the mind. This before and after applied to a before and after [in the interval] is time'.

31 See e.g. Ibrahim, Immediate Knowledge.

32 This may explain why Faḥr al-Dīn refers to 'innate intuitions' and the like in other arguments in this *faṣl* (for instance *al-fiṭra al-aṣaliyya* in §§2.2.2, 9 and 10: *Maṭālib*, vol. 5, pp. 27 and 30): he is trying to call attention to the fact that Abū Bakr's view depends exclusively on such ungrounded beliefs.

concepts have a basis in reality. Ironically, though, Faḥr al-Dīn will turn that possible rejoinder against Avicenna's own theory.

3 Faḥr al-Dīn on Avicenna's Proof of Time's Existence

That brings us to the main event in this section of the *Maṭālib*: Faḥr al-Dīn's presentation and refutation of the proof of time's existence found in the *Šifā'* and *Nağāt* (he refers explicitly to both texts, and to the popularity of the theory, at *Maṭālib*, vol. 5, p. 33). Faḥr al-Dīn quotes almost verbatim from the version in the *Nağāt* (cf. *Physics* II.11.1–2).³³

§3.1.1, *Maṭālib*, vol. 5, pp. 33–4: (a) If any motion allocated to a given interval (*masāfa*) with a given speed, that has along with it another motion at the same speed, with the same starting and stopping points, they traverse the interval simultaneously (*ma'an*). But if (b) one of them begins without the other yet having begun, but they finish together, then one of them traverses less [of the interval] than the other does. (c) If they do begin together, but one moves more slowly (though they have the same starting and stopping points), then the slow one is found to traverse less [of the interval] while the fast one has traversed more. This being the case, between the starting point and stopping point of the first, fast one is a possibility to traverse a certain interval at a certain speed, or less than that interval at a certain slower speed. And between the starting and stopping points of the second fast one is a lesser possibility than this with respect to that determined speed, insofar as this possibility is [only] a part of the first possibility.³⁴ This being the case, this possibility is susceptible to increase and decrease. So necessarily, it must be something that exists.

Avicenna's approach accepts the Aristotelian view that time is a number or magnitude of the prior and posterior in motion (as he says explicitly at *Healing: Physics* II.11.3). What he has added is a specification of this magnitude: it is the possibility (*imkān*) associated with moving a certain distance at a certain speed.

The point of the comparison between the three scenarios envisioned here, on Faḥr al-Dīn's interpretation, is as follows:

§3.1, *Maṭālib*, vol. 5, p. 34: The first scenario (a) establishes the existence of this thing we call time. The second scenario (b) establishes that this possibility is different from³⁵ the motion itself, from the slowness and speed of [the motion] themselves, and from the magnitude of the motion³⁶. The third scenario (c) establishes that this possibility is something distinct from the magnitude of what moves and from the extent of the interval.

33 Avicenna, *al-Nağāt*, vol. 1, p. 143.

34 This sentence is describing case (b), which is why the second motion is described as 'fast'.

35 Reading *muğāyir* as in two manuscripts instead of *musāwī* ('equal') preferred by the editor.

36 Reading *al-ḥaraka*.

This summary, which receives a lengthy and somewhat pedantic further explanation in the *Maṭālib*, strikes me as basically correct (for a caveat, see below). Avicenna does want to show that time is something real, that is, objectively existent; that is a magnitude, since it can be compared in terms of larger and smaller (for instance it takes a longer time to travel the same distance at a slower speed); and that it cannot simply be identified with any of the other magnitudes in question here. This last point is made explicit by Avicenna himself, in fact (*Healing: Physics* II.11.2).

Avicenna also emphasizes that time cannot, as Abū Bakr al-Rāzī alleged, be self-subsisting. Rather it must be dependent on motion, since the possibility in question ends along with the end of the motion (*Healing: Physics* II.11.2). Faḥr al-Dīn does not mention this aspect of Avicenna's proof in his exposition, perhaps because for the question of time's objective existence, it is not important to decide whether time is self-subsistent or depends on motion--it will objectively exist either way. This is worth emphasizing: Faḥr al-Dīn is scrupulous in sticking to the question of whether time exists, as opposed to anticipating the next topic of what time is. Here we have a contrast between him and Avicenna. Although Avicenna does, as we have seen, distinguish between the questions of time's existence and its essence, he says that these are two birds one can kill with one stone: 'having pointed out the false teachings regarding time's essence, it is fitting that we point out the essence of time, from there, its existence will become clear to us' (*Healing: Physics* II.10.13). In this respect, Faḥr al-Dīn's summary of Avicenna's purpose is accurate, but incomplete--for Avicenna thought the three scenarios also reveal time's essence.

It is solely on the terrain of time's existence, then, that Faḥr al-Dīn will criticize Avicenna by posing three objections (politely labeled as 'questions', §3.1.1–3). The first is that Avicenna's account is circular. To speak, for instance, of 'fast' and 'slow' motions is already to smuggle in talk of time, 'because the fast is that which traverses what the slow traverses in less time, or traverses more than the slow does in an equal time' (§3.1.1, *Maṭālib*, vol. 5, p. 36). If we must presuppose time in order to describe something as faster or slower, as in principle (c), or as leaving at the same or different 'instants', as in scenario (b),³⁷ then we cannot even describe the scenarios in question without presupposing that time exists. Here, I think that Avicenna would probably respond that the speed and simultaneity of motions are obviously real phenomena, so if they cannot be described without invoking time then we can take time's objective existence too as secure.

37 In fact Avicenna avoids using the word 'moment' or 'instant' (ān) here, instead talking about motions beginning or ending 'together' or not. But Faḥr al-Dīn could, I think, rightly insist that this term 'together' can only be understood as temporal simultaneity, that is, occurrence at one and the same moment.

But this is too quick, if you'll pardon the expression. For Faḥr al-Dīn is not arguing that time may after all not exist, or only exist mentally. Rather, he is objecting that Avicenna has not ruled out the option explored in *faṣl 2*, namely that time is known immediately. As he says:

§3.1.1, *Maṭālib*, vol. 5, pp. 36–7: The existence of time is either in no need of proof (*ist-idlāl*), or does need to be proven. In the first case, going through this proof is needless. In the second case, we say, you are only able to conclude to the existence of time through these premises. But we have shown that one can establish these premises only once one knows that time exists. So the argument is circular, and hence obviously invalid.

Here, we should think back to the arguments of *faṣl 2*, which invoked these very same scenarios (§2.1.9–10: one motion beginning after another; one motion slower than another) to persuade us that there is no need to prove time's existence. It seems that there, Faḥr al-Dīn was already preparing the way for an objection to Avicenna: even if we must concede time's objective existence to make sense of the scenarios described in the *Naḡāt* and *Šifā'*, we would not thereby have proved anything. Rather, we might be just exploiting our immediate awareness of time as existent.

Even the concession that time must exist objectively, in order to make sense of the three scenarios, is short-lived. For Faḥr al-Dīn's next move is to argue that the scenarios can establish only mental existence after all.

§3.1.2, *Maṭālib*, vol. 5, p. 37: According to your teaching, whatever is judged to increase and decrease must certainly be something existent ... But it is known of elapsing things that their³⁸ parts are not stable, and their portions have no endurance. This being so, it is not right to make a judgment here about the thing itself on the basis of increase and decrease. Rather, the most that can be inferred (*al-ḡāya mā fī l-bāb*) is that the extended thing depicted in the estimation (*wahm*) can be judged as increasing and decreasing. But time as something extended has no existence whatsoever in objective reality (*fī l-a'yān*).

As I promised above, we here see Faḥr al-Dīn using against Avicenna the characteristically Avicennan tactic of reducing an opponent's confidently asserted conclusion to a mere figment of the *wahm*. In this case, the objection is a spin on a traditional skeptical argument about time, one already familiar from Aristotle:

Physics IV.10, 217b33–218a3: One part of it (τὸ μὲν αὐτοῦ) was, and is no more, while another part of it (τὸ δέ) will be, but is not yet. But time, whether indefinite or as an amount taken in each case, is made up of these. But what is made up of what does not exist cannot, it would seem, have any part in existence.

38 Reading *annahā* for *allatī*.

When Faḥr al-Dīn says that the parts of time that make it extended have no stability or endurance (*tabāt, istiqrār*), I believe he likewise means that what has elapsed is already non-existent, whereas what has yet to elapse is not yet existent. If, then, we are comparing time spans in terms of relative magnitude, we are comparing things with no objective existence. This shows that the comparison is an act of *wahm*, in the sense of spurious supposition. The most that reflection on Avicenna's scenarios can yield is a recognition of time's mental existence. But this is no achievement at all--even the skeptic of *faṣl* 1 was apparently ready to concede that, and the whole discussion concerns objective existence.

A final set of remarks on Avicenna's proof is labeled as a single 'question' but in fact consists of three independent arguments. The first (§3.1.3.1, *Maṭālib*, vol. 5, pp. 37–8) is a regress argument of the sort already familiar from the first, skeptical *faṣl* (cf. §1.4). Within any given span of time, understood as the possibility to move a certain distance at a certain speed there is another, smaller possibility of the same kind. 'This being so, it follows that time has another time, to infinity'. Yet it is not obvious why this should follow. It seems to me that the smaller time spans would not demand the postulation of the higher-order times needed to trigger a regress. Rather, they are smaller possibilities that are (first-order) parts of the larger (first-order) possibility that is time. For instance, if someone moves at a certain speed across Europe, beginning in London at t_1 , arriving in Paris at t_2 , in Würzburg at t_3 , and finally in Munich at t_4 , then the possibility of going from Paris to Würzburg at that speed is just part of the possibility of going from London to Munich at that speed. Perhaps Faḥr al-Dīn would insist that since the time span from t_2 to t_3 is happening within the time span from t_1 to t_4 , a part of the larger time span is measured by the smaller time span. This would yield the desired regress, but I do not see why Avicenna should admit that parts of time spans need to be measured the way that motions do, since time spans (or their parts) do not move over certain distances at certain speeds.

In the next refutation (§3.1.3.2, *Maṭālib*, vol. 5, p. 38), the worry is that the time extending from now until tomorrow is already elapsing. If this time already exists now, 'this yields the result that the time which will elapse tomorrow is occurring now, and is present in this moment.' We might make better sense of the argument by phrasing it in terms of parts and wholes:

- (1) There is a time, call it t , which extends from now until tomorrow.
- (2) t objectively exists now.
- (3) If t objectively exists now, then the whole of t objectively exists now.
- (4) Part of t occurs tomorrow.
- (5) If the whole of something exists now, then each of its parts exists now.
- (6) Therefore the part of t that occurs tomorrow exists now.

If this is right, the objection complements the argument for merely mental existence, just discussed above (§3.1.2). There, we were told that if past and future do not exist now, then time cannot exist as an extended thing. Here, we instead assume that time does exist (now) as an extended thing--this is why one might be tempted to endorse the suspicious-looking premise (3). After all, if the *whole* time span *t* from now until tomorrow doesn't exist now, or at any other given moment, then how can we say it exists as an extended thing? But once this has been conceded, then given the plausible mereological premises (4) and (5), the paradoxical result (6) does seem to follow.³⁹

Finally, Faḥr al-Dīn proposes a spatial analogue to what Avicenna has said about time:

§3.1.3.3, *Maṭālib*, vol. 5, p. 38: Between the top and bottom of a drinking-cup, there is a possibility to accommodate a certain magnitude of bodies, which would not be filled by a lesser magnitude, and would not accommodate a larger one. So it is necessary that this possibility, which accommodates that measure of body, is something existent. This forces you to acknowledge the existence of self-subsisting extensions (*ab'ād*) which are places for those bodies.

To which one might reply: so what? Well, in his discussion of place, Aristotle raised and then rejected the view that place is to be identified with extension (διάστημα, *Physics* IV.4, 211b14–29).⁴⁰ In this he is followed by Avicenna who criticizes the idea of place as extension (*bu'd*) in *Healing: Physics* II.7.3–9. Faḥr al-Dīn's argument, if successful, would therefore have some dialectical bite, by forcing on Avicenna the unwelcome conclusion of admitting the existence of such extensions.⁴¹ Speaking of dialectic, he characteristically proposes a response on Avicenna's behalf, which is that the possible presence of bodies in the cup is not to be reified as a distinctly existing *zarf* for those bodies--a more abstract 'vessel' within the concrete vessel that is the cup. Rather, Avicenna could say, there is nothing more here than the possible existence of bodies. But this of course would play right into the objector's hands, since we could say the same about motion and time. In other words, we could say that there are possible motions with certain speeds and distances, without identifying the possibility as an objectively existing *zarf* for those motions.

From all this we learn that, if Avicenna wants to deny the presence of objectively existing extension in the cup, but to assert the objective existence of

39 The argument is akin to one presented by Aristotle at *Phys.* IV.10, 218a21–30.

40 On this see Morison, *On Location*, pp. 121–32.

41 In fact Faḥr al-Dīn is, in a subsequent section of the *Maṭālib*, going to offer an elaborate defense of the claim that place is self-subsisting extension. On this see Adamson, *Fakhr al-Dīn al-Rāzī on Place* (forthcoming).

time as a possibility related to motion, he needs to find another disanalogy between possible locatedness and the possibility he identifies with time. This is, I think, something he could readily do. In the case of time, he has said that any given motion moves over a given distance with a given speed--inevitably then, time will exist objectively as a function of that distance and speed. There is nothing else that can play this role. In the case of location, though, we already have something to do the job the extension might do. This is the sort of place acknowledged by both Avicenna and Aristotle: ‘the surface that is the limit of the containing body’ (*Healing: Physics* II.9.1). Since this surface would have magnitude, it would suffice to invoke it in order to explain why the bodies in the cup (for instance beans poured into it) will take up a certain amount of the cup and no more. The analogy to Avicennan time is a close one: just as there are many places (containing surfaces) for many amounts of body that could be placed into the cup, so are there many possibilities of moving various distances at various speeds. According to Avicenna, place and time are both ontologically dependent on body and motion. But they are nonetheless objectively existent.

3.1 The Method of Beforeness and Afterness

Faḥr al-Dīn is now ready to move on to consider in detail another proof of time’s existence, which he says employs ‘the method of beforeness and afterness’ (*ṭarīqat al-qabliyya wa-l-ba’diyya*) (*Maṭālib*, vol. 5, p. 38). The basic idea is expressed quickly, but the arguments for and against the idea are rather elaborate. This is apparently largely the work of Faḥr al-Dīn himself, since he says that the proponents of this method speak unclearly, whereas he will present the view in a clear and well-ordered fashion. The key idea is as follows:

§3.2, *Maṭālib*, vol. 5, p. 39: There is no doubt that the father is existent before the existence of the son. This beforeness is either the same as the existence of the father and the non-existence of the son, or it is something additional to this. But the first is false.

We then get six arguments that the existence of the father and non-existence of the son is not the same thing as beforeness. Probably the simplest and most convincing rationale is that the father could later on exist without the son again, if the son died first (§3.2.1.3, *Maṭālib*, vol. 5, p. 39). So beforeness is something other than the father’s existing. The next step is to show that this something else exists, and exists not just mentally but objectively. Objective existence is proven with surprising ease: Faḥr al-Dīn simply asserts that the father’s being before his son is obviously not just a figment of our minds, but a real feature of the world (*Maṭālib*, vol. 5, p. 40). Finally, beforeness and afterness are shown to be dependent on a subject, rather than self-subsistent, since they ‘fall into the

class of connections and relations' (*min bāb al-nisab wa-l-iḍāfāt*) (*Maṭālib*, vol. 5, p. 41). To what do beforeness and afterness belong, then? Not to the father and son, since they are only accidentally before or after one another. Rather, there must be something else which is essentially the subject of beforeness and afterness, and which 'is existent, flowing and elapsing'--this is time (*Maṭālib*, vol. 5, p. 41).

The arguments mounted against this method of beforeness and afterness are rather familiar. First, Faḥr al-Dīn argues on several grounds that beforeness and afterness themselves are not 'existing intentions' (*ma ʿānī mawḡūda*). For instance, non-existence can be 'before' something else, and if before is an attribute of the non-existent then it too is non-existent (§3.2.2.1.1, *Maṭālib*, vol. 5, pp. 41–2). We have seen exactly this argument above, in the first *faṣl* (§1.12, *Maṭālib*, vol. 5, p. 19). More interesting are arguments that focus on the relational nature of beforeness and afterness. Faḥr al-Dīn points out (§3.2.2.1.3, *Maṭālib*, vol. 5, pp. 42–3) that since beforeness and afterness are correlative, they must exist simultaneously (*ma ʿan*: a parallel case would be that whenever A is to the left of B, B is simultaneously to the right of A). But in that case, the things that are related as being before and after are also simultaneous,⁴² which is absurd. Again (§3.2.2.1.4, *Maṭālib*, vol. 5, p. 43) if beforeness and afterness are simultaneous, then we will need a second-order time to explain how these two temporal relations can themselves bear a temporal relation to each other. This is just the latest version of the regress threat that has presented itself frequently in this part of the *Maṭālib*.

3.2 Time as Subject of Division

We are still searching, then, for a way to prove the objective existence of time. As that last argument brings home to us, there are certain dangers to which the theories we have been considering repeatedly succumb. One of the most prominent is this threat of infinite regress. What is wanted, then, is a conception of time according to which time does not happen *at another time*. In the remainder of the third *faṣl*, Faḥr al-Dīn provides two more arguments for time's existence that can avoid this consequence. He will endorse the final argument; it's less clear what he thinks about the penultimate one, since it goes without criticism after he presents it. On the other hand, he makes no positive remark about it apart from noting its immunity to regress arguments.

42 The point here is that attributes cannot exist without their subjects' existing. So if beforeness and afterness are simultaneously existent, and if the father is the subject of beforeness, while the son is the subject of afterness, then the father and son must exist simultaneously.

This time, the key insight is that we routinely make use of temporal divisions, like years, months, and days--and these must be divisions of something (§3.3, *Maṭālib*, vol. 5, pp. 43–4). Whatever it is that is divided in this fashion (their ‘source’ or ‘basis’ (*mawrid*), *Maṭālib*, vol. 5, p. 44, line 11) will be time. Of course this cannot be non-existent, since non-existence cannot be divided into parts, to say nothing of parts of different lengths (as years are longer than months). Furthermore, we know that it is not purely non-existent, because ‘if this thing had no presence or occurrence whatsoever, then the mind could not possibly judge it to be past or future’ (*Maṭālib*, vol. 5, p. 44). On the other hand, time’s existence is qualified in a certain sense. We are told next that there are two kinds of existence, those that are *qārr* and those that are not. Helpfully, we are told exactly what this means. Something is *qārr* ‘if its parts are present simultaneously’⁴³. I therefore propose to translate this word interpretively as ‘integral’ (rather than a more literal translation like ‘stable’ or ‘permanent’). So is time integral or not? Obviously not, because different moments of time do not occur together. This will help the proponent of this proof avoid arguments like the one analyzed above, where the time occurring tomorrow wound up occurring now (§3.1.3.2).

From the non-integral nature of time we can furthermore conclude that time is not to be identified with any integral existent, such as body or its predicates (*maqūlāt*--and examples are given from the list of 10 categories, *Maṭālib*, vol. 5, p. 45). Nor is time motion or any of motion’s attributes. This is less obvious, since motion is itself presumably a non-integral existent. But we have already seen good grounds for saying that time is prior to motion, and Faḥr al-Dīn repeats them here: motion involves succession, which presupposes time as a ‘vessel’. Finally, as already mentioned, Faḥr al-Dīn asserts that regress arguments will be ineffective against this proof. For the time we are envisioning here is nothing other than the container for motions, which can be divided into years and so on. This time is not ‘like this and like that’ (*laysa ka-dā wa-lā ka-dā*) (*Maṭālib*, vol. 5, p. 46). By this, I suppose that he means that times do not on this view need to be recognized as ‘before’ or ‘after’ one another, for instance. So minimal is the understanding of time here that times have no further temporal properties that would give rise to a second-order kind of time.

Faḥr al-Dīn goes through this whole exposition without naming a source, but the ideas seem to go back at least as far as Abū l-Barakāt al-Baḡdādī. At the beginning of his treatment of time in *Muṭabar*, Abū l-Barakāt writes about the intuitive view of time shared by most people:

43 Notice that the distinction is the same as that between actual and potential infinities; we could say that the infinite is possible only if it is ‘non-integral’, that is, potential.

Kitāb al-Muʿtabar, vol. 2, pp. 69–70: They [sc. people in general] divide time into past, present and future, and into parts which they call days, hours, years, and months. They define these divisions by means of motions, like days through the risings and settings of the sun, and months through the cycles of the moon, and years through the cycles of the sun, or through some other temporal features, for instance periods of heat or cold.

The technical term *qārr* is also found in Abū l-Barakāt, who likewise denies that time is ‘integral’ (*qārr*) (*Muʿtabar*, vol. 3, p. 40, line 1).⁴⁴ Faḥr al-Dīn has, however, made several alterations to the view to present it here in the third *faṣl*. For one thing, he drops the idea of tying divisions of time to (heavenly) motions, albeit that one could see this as implicit in the reference to years, months and days. For another, he is more explicit that time is something with an independent existence being divided by us, and he finally adds that the method is proof against regress arguments. In short, Faḥr al-Dīn is presenting this as a robust theory that can withstand criticism, whereas Abū l-Barakāt’s presentation is more that of an intuitive, popular conception of time.

Since Faḥr al-Dīn does not attempt any criticisms of this third proof, we will have to do it for him. One worry might be that this proof looks remarkably like considerations that were offered in support of time’s epistemic immediacy (especially §2.1.6). Faḥr al-Dīn even speaks repeatedly of our ‘necessary’ knowledge in presenting the proof, for instance remarking that the division of time into years and so on ‘is immediate and patently evident’ (*Maṭālib*, vol. 5, p. 44). Why then does this count as a proof of time’s existence rather than another consideration in favor of its epistemic immediacy, that is, of time’s needing no proof? The answer, I think, is that although it is immediately obvious that we distinguish time spans like years, months and days, it requires an inference to realize that there is something existent which is being so divided. A further worry, though, might be that years, months and days seem evidently to be mentally imposed and arbitrary divisions. How, then, could the need for a subject of

44 Cf. his discussion of the question at vol. 2, pp. 76–7; here *qārr* is paired with the term *ṭābit*, and a duration that has this ‘integral’ nature is said to be *dahr* (and to apply to God) rather than *zamān* (which applies to created things). For Abū l-Barakāt’s understanding of the term see also vol. 3, p. 19, where accidents are divided into mental and existential, the latter being divided into those that are *qārr* and those that are not. This is then used to classify the ten categories into three groups. Action and being-acted-on are said to be not *qārr*. Accidents that count as *qārr* are those that ‘exist for a period of time according to the same, or approximately the same, defining limits (*ḥudūd*).’ Thus Abū l-Barakāt explains *al-qārr* more in terms of persistence over time (as is also suggested by *ṭābit*), but the notion seems to be the same as that in Faḥr al-Dīn, given that it is contrasted to such things as actions, which are not fully actual as they are occurring. See also above, n. 4, for his use of the term when setting out various views about time, and also *Maṭālib*, vol. 5, p. 90, for further use of this language in the context of Avicenna’s definition of the words *dahr* and *sarmad*.

division lead us to assert the objective, and not just mental, existence of time? Again, a spatial analogy might be useful: we can mentally impose divisions on a spatial magnitude, and these divisions are arbitrary. But for this to be possible, there must be an objectively real magnitude to be divided, that is, a body.⁴⁵

The Stipulative *kalām* View

Finally, Faḥr al-Dīn comes to his favorite demonstration of time's objective existence:

§3.4, *Maḥālib*, vol. 5, p. 47: A man might say to someone else, 'I will come to you when the sun rises', or 'I will come to you when spring is here.' In fact what this means is that the coming of the man is unknown, but the rising of the sun is known. Thus, this unknown thing is being connected to this known thing, so that the unknown thing may become known thanks to that connection. With this in mind, right-thinking people (*ahl al-tahqīq*) said, 'reckoning time is equivalent to connecting an imagined (*mawhūm*) event to a known event, so as to remove doubt'⁴⁶.

This is not an idea that Faḥr al-Dīn invented himself. It goes back to pre-Avicennan *kalām*, as is reported by al-Aṣ'arī:⁴⁷

Some say that the moment (*al-waqt*) is that which one stipulates (*tuwaqqitu*) for something, so that when you say, 'I will come to you when Zayd arrives,' you have made Zayd's arrival the moment for your showing up. They claim that moments are the motions of the celestial sphere, because God, the great and mighty, stipulated them for things. This is the statement of al-Ġubbā'ī.

Avicenna then took up this theory in his discussion of time in the *Physics* of the *Healing*, at II.10.1, describing it as the view that 'time is the collection of moments, the moment (*al-waqt*) being some event that happens, which is posited to exist along with another event, so that it is a moment for the other'.

Notice though that al-Ġubbā'ī seems to have set out his 'stipulative' understanding of moments only as the first half of a two-component theory of time. The second half adds that God stipulates the moments at which heavenly motion

45 Cf. Avicenna, *Healing: Physics*, III.3.1: 'Before the division, every body lacks parts entirely, and it is the existence of division that makes the part, whether that division is by severing the continuity ... or by the act of the estimative faculty and positing'.

46 The view is also mentioned at *Mabāḥiṭ*, vol. 1, p. 761, which similarly emphasizes that the unknown or obscure is being made known through the act of stipulation.

47 Al-Aṣ'arī, *Maqālāt al-islāmiyyīn*, p. 443. Cited also as background for Avicenna in McGinnis, *The Topology of Time*, p. 9.

will occur. I take this to be a way of securing the traditional association of time with celestial motion, as opposed to motion in general (see my discussion of this above in section 2). It may seem that Avicenna's version simply eliminates this aspect of the original *kalām* theory, but if we turn ahead to the critique of the theory at *Healing: Physics* II.10.6, we notice that the example has changed. Now, we agree that I will meet you *when the sun rises*. This would build both parts of al-Ġubbā'ī's theory into a single move: God has already stipulated moments by associating them with heavenly motions, and we can avail ourselves of those moments to coordinate events such as our meeting.

Now on the one hand, similar examples involving celestial phenomena are used by Faḥr al-Dīn (§3.4): 'I will arrive when the sun rises' or 'when spring is here'. But when he considers the relation between stipulated moments and heavenly motions, we lose the sense that celestial motion is primary in understanding time. He insists that the moment is a 'vessel' (again, the word is *zarf*) not only for my arrival but also the sunrise. The moment does not depend on the heavens in order to exist objectively. For instance, Faḥr al-Dīn suggests, it is conceivable that God could make the heavens grind to a halt and then perform some further action while they were at rest. The implication is that, were He to do so, He would be acting at some moment, despite the absence of heavenly motion (cf. the arguments of Abū Bakr al-Rāzī discussed in *faṣl* 2). So the moment is not to be identified with either the heavenly motion or any attribute thereof (*Maṭālib*, vol. 5, pp. 47–8). What survives of al-Ġubbā'ī's theory is only the basic notion that time is made up of stipulated moments. Even the idea that God has primacy in stipulating such moments seems to have vanished; it is already eliminated from the theory by Avicenna's summary in the *Healing*, and Faḥr al-Dīn makes no move to restore it.

Avicenna does not just summarize the stipulative view in the *Healing*, he also refutes it. At first, what he says seems at least compatible with the theory of al-Ġubbā'ī: 'simultaneity indicates something different from the two [simultaneous] motions' (*Healing: Physics* II.10.9). This something would be precisely that which al-Ġubbā'ī designates as a 'moment'--it is stipulated to serve as a link, by means of which two events are coordinated. But Avicenna now says that this very observation leads us to see a problem (II.10.10). He describes the *kalām* view by saying that it 'makes moments events (*a'rād*) that give moments to other events'. But obviously, the moment will not be able to bestow temporal properties like simultaneity just by being an event. *Qua* event, it too has to be 'given a moment', just as much as the sunrise stands in need of something to coordinate it with other events temporally. We could think of this as a regress argument: if a moment needs to be stipulated in order to coordinate my arrival and the sunrise, then something further will be needed to coordinate that stipulated moment with my arrival, or with the sunrise.

Rather surprisingly, given his own fondness for regress arguments, Faḥr al-Dīn does not explicitly raise Avicenna's objection, let alone respond to it. Instead he proposes two other avenues of refutation, and dismisses both of them in fairly short order. The first objection (§3.4.1.1) is that we could simply assert a direct connection between the two events, e.g. my arrival and the sunrise, rather than postulating a third thing that would help to connect them. To this Faḥr al-Dīn retorts that the connection in question is nothing more nor less than 'occurring at one and the same *moment* and *time*' (§3.4.2.1, *Maṭālib*, vol. 5, p. 49). The reason this seems rather unsatisfying is well articulated in the second objection (§3.4.1.2), which is that Faḥr al-Dīn is basing himself on conventional use of language. His answer is very interesting:

§3.4.2.2, *Maṭālib*, vol. 5, p. 49: Debates are meaningless unless one puts together necessary pieces of knowledge (*tarkīb 'ulūm ḍarūriyya*), for the sake of reaching sought conclusions that are not known innately. This will never be achieved unless one acknowledges the soundness of immediate judgments. In this case, when we consider it, we know that all intact intellects endorse the soundness of stipulating a moment (*tawqīt*) in this way. Then, when we consider it, we know that these immediate premises imply asserting the existence of time.

Notice how his answer implies an explanation of why the stipulative view belongs here in the third *faṣl*, and not in the second where we considered the view that time's existence is acknowledged immediately. Faḥr al-Dīn tells us that immediate knowledge is relevant, but an inferential step is needed to get from there to time's existence: time is needed in order to explain how we are able to stipulate moments.⁴⁸ That we do indeed stipulate moments, though, is something we know necessarily and immediately.

In light of this, Faḥr al-Dīn may have felt no need to rebut Avicenna's critique in the *Healing*. Bear in mind, he is not trying to demonstrate the nature or quiddity of time, only to prove that there is such a thing as time. Avicenna said in his refutation of the stipulative view that the moment's occurrence is not the 'true nature (*ḥaqīqa*) of earlier, later, or simultaneous' (*Healing: Physics* II.10.10). Perhaps not, Faḥr al-Dīn might reply, but the moment's occurring does show that time exists. It is however also worth recalling his remark at the end of the third, unrefuted proof of time as that which is divided into years, months and so on. What he said there was (*Maṭālib*, vol. 5, p. 46) that the vessel

48 It seems likely that Faḥr al-Dīn is taking al-Ġubbā'ī's idea in a rather different spirit than originally intended. One can understand this earlier proposal to be not an attempted proof of time's existence, but rather an epistemic point: God mercifully provides us with celestial motions to help us coordinate other events. Al-Ġubbā'ī was not necessarily arguing for the existence of time as a thing distinct from both the rising of the sun and some other event, which seems to be the point Faḥr al-Dīn wants to take from the example.

(*ẓarf*) for motions stands in need of no further vessel. He may be thinking the same thing here: the moment (*al-waqt*) which is a vessel for events like the sunrise would not itself have temporal properties that need to be explained with reference to a further vessel. In other words, Avicenna would be wrong in supposing that a moment considered in itself is just another kind of event that needs to be coordinated with other events in terms of beforeness, simultaneity, and afterness. That we are invited to see the fourth proof as at least compatible with the third proof is indicated by the fact that the fourth proof speaks of time as 'something flowing', (*Maṭālib*, vol. 5, p. 48) which seems to mean the same as the denial that it is 'integral' in the third proof. Still, it seems to be this fourth and final proof that Faḥr al-Dīn finds most persuasive. He concludes the *faṣl* by saying, 'this discussion (*kalām*) is among the most evident of proofs, and strongest demonstrations for affirming what was sought' (*Maṭālib*, vol. 5, p. 49).

4 Conclusion

The sophistication of Faḥr al-Dīn's treatment of time's existence does not lie only in its abundance of detailed and sometimes technical argumentation. It is also remarkable for its methodological rigor and consistency. He adheres to several basic distinctions throughout. First, that between mental and objective existence. As we have seen, he is careful to say whether a proof (or in the second *faṣl*, a consideration that is not intended as proof) can establish objective existence. Underlying this scruple is a tacit metaphysical principle of parsimony, which is especially evident in the first, skeptical *faṣl*: the default assumption should be that time has only mental existence. If we are to believe in its objective existence, we will need to be offered a good reason to do so. This is Faḥr al-Dīn's version, we might say, of Ockham's Razor, albeit set forth several generations earlier and in terms of the Avicennan contrast between mental and objective existence. In addition, when it comes to the objectively existent Faḥr al-Dīn is scrupulous in observing the difference between asserting epistemic immediacy and actually offering proof. The two proofs he prefers at the end in fact come fairly close to accepting the epistemic immediacy of time. In both proofs, we are told that only one inferential step is needed to get us from something immediate and necessarily known (making divisions like years,⁴⁹ and stipulating a moment to coordinate two events) to the existence of time.

A further fundamental distinction goes back to Aristotle's discussion of time: asking whether time exists, as opposed to saying what it is. In the section

49 Cf. Faḥr al-Dīn al-Rāzī, *al-Risāla al-kamāliyya*, p. 68: 'most of the philosophers have affirmed time, saying that we know by necessity of the intellect that today exists, yesterday is past, and the future is yet to come. The difference between today, yesterday and the present is known by the necessity of the intellect, and whatever is like this cannot be doubted'.

we have examined, Faḥr al-Dīn is remarkably, perhaps unprecedentedly careful to adhere to the first of these two projects. This is something we might explain not only with reference to his *kalām* method, but also the Avicennan background. It would be natural to proceed this way if one habitually worked with a distinction between existence and essence. Of course, Faḥr al-Dīn does have something to say about time's essence too. The next section of the *Maṭālib* is devoted to it. In that section he mentions the idea that 'time' in the broader sense is in fact three things, one of which is 'time' in a narrow sense:

Maṭālib, vol. 5, p. 63: The relation of the changing (*al-mutaḡayyir*) to the changing is time (*zamān*), the relation of the changing to the unchanging (*al-tābit*) is everlastingness (*dahr*), and the relation of the unchanging to the unchanging is eternity (*sarmad*).⁵⁰

This is stated to be Avicenna's view in 'many of his books' (*Maṭālib*, vol. 5, p. 79)--here one might think for instance of *Healing: Physics* II.13.7 where Avicenna indeed explains the difference between *zamān*, *dahr*, and *sarmad*.⁵¹ Faḥr al-Dīn also declares his own preference for the teaching of Plato, according to whom 'time is a self-subsisting substance' (*Maṭālib*, vol. 5, p. 77). In the *Šarḥ 'Uyūn al-ḥikma* he makes the same threefold distinction and associates it with the (supposed) view of Plato that time 'exists in itself and is self-subsisting'.⁵² These claims, it seems to me, fit very well with what we have seen in his discussion of whether time exists. He thinks that we grasp time (in the narrow sense) by relating events in the changing world one to another, but resists proofs of the existence of time (in the broader sense that includes eternity) that imply its dependence on motion. But a full discussion of his view on the essence of time is something for another time.⁵³

50 Cf. id., *Maṭālib*, vol. 5, pp. 79–80. For this division of time into these kinds, cf. Abū l-Barakāt, *Mu'tabar*, vol. 3, p. 41, where he reports that certain people who want to say that God is not in time distinguish between *zamān* on the one hand, and *dahr* and *sarmad* on the other. He himself however thinks that there is a single notion of time or duration that can be applied to the changing and unchanging. The distinction between the eternity (*dahr*, *sarmad*) of the unchanging and the time (*zamān*) of the changing was already mentioned at *Mu'tabar*, vol. 2, p. 80, which is close in wording to the quotation here from *Maṭālib*, vol. 5, p. 63.

51 Cf. Avicenna, *al-Naḡāt*, vol.1, 147 for the difference between *zamān* and *dahr*. This idea will be further elaborated in the Safavid period by Mīr Dāmād; see Rizvi, *Between Time and Eternity*.

52 Faḥr al-Dīn al-Rāzī, *Šarḥ 'Uyūn al-ḥikma*, part 2, pp. 127 and 147.

53 This is offered in a forthcoming paper jointly authored by myself and Andreas Lammer, and entitled Faḥr al-Dīn al-Rāzī's Platonist Account of the Essence of Time. I am grateful to the editors of this volume for their careful reading of the piece and numerous helpful suggestions. I would also like to acknowledge the support of the Leverhulme Trust for the research that yielded the present paper, and members of an Arabic reading group at Munich devoted

Appendix

Outline of the Arguments Concerning Time's Existence in *al-Maṭālib al-ʿāliya*

Faṣl 1: Arguments of those who deny time (*Maṭālib*, vol. 5, pp. 9–20): twelve proofs.

Introductory remark: time is not required either for successive or enduring entities; we need only the basic distinction between the eternal and the originated-and-successive.

- 1.1: Time itself can be neither persistent nor elapsing.
- 1.2: Time's existence cannot emerge from the existence of its parts, since this will lead either to atomism or non-existing parts.
- 1.3: Time can be neither generated nor eternal.
- 1.4: Regress: temporal priority can be explained only via second-order time.
- 1.5: God is prior to events, but this priority cannot be temporal. If this is possible in His case then in general priority does not require time.
- 1.6: If there were time then God's eternity would depend on time's existing, so He would not be the Necessary Existent.
- 1.7: If time existed it would exist necessarily, but only God exists necessarily.
- 1.8: An originated thing's being after non-existence would be necessary.
- 1.9: Time would be either continuous or discontinuous quantity; neither is possible.
- 1.10: Time would be either concomitant to motion or not; neither is possible.
- 1.11: Time would be either the measure of motion or not; neither is possible.
- 1.12: The non-existent can be temporally prior, so temporal priority is a feature of the non-existent. But features of the non-existent do not exist.

Faṣl 2: Arguments of those who claim that time needs no proof (*Maṭālib*, vol. 5, pp. 21–32)

2.1 Time is self-evident: ten proofs.

to the relevant sections of the *Maṭālib*. Finally I would like to thank Lukas Muehlealer, who helped me track down passages in Abū l-Barakāt referred to in the notes to this paper.

- 2.1.1: Thought experiment about the motionless man in the dark house.
 - 2.1.2: Everything is either eternal or created, and either way time is presupposed.
 - 2.1.3: One immediately understands time through notions like ‘before’ or ‘simultaneous’.
 - 2.1.4: One immediately understands time by understanding motion.
 - 2.1.5: The created and eternal are defined in terms of having or lacking a ‘beginning’ so time is presupposed by these notions.
 - 2.1.6: The divisions of time (year, month, day, hour) presuppose time.
 - 2.1.7: We innately compare stretches of time in terms of length.
 - 2.1.8: The notion of consecutivity, past, future, present presuppose time.
 - 2.1.9: It is necessary to understand that two motions can start or end simultaneously which presupposes time.
 - 2.1.10: It is necessary to understand that two motions can vary in speed, which presupposes time.
- 2.2 Time is not asserted on the basis of any motion (e.g. of the sphere): eleven proofs.
- 2.2.1: Return to the house example: man is aware of time passing without reference to heavenly motion. Second thought experiment of the deaf and blind man.
 - 2.2.2: Motion has no intrinsic priority; time is thus presupposed by direction.
 - 2.2.3: It is obvious that time has always existed, doubtful whether heavenly motion has. Therefore they are not identical.
 - 2.2.4: There are multiple heavenly motions but not multiple times.
 - 2.2.5: Motion can be fast or slow, whereas time cannot.
 - 2.2.6: Many-world hypothesis: a plurality of heavens would not imply a plurality of time.
 - 2.2.7: Motion happens *at* a time and nothing can happen ‘at itself’.
 - 2.2.8: Time would pass in the absence of a universe.
 - 2.2.9: Our grasp of motion presupposes an antecedent grasp of time.
 - 2.2.10: It would be possible for the universe to exist *before* it does, but this presupposes that there is (or at least could be) time before any motion.
 - 2.2.11: The beginning of a motion does not presuppose prior motion, whereas the beginning of duration does imply previous duration. So they are not the same.

Concluding remark: If time is not motion, neither is it any of motion’s attributes. The measures of time do not bring time into existence but only divide it.

Faṣl 3: Time's existence can be proved: four kinds of proof.

3.1: Avicenna's proof: time is proven to exist as a function of speed and distance (*Maṭālib*, vol. 5, pp. 33–6). Three cases considered: (a) Two motions which coincide in distance and speed. (b) Two motions equal in speed, one of which starts after the other. (c) Two motions that begin together but at different speeds. Case (a) establishes that there is time, case (b) establishes that time is not the same as motion, speed, or the size of what moves, and case (c) establishes that it is not the same as the distance covered. Conclusion of the proof: The possibility of moving a certain distance at a certain speed is quantitative--this is a *mawḡūd miqdārī*.

Three objections (*Maṭālib*, vol. 5, pp. 36–8):

- 3.1.1: The three cases (a) (b) and (c) already presuppose time, so this is either all circular or presupposes that time is self-evident (as held by the proponents of *faṣl* 2).
- 3.1.2: The time that can be extended and is thus quantitative has no external existence, but only mental existence.
- 3.1.3: Containment problems:
 - 3.1.3.1: Each time can contain another time: regress.
 - 3.1.3.2: Problem of overlapping future temporal durations.
 - 3.1.3.3: The same argument could show that the possibility to contain bodies in a cup would be existent in its own right, which is absurd.

3.2: Second Proof. One thing's being before another (e.g. father and son) is not just reducible to the existence and non-existence of the two things; something else is needed, namely time (*Maṭālib*, vol. 5, pp. 38–43).

- 3.2.1: Six arguments in favor of this distinction:
 - 3.2.1.1: We can conceive of father and son without being aware of temporal relation.
 - 3.2.1.2: Beforeness is a relation and relations are distinct from the relata.
 - 3.2.1.3: What happens before possibly happens after what comes later, but the before as such does not possibly occur after the after as such.
 - 3.2.1.4: Things of different quiddities share beforeness (e.g. men, horses and donkeys are all 'before' their offspring), so beforeness is not the same as the quiddity of that which is before.

- 3.2.1.5: The father and son are non-relational items so they cannot be identified with relational items like beforeness and afterness.
- 3.2.1.6: God can also be before and after, but obviously time cannot be identified with Him or His essence.

Concluding remarks: Beforeness and afterness must be existing things, and exist in reality, not just in the mind. However they are not self-subsistent, but relational and accidental to something that does exist in its own right. This is not motion, but time, which is ‘something flowing and elapsing in itself.’

3.2.2 Two objections to the proof

- 3.2.2.1: Beforeness and afterness do not in fact exist, for four reasons:
 - 3.2.2.1.1: Non-existence can precede existence, so beforeness is a property of the non-existent. Therefore it doesn’t exist (cf. 1.12).
 - 3.2.2.1.2: Beforeness is itself before other things: regress.
 - 3.2.2.1.3: If beforeness and afterness exist they are simultaneous, so their relata must co-exist; but if A is before B, A and B don’t co-exist.
 - 3.2.2.1.4: The simultaneity of beforeness and afterness is a further temporal property: regress.
- 3.2.2.2: Parts of time are themselves before and after others, just like father and son: regress.

3.3: Third Proof. There is something that is divided into years, months, etc. This must exist since the non-existent cannot be divided at all, never mind into sections of different extent. This will be not an ‘integral’ (*qārr*) existent, i.e. something whose parts exist simultaneously, but something none of whose parts are co-present--this distinguishes it from body and most of its predicates. This thing is not motion or one of its attributes (for reasons already given) but a *zarf* for motions. No regress argument can be brought against this proof, since time needs no further *zarf* (*Maṭālib*, vol. 5, pp. 43–6; this proof is not critically discussed).

3.4: Fourth Proof. When e.g. I say ‘I will come to you when the sun rises’ time is needed as a third thing to link my arrival with the rising of the sun: ‘reckoning time is equivalent to connecting an imagined event to a known event’. This third thing is not enduring, since it is not yet present when we

make the future arrangement. Rather it is 'something flowing' and not to be identified as heavenly motion or one of its attributes (*Maṭālib*, vol. 5, pp. 46–9).

3.4.1: Two objections:

3.4.1.1: No third thing is needed, rather the two items (my arrival and sunrise) are directly connected.

3.4.1.2: This is based on conventional intuitions.

3.4.2: Replies to the objections

3.4.2.1: The things in themselves do not constitute the connection; rather the connection 'has no meaning apart from the two things occurring at the same time'.

3.4.2.2: The debate can only proceed on the basis of such intuitions.

Concluding remark: 'This discussion (*kalām*) is among the most evident of proofs, and strongest demonstrations for affirming what was sought.'

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