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Is There Science in the Bible? An Assessment of Biblical Concordism

During the Middle Ages—the golden age of Jewish philosophy—"rationalist" philosophers like Saadya Gaon, Rambam and Ralbag sought to demonstrate a harmony between Torah on the one hand and the science and metaphysics of their day on the other. Reflecting this quest for harmony was their approach to biblical interpretation. In what follows I will examine this approach and assess its impact—or lack of same—upon one of the most highly contentious issues on the religious landscape today: how religious thinkers should respond to the ostensible conflict between Genesis and contemporary science. As part of the discussion, I will point to a curious, perplexing phenomenon with regard to how Modern Orthodox Jews react to medieval-style hermeneutics when it is advocated and carried out in our time.

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The most salient feature of the rationalist approach to exegesis is its embrace of a position called "concordism," which affirms the concord or harmony of which I just spoke. In saying this, I do not mean only that these philosophers believed that the Bible may be *reconciled* with accurate science and accurate metaphysics, a thesis that may be called "modest" concordism. Rather, they also thought that the Bible teaches science and metaphysics in a positive fashion, a view that may be called "bold" concordism.[1] To take an example: in rationalist readings, the opening of Genesis 1 includes reference to the four elements of Greek cosmology, and the creation story as a whole expresses what was then perceived to be the scientifically accurate view.[2] Likewise, the angels in Jacob's dream are the intellects posited in medieval cosmology; Ezekiel's vision is an apprehension of the structure of the celestial world, prime

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matter, the four elements of the lower world, and the "separate intellects";[3] and *Shir ha-Shirim*, for Gersonides, is a dialogue between the passive and active intellects, which (without here entering into specifics) are crucial parts of medieval psychology and metaphysics. In some of the medieval cases, words, phrases, verses and whole narratives were understood figuratively in order to arrive at the scientific or metaphysical interpretation; in others, they were understood literally, but in a non-obvious literal sense.

The Active Intellect is no longer with us, but in Orthodox circles today there are continuers of this bold form of concordism.[4] Thus, the Israeli physicist Nathan Aviezer, in his often ingenious book, *In the Beginning*, proposes that the six "days" of creation correspond to six epochs in the evolutionary story; that the created light is the primeval fireball; that the separation of light from dark is the decoupling of electromagnetic radiation from the dark fireball-plasma mixture; that the "waters above the firmament" refer to the ice in outer regions of the solar system; that the gathering of waters into one place is the receding of oceans described by science; that *ha-tanninim ha-gedolim* (said by other concordists to be dinosaurs) are the Ediacaran fauna, which, as Rashi says about the *tanninim*, became extinct; that the two stages in the development of animals (days five and six) correspond to two stages of their development according to evolutionary theory.[5] For bold concordists, once we know the science—better put: only when we know the science—can we interpret Genesis properly at its deepest level, uncovering its Author's "original intent." At least as regards the creation narrative, then, Aviezer, along with another physicist, Gerald Schroeder, are today's emulators and standard bearers of medieval rationalism's approach to biblical interpretation.

It is worthwhile, I think, to briefly compare and contrast bold concordism with the approach to Genesis that is best known to the public, namely, biblical literalism. According to this latter view, the creation narrative must be interpreted in its obvious, straightforward literal sense, and the resulting interpretation yields, at least in critical respects, an accurate description of the world and its origins.[6] Contrary to science, the world is less than six thousand years old, and evolution never happened. Science, so claim literalists, is mostly or totally irrelevant to the interpretation of the chapters; and it yields false answers to critical questions about the origin, history, age, and structure of the world.

Certainly, bold concordism lies at a very different point on the spectrum of biblical interpretation than does literalism.[7] Even so, literalism

and bold concordism concur on certain points. Most important, both sides agree that the Genesis account is intended to be, and is, an accurate description of the sequence of creation. It is not, for example, poetry or allegory; and it is not presenting something other than a sequence. For instance—this is a suggestion to which we will return later—the Bible is not presenting a conceptual hierarchy of created things, as opposed to a chronology. Furthermore—again suggesting a significant measure of agreement—although only one of the camps is *called* "literalism," both sides agree, as perhaps was suggested by what I have written already, that the creation narrative should be interpreted literally.

This last statement cries out for clarification. After all, bold concordists invoke sophisticated scientific notions like fireball-plasma mixture to explain Hebrew words that ordinarily are rendered as "light," "darkness," "water above the firmament," and "let the waters be gathered." The scientific meanings, to put it mildly, are far removed from the obvious, straightforward, ordinary literal meanings of the words. And yet, in point of fact, bold concordist interpreters do profess to capture the literal meaning of the verses—Aviezer is explicit on this point. To render this view more precise and palatable, what I suggest is that the bold concordist endeavor is an attempt to capture, by means of today's science, the verses' *non-obvious* literal meanings. In other words, literalists seek the obvious literal meanings; concordists seek the scientific meanings, which, though not obvious, are still literal.[8] We should add one more item to this catalogue of similiarities and differences: that, whereas literalism rejects contemporary evolutionary accounts, concordists think that science furnishes accurate answers to the big questions about how and when the world came to be.[9]

Bold concordism is sometimes greeted with a mixture of amusement and antipathy. Now it is eminently obvious why those who do not believe in the divinity of the Bible relate to concordism with negativity. (Hereafter, unless otherwise indicated, "concordism" will refer to bold concordism.) For these individuals, it is absolutely impossible for the allegedly human biblical author(s) to have known contemporary science. More interesting, however, is a sociological point about the Modern Orthodox community. My impression—a highly impressionistic impression, to be sure—is that some, perhaps many Jews who accept the text as the *devar Hashem* and also accept current scientific teaching react to bold concordist readings with skepticism and suspicion. Indeed, bold concordism, at times, meets with visceral rejection. Although some distinguished scientists (for some reason mostly physicists) push for concordist

readings, other intellectuals, for example those immersed in the humanities, are as a rule wary of, or put off by, such interpretations. They hear the words "primeval fireball" and turn away. Indeed, even independent of the details of particular bold concordist readings, and—this is very important—even without knowing the details or having read the relevant books to judge how well the text and the science match, these Modern Orthodox Jews oppose concordism *as a genre*.

This is surely surprising. One would think that given their twin commitments to the truth of contemporary science and the divinity of the text, these individuals would maintain that the omniscient God would know the correct science and would express it in chapters devoted to something as crucial as the origin of the world. At the least, there is no reason to say that He did not express it at the non-obvious level.[10] Furthermore, surely the skeptics and scoffers recognize that today's concordists are but emulating the convictions and projects of major *rishonim*. What we have here, then, is a deep, instinctive resistance to an approach taken by the very medieval thinkers whom Modern Orthodox Jews usually point to and invoke as their models and ideological forebears. Why this instant, reflex-like, dismissal of concordism on the part of some or many Modern Orthodox Jews?[11]

One answer, I think, is that Aviezer and Schroeder are associated with a method of *kiruv* which critics regard as potentially counterproductive. Concordists use the "discovery" that the Torah already includes truths that scientists discovered millennia later to instill awe, wonder, and belief in the Author's omniscience. But when *kiruv* is done this way, fluctuations in scientific beliefs could induce cynicism over time: when science changes, out go the proofs of the author's omniscience that were based on a correspondence between Genesis and the old science. If anything, the Author will look ignorant, *has ve-shalom,* when the science changes. Concordism comes off as a gimmick.[12] Some also may fear that concordism will sidetrack the proper study of Humash. Students may become entranced by concordism, they might argue, whereas in truth we should not devote substantial time to learning or teaching Humash through concordist methods. Moral and spiritual truths, as well as narratives about, for example, the revelation of God's law and the formation of our people, along with detailed examination of *mitsvot*, should dominate our personal and school curricula. Furthermore, the interpretations of *Hazal* and classical *mefarshim* obviously must take precedence over those of concordists.

But the consequences that concordism carries for *kiruv* and teaching methods are not our issue. Our issue is whether, antecedent to any detailed examination of specific concordist readings, and in isolation from their applications to specific contexts like curricula and *kiruv*, concordist readings must be rejected. The issue has to do not with *publicizing* concordism or *teaching* concordism, but with judging its admissibility as a genre of biblical hermeneutics.

In this essay I will consider arguments for and against recognizing concordism as an admissible genre of biblical interpretation. Based on some items in the literature and a few conversations with people, I believe that some or all of the "con" arguments we will canvass—arguments that concordism can be ruled out of court even before we scrutinize details of concordist interpretations—will play a role in the opposition I just described once it is demanded that visceral reactions be backed up by argument. I shall try to show that these arguments are not decisive, though one of them weakens concordism to some extent. At the same time, I claim that bold concordists can boast two cogent arguments for the admissibility of their exegetical approach, though neither argument *mandates* bold concordism. Despite the success of the bold concordist's attempt to establish that bold concordism is admissible in principle, the paper takes a final twist: contemporary concordist accounts can be impugned—not in principle, as the critics I described are wont to believe, but in practice.[13]

By this I mean that, with regard to demonstrating a genuine correspondence between science and the Bible on the level of specifics—matching up this or that *pasuk* to this or that scientific belief—I am prepared to say, and will back this up with specifics later, that concordism is a failure. But my question in the first instance is, to repeat, only whether concordism could be true *in principle*.

This is a complex essay. In particular, the presentation is highly dialectical; it displays a persistent, almost relentless, pattern of argument and counterargument, objection and reply, punch and counterpunch, on the part of real or else imagined and hypothetical concordists and anti-concordists. In essence the paper is a dialogue. Although the dialectic herein, as in much of philosophy,[14] is similar to the *shakla vetarya,* the give-and-take, the back-and-forth, of a halakhic discussion, even those steeped and proficient in the latter may prefer a linear argument in the case of philosophical discussions. To facilitate keeping track of the arguments back and forth, I have provided a "Concluding Summary" at the end of the essay.

A word more about bold concordism. Although bold concordists today think that the "scientific" reading of Genesis yields its literal, albeit non-obvious, meaning, even a view which states that the verses may or must be interpreted figuratively may very well turn out to be boldly concordist. After all, the "cash value" of the figurative language may be a description that matches contemporary science. I stress this point because many Orthodox scholars who believe in evolutionary cosmology and biology but oppose concordism, reconcile Genesis and science with the bare statement that the verses are meant figuratively. They do not tell us what the "figure of speech," the *pasuk* or narrative, refers to. If a proponent of "figurative interpretation" cannot supply that information, then for all that this "figurativist" knows, the cash value of the figures of speech is contemporary science. Hence he or she may unknowingly and *malgre lui* be a bold concordist. To cry "figurative interpretation" is not to get concordism off your back.

I. TWO ARGUMENTS FOR BOLD CONCORDISM

What reason is there to support bold concordism? Two considerations seem most important. I do not claim that bold concordists actually articulate these arguments, but only that the arguments could be deployed to justify the position.

First is an argument from precedent. As we noted at the outset, bold concordism held sway amongst *rishonim*. Indeed, they, and especially Rambam, devoted their energies to developing concordism, both modest and bold, as their main exegetical program. This datum automatically weakens any attempt to assert that the Bible is not "about" science. After all, attributing to Rambam and even less formidable figures a massive misunderstanding of the Bible's aims is a step that concordists could argue is fraught with religious difficulty. It is true that these *rishonim*'s *particular* readings of the biblical texts were Aristotelian, and strike nearly everyone today as forced and false. But the issue is whether it is a misunderstanding of the Bible's aims to seek *some* major scientific truths of one's time in it; and as regards this question, the *rishonim*, bold concordists will argue, serve as a precedent. Furthermore, even if it is claimed that, as is certainly the case, there are larger concerns and teachings in the Bible—God's hegemony, the specialness of human beings, the importance of morality and obedience to God's word—which demote the importance of finding concord between the Bible and sci-

ence, the notion that *one* of the Bible's aims in the creation chapters is to convey scientific truth is hard to dispel given the precedent. Anti-concordists have to contend with this, and *prima facie* their position requires a break, to some degree, with certain *rishonim*. Concomitantly, concordists can claim they are following a path blazed by, among others, Rambam.

This argument suffers from at least one key limitation. Anti-concordists (a reminder: the term "concordism" will denote bold concordism, and "anti-concordist" will denote opponents of *bold* concordists) can cite numerous latter day authorities, such as R. Samson Raphael Hirsch, R. David Zvi Hoffmann, R. Abraham Isaac ha-Kohen Kook and R. Isaac Halevi Herzog, who saw evolution as compatible with Torah and were prepared to give it some credence, yet who, unlike rationalist *rishonim*, denied that the verses teach the science of their times while also denying, or at least being open to denying, the account that results from the obvious literal reading.[15] Concordists must recognize, therefore, that others can hang their hats on other authorities, indeed authorities who dealt with evolution itself, as opposed to some Neoplatonized Aristotelian system. At best a concordist can claim, "*yesh al mi lismokh*, there is an authority to rely on." He can claim to have support for his position, but he cannot convert anyone to that position just on the basis of medieval precedents. The contrast between, on the one hand, rationalist *rishonim*, and, on the other hand, *aharonim* who accepted evolution (or at least were receptive to doing so if the evidence proves strong enough) could be a case of *elu ve-elu* or *shiv'im panim la-Torah*.[16] The upshot is that the appeal to precedent and authority makes bold concordism an admissible position, but not a mandatory one.[17] Still, a demonstration of admissibility should be enough to answer the scoffers.

Another challenge to the argument from precedent is that, as R. Natan Slifkin points out,[18] Rambam—according to several interpreters who profess to locate a hidden meaning in *Guide of the Perplexed* 2:30 (e.g., *Akedat Yitshak*, Abarbanel, Shem Tov)—and, in addition, Ralbag,[19] read Gen. 1 as putting forth a hierarchy of the world or description of its structure, not a story about the order of creation. Creation took place all at once,[20] not in successive days. This discredits the concordist's search, drawing on *rishonim*, for an account of sequential, linear evolutionary stages, since for Rambam and Ralbag (if Slifkin is reading Rambam correctly) Genesis 1 is not about stages of a creation. It furnishes a cosmology (a theory of the nature and

structure of the cosmos), not a sequential cosmogony (a theory of the world's origin).[21]

Rambam's exoteric, outward meaning, however, is that Gen. 1 *does* give a sequence. It gives the order in which things were *differentiated* after having been created all at once.[22] Moreover, even assuming the correctness of the esotericist, nonsequentialist reading of Rambam, the fact remains that, for him, as for Ralbag, Gen. 1 expresses *something* of a scientific nature, specifically the cosmology of their day(s), and so does a fair portion of the rest of Tanakh.[23] In concordists' minds, therefore, their own shift from a medieval hierarchical approach to a sequential one is of little consequence—the fact remains that it is proper to find science embedded in the text. And so Rambam and Ralbag, they will argue, serve as a precedent after all, even if read as nonsequentialist. To be sure, bold concordists would be in a better position were it utterly clear that Rambam endorsed a sequential interpretation. Without such clarity, their argument from precedent is weaker than appeared at first. But it still carries weight, again in the sense that the view is admissible.[24]

Admittedly, concordism seems strange. The notion that in the opening of Bereshit, Moshe was writing down some tome of contemporary cosmology or evolutionary biology will strike many as extremely odd, just as Ralbag's idea that *Shir ha-Shirim* is a dialogue between the active and passive intellects will strike many as extremely strange even if they accept the existence of these intellects. I personally share this reaction. But an adverse reaction does not an argument make. Apart from the fact that concordists claim only that a limited set of scientific truths is contained in the verses, so that Moshe was not writing a "tome,"concordists can respond to those who raise these seeming *reductio ad absurdum* arguments—myself included—by saying "yes indeed" to the supposedly absurd conclusions. One person's *reductio ad absurdum* is another's *in hakhi nami*. Equivalently, concordists may say, "that's not a *criticism* of my view, that *is* my view." They may add: "the *rishonim* are not to be laughed at, yet they thought the Torah expresses Neoplatonized Aristotelianism." Surely, concordists will reiterate, whatever your personal instincts as to whether concordism rings plausible, the *rishonim* could not have been guilty of so massive a misunderstanding of the Bible's nature that contemporary attempts to emulate these authorities must be ruled out of court.

A second argument in favor of bold concordism involves a certain exegetical principle to which it seems Orthodox Jews would or should

agree. One religious philosopher puts the principle as follows: "The text must never be interpreted so that it comes out false. . . . Modern science enables us to discern God's discourse with greater accuracy."[25] In a more nuanced formulation suggested by David Berger, the principle is that the Torah is, in the deepest sense, true, and therefore one's first assumption in dealing with a biblical account is that it is true in the straightforward sense that it contains accurate information. Since contemporary science and the obvious literal reading of Genesis 1 are in conflict, Genesis 1 must be reinterpreted according to a non-obvious literal meaning, and this interpretation will "enable us to discern God's discourse with greater accuracy." The concordist's exegetical principle has strong intuitive appeal and is a staple of medieval philosophical exegesis. Hence many would seek to affirm it and then apply it to *ma'aseh Bereshit*.[26]

If you are an anti-concordist who accepts scientific teaching, you have the burden of explaining why the Bible did not convey the science accurately. After all, the concordist's exegetical assumption about the Bible's accuracy boasts a great deal of initial plausibility, and you are claiming it is incorrect. You might retort that even if someone grants the concordist's exegetical principle, all that follows is that the verses have to express *some* truth; it does not follow that they have to express every truth around, and in particular that they have to express *scientific* truth. Maybe they express moral and religious truth alone—for example, God's being the Creator and man's being created in His image and being the telos of creation. The Bible has bigger fish to fry, it will be said, such as the individual's and community's relationship to the *Ribbono shel Olam* and how human beings should behave. But this anti-concordist appeal to moral and spiritual themes does not explain why scientific accuracy isn't somewhere in the kettle. After all, the aims of morality/spirituality and scientific description are not mutually exclusive. Once we are given a story about how the world arose, would it not be logical to expect that this story be true, whatever moral lessons it implies in addition? Why else would the Torah tell the story exactly this way?

I do not believe that the concordist's appeal to his exegetical principle is dispositive. Yes, anti-concordists (as the term is understood in this discussion, anti-concordists accept contemporary cosmology and evolution) have the burden of explaining why the Genesis account, in their view, is written in a way that by their lights is inaccurate. But such an explanation is at hand. An anti-concordist will propose some form of *dibbera Torah ki-leshon benei Adam*—"the Torah speaks in the language

of humans."[27] In one version of this idea, it needed to make the truth accessible to masses of uneducated people no less than to scientists, so it eschewed scientific jargon and detail.[28] The "science" of the Bible, this response goes, is inaccurate in its details, but it is rescued from criticism by saying that God never intended it to convey scientifically pristine truth. There are diverse forms of the *dibbera Torah* response, and we will examine them in due course. For now, the point is that anti-concordists think they can bear the burden of explaining why, as they assert, there is no full concord, and why the concordist exegetical principle poses no obstacle. Furthermore, if their explanation is powerful enough to show decisively that God absolutely *had to* make the biblical account inaccurate, that He had no logical choice but that, then anti-concordists will have won the day.

But of course, concordists might find good reasons to reject the anti-concordist's particular version of a *dibbera Torah* explanation, or, better, may argue that *dibbera Torah* is compatible with bold concordism. After all, was it not rationalist *rishonim* who gave the talmudic phrase currency, using it to explain that the Torah has an outer layer accessible to the masses and an inner one accessible only to elite scientists and philosophers? Whether the anti-concordist explanation of the scientific falsity of Genesis (by their lights) has the requisite power to defeat concordism will be explored later. For now, it is clear that concordists do not have a decisive argument for *mandating* concordism, but neither have their opponents shown that the concordist's invocation of *rishonim* is inadequate grounds for his approach or that the concordist's exegetical principle should not be applied to the case of Genesis. So far as we have assessed matters to date, concordists can marshal two considerations—precedent and, given that we are dealing with Orthodox believers, an intuitively plausible exegetical principle—that suggest at least the reasonableness and admissibility of their position. The burden of proof is on those who believe that concordism is not admissible as a genre of biblical interpretation.

II. FOUR ARGUMENTS AGAINST BOLD CONCORDISM

Having weighed the arguments for bold concordism, let us turn to the arguments against it.

The Shifting Sands Objection

Shmuel David Luzzatto (Shadal) opposed medieval rationalist readings

of the Bible, and indeed all concordist efforts, on the ground that the metaphysics or science will change and with it so will the interpretation.[29] In leveling this objection, he was echoing earlier, non-Jewish thinkers. Thus, John Locke wrote that one outcome of basing biblical interpretations on theories held by a society is that:

> The Scripture serves but, like a nose of wax, to be turned and bent, just as may fit the contrary orthodoxies of different societies. For it is these several systems, that to each party are the just standards of truth, and the meaning of the Scripture is to be measured only by them.[30]

Other critics make the same point via the image of the weathercock, blown about by every "wind of doctrine."

In a generation bred on historicism, relativism, and Thomas Kuhn (who dramatically illustrated the frequency and scope of changes in science),[31] this criticism—let us call it the shifting sands objection— has particular force. The history of biblical interpretation is indeed strewn with defunct readings based on then-contemporary and fashionable science and metaphysics. Consequently, the argument goes, the Bible should be read on its own terms, without a scientific overlay.[32]

Before we evaluate the argument at hand, we need to flesh it out somewhat. The crucial theme in the shifting sands (or "wax nose") objection is the fear of making the Bible say something we believe today but may disavow tomorrow. But exactly why is this outcome fear-inducing? Here are two possible reasons why shifts in interpretation are problematic.

1) To keep changing interpretations as the scientific winds blow ultimately proves embarrassing. For, if each generation finds its science in the Torah, only to give way to the next generation's finding *its* science in the Torah, the result is cynicism toward this whole enterprise of reading Scripture through scientific lenses. Anybody can play this game, it seems! True, scientists aren't embarrassed by scientific change; on the contrary, according to one prevalent line of thought, they celebrate falsifiability as a good quality in a scientific theory, a defining characteristic perhaps, and even work toward bringing falsification and change about.[33] But, this version of the shifting sands argument goes, it's embarrassing *to Torah* to have interpretations of it change as science changes.

Concordists will deny this is worrisome. After all, within bounds, interpretations of passages of the Torah do change—more on this later. So the mere fact that interpretations change as science changes is not especially problematic. Hence we should keep plugging to find the right scientific interpretation. Furthermore, as noted earlier, the fear of

being embarrassed is a *kelappei huts* consideration about *publicizing* concordist readings and does not impugn the appropriateness of a given interpretation that is based on what we believe *now*.

2) Because sands shift, we can have no *confidence* in any scientifically-driven reading of Genesis, so better not to put any forward. The proposed reading will prove false anyway when the science changes.

For the most part, the discussion that follows takes (2) as the more cogent construal of the anti-concordist's conclusion.

A second point that needs to be fleshed out is how the proponent of the shifting sands argument *does* interpret the Bible given the problem of shifting sands. Let me run through two possibilities (two others are explained in note 39).

One path, of course, is to be a literalist and believe that the world is less than six thousand years old and evolution never happened.[34] But there is a second, more complex possibility. Bold concordism affirms not only that the Torah states scientific truth, but also that we can and should interpret the verses so as to find the truth that it states. Anti-concordists might hold that, although the truth about the world's origins *is* in the verses, we do not know the true interpretation of the individual words and sentences and hence cannot *find* the truth in the verses. Due to the futility of seeking the "real" interpretation, an anti-concordist of this stripe would not approve of the project of trying to find precise interpretations of words and verses that match modern cosmogony and evolutionary theory, notwithstanding that the true scientific theory is lying right there in the text.[35] The unknowability of the true meaning dictates, says this anti-concordist, that the enterprise of constructing concordist readings is foolish, even though concord exists between the verses and the true and unknowable theory.

How, then, should we interpret the verses on this second view? An "obvious" literal reading cannot be correct, because *ex hypothesi* the true meaning of the verses involves a scientific theory. The only alternative left is not to interpret, period.

It is strange to say, however, that because science is fallible, therefore we must not interpret at all. Confronted by the dire consequence of shutting the gates of interpretation forever, why not (as David Berger suggested) formulate interpretations in terms of science with the explicit proviso that these interpretations are not set in stone but rather are revisable in light of new data?[36] Netsiv draws a parallel between "*sitrei ha-teva*" and biblical interpretation that reinforces this idea. Beliefs about nature are mutable, he notes, and hence the inquir-

er knows he may be wrong. And yet, "it is a *mitsva* to investigate as much as possible." Likewise, one who investigates Torah must do his best though he is fallible.[37] Furthermore, if one takes the admittedly debatable view that science grows by accretion—new theories add to previous theories rather than reject them wholesale, or, in other words, there is such a thing as scientific progress —then perhaps interpretations of Genesis can grow by accretion as well, with successive interpretations bringing us closer to what Shalom Carmy (while rejecting the idea that Genesis teaches science) suggested I call "the eschatological interpretation." For these reasons, I will assume the "shifting sands" objector is a literalist.[38]

With these two preliminaries aside—specifying why changing interpretations is a bad thing, and spelling out how verses should be interpreted if not by applying our scientific knowledge at a given time—we may turn to the crucial question: is the shifting sands argument persuasive? In what follows, I will present some challenges to the argument.[39]

(A) What about the *rishonim* who used the science of their time to interpret Scripture? They obviously did not shrink from reading science into Torah! Anti-concordists may reply that *rishonim* lacked the historical consciousness we have today and in particular did not appreciate that their own theories were likely to be displaced (as in fact they were). After the revolutions wrought by Copernicus, Galileo, Newton, Lavoisier, Darwin, Einstein, and quantum physicists, we know what the medievals did not, namely that we cannot have confidence in our science and indeed have inductive reason (a reason that extrapolates from past to future) to think today's science will be overturned. Hence, *for us today*, viewing science as ever changing is the only position that is cogent.[40]

I will take this response by the shifting sands objector as adequate, albeit with reservations.[41] The next three challenges, however, are more formidable.

(B) We have already encountered David Berger's objection that interpreters could simply announce that their readings are tentative and revisable. Again, comments of Netsiv support this objection.

(C) Consider the position of a scientist who raises the shifting sands objection. Coming *from him or her*, the objection strikes one as incongruous, that is, dissonant with what one assumes is the scientist's actual belief system. After all, scientists who have read historians of science do not translate their belief in the fallibility of science into practice,

but instead believe that their own scientific theories, in their time and place, are true.

Because shifting sands are not a problem for scientists qua scientists—scientists, when forming theories, *bracket* problems of fallibilism, relativism and historicism—dissonance is introduced when qua religious believers they take those objections seriously. In other words, the danger that historical consciousness poses to interpreting the text by contemporary opinion is not greater than the danger of holding those opinions in the first place. If you swear off interpreting according to science on the grounds that science is mutable, you should swear off believing scientific theories altogether. Granted, there are philosophers of science who counsel scientists to refrain from "believing" theories of their day but merely to "accept" them; that is, to regard them, for reasons that may be quite independent of their revisability, as instruments for prediction and control rather than true descriptions of reality.[42] But to say that working scientists engage only in "accepting" and not "believing" seems implausible. Even scientists who possess a historical consciousness *believe* the theories they promulgate, often quite firmly and, I am told, even dogmatically. Anyone who doubts this should attend a conference of scientists on some controversial issue and watch the sparks fly.

Consider some analogies. We find philosophers who in their theorizing are ethical relativists or ethical fallibilists but nonetheless hold strong convictions about discrimination, human trafficking, and the actions of Hitler and Stalin; and every person living after the philosopher David Hume (d. 1776), including every philosopher, still relies on induction (defined, roughly, as reasoning from past to future) despite Hume's having shown that all inductive inferences are fallacious. Skeptical philosophical arguments do not change people's doxastic practice, that is, their methods of forming and maintaining beliefs. Hume argued persuasively that beliefs in the reliability of induction and the existence of the physical world could not be dislodged from people's psyches no matter how meager the grounds for these beliefs were shown to be. To put the matter in terms of the shifting sands problem, philosophers regard all beliefs as fallible, and induction suggests that a sizeable number of a person's beliefs will change. Yet, while we cannot solve these puzzles, common sense dictates that this is no reason for people not to believe anything based on the best evidence or argument available at a particular time

To be sure, while the charge of incongruity or dissonance sticks in the case of many scientists who might use the shifting sands argument, it has

no effect on shifting sands objectors who really and truly, in their heart of hearts, do not believe scientific theories. But their practice as biblical interpreters might introduce dissonance in a different way. For example, if they translate Ps. 93:1, "*af tikkon tevel bal timmot,*" as implying not, as per Ibn Ezra, "the earth does not move," but rather "the earth does not falter," they ought to ask themselves just why they are sure "falter" is correct if not by virtue of believing Copernicus's heliocentrism. Here, they seem to be ignoring their own anxieties about shifting sands.[43] The same is true if they refuse to take the Bible's assertion that Joshua stopped the sun as asserting that Joshua stopped the sun's rotation around the earth. Some scientific conclusions are believed by anti-concordists even though science is highly mutable. Maybe evolutionary cosmology and evolutionary biology are worthy of belief too.

(D) We come now to what I think is the most fundamental problem with the shifting sands objection. If we worry about shifting sands, then even literalism and the notion that the Bible must be read on its own terms will come under attack. For what are "its own terms," and how do we discover them? Modern Orthodox Jews—the group whose reflex-like negative reaction to concordism I am trying to understand—draw on many disciplines in carrying out biblical exegesis. Presumably, defining "the Bible's own terms" would require use of, *inter alia*,[44] philology and linguistics, e.g. theories of syntax. But theories in philology and linguistics are time bound and liable to change. Consider, as one example, the shift in the Middle Ages from the view that Hebrew roots are two letters to the view that they are three letters, a shift which affected the interpretation of many words.[45] So according to a thoroughgoing shifting sands objection, not only could there be no philosophical or scientific reading of texts, there could be no reading based on a current theory of philology and linguistics. Conducting exegesis by situating a text, say a *sefer* in *nevi'im,* historically won't do either, since apart from the fact that we cannot interpret historical documents absent philology and linguistics, historical claims face all the same epistemological obstacles as claims in physics, biology and philology. Revision is always possible. Using modern literary theory would not be acceptable either, since those methods may be disputed in the future. Understanding a character's behavior in Tanakh by means of psychological assumptions we make today will be illicit for the same reason. As for the most important component of understanding Bible from an Orthodox perspective, namely, basing our readings on what prior commentators said (including *midrash*), views of how earlier

commentators thought shift too, as previously unappreciated sources of influence surface, we uncover new manuscripts, and readers come up with new explanations of *mefarshim*'s comments, causing us to interpret the commentator's meaning differently. To put the matter broadly, the history of *parshanut* reveals that different schools and methods have arisen and dominated at different times. The development of the *peshat* school is a case in point, as is the rise of the rationalist school that would dictate, for example, that Jacob never wrestled with the angel and that Balaam's ass spoke only in a dream.[46] Thus, styles of *parshanut* shift, and may shift in the future. Should we therefore stop interpreting altogether? Worrying about change paralyzes, freezes, and frustrates all attempts to read the Bible. If the shifting sands objection is right, we are left without any plausible way to carry out interpretation. What will be left, at best, is some quasi-mystical encounter with the text whose product is not propositional and conceptual at all.[47]

A reflex-like response by critics of concordism will be that the worries about linguistics, philology, etc. are overdramatized. There are aspects of philology, linguistics, and *parshanut* that are more or less constant, enduring, and in no danger of being overthrown. No one will ever deny the meanings of the words "*va-yedabber Moshe*," "*lo tin'af*," or "*Haman ha-ra ha-zeh*," no matter what revolutions occur in linguistics and philology. Scientific theories are sweeping, encompassing a huge range of phenomena. Revolutions in science change the way people view the world (this is a theme in Kuhn's writing). They lead to a total rereading of the Book of Nature. Revolutions in linguistics, philology and *parshanut* do not change to anywhere near the same extent how Tanakh is interpreted. For this reason, revolutions in science place Torah interpretation in greater jeopardy than do revolutions in other disciplines.

But isn't this contrast itself an exaggeration? Many scientific data remain constant, and many laws of nature are held constant, even as scientific theories change. Indeed, Kuhn and others notwithstanding, scientists identify fixed data that different theories will then seek to explain. Furthermore, as things look to us now, heliocentrism has been around long enough for us to take it as correct. On the other side, there are sometimes *major* changes in philology, linguistics and other disciplines. Despite its youth and despite skepticism mostly among non-biologists, it seems *for now* unlikely that evolution will disappear as a paradigm *for scientists*; and if it does, that will take cen-

turies. Attempts to find evolutionary theory in the text would be legitimate, therefore, until the theory changes, just as we would say when we defend the use of our best theories in philology and linguistics. We should merely label our interpretations, as David Berger (cited earlier) suggested, with an announcement that they may change as science changes.

Yet, anti-concordists might point out that, even if the current scientific paradigm endures, our understanding of the *details* of the cosmogonical and biological processes is likely to change. And indeed the details of evolutionary theory have changed significantly over time. This mutability will adversely affect the cogency of earlier interpretations *of individual verses* that were predicated on certain scientific views. After all, does not concordism profess to be explaining individual verses? A revolution in linguistics and philology, to repeat, certainly will not change the way people understand, say, "*va-yedabber Moshe*," "*lo tin'af*," or "*Haman ha-ra ha-zeh*," among a zillion other phrases. We have no inductive reason to think that such strings will ever be understood differently. By contrast, induction from the history of science suggests that modifications in *details* of cosmogony and evolutionary theory will occur and will lead to modifications of details in concordist interpretations of the verses. Once that is so, we are back with the problem: how can we interpret Torah using beliefs that are likely to be revised?

I believe that this point weakens the concordist rejoinder we are evaluating, but does not decisively dispose of it. Yes, there are many, many phrases and words in Tanakh whose meaning is beyond dispute and will probably never be changed, while the details of the concordist account of Genesis will, if induction from history holds true, have to change in ways we cannot imagine at the moment. Still, the fact is that understandings of numerous other phrases in Tanakh will change over time, yet *mefarshim* offer particular meanings. Much interpretation is time-conditioned even though many meanings are held constant across time. And so, argues the concordist, it is legitimate to interpret the details of Genesis by our best lights, even if our best lights will not be those of our descendants.

The essence of the concordist rejoinder to the shifting sands objection given in (D) is that even if post-Kuhnian trends—and Locke's wax nose anxiety—are taken seriously, we must interpret the Bible in light of what we believe today, because, if we do not, much interpretation will come to a halt. Much interpretation is time-condi-

tioned, but we must engage in interpretation anyway. The suggested response stimulates the quest for an explanation, in theological terms, of why biblical interpretation is a mandated pursuit despite its often time-conditioned quality: Why does God want us to interpret at all in accordance with our general beliefs, "our best lights," if beliefs are so transient? This is a good question. But we have seen enough to conclude that the shifting sands objection cannot show decisively that there is something especially wrong with concordism's use of changeable scientific theories. Utilizing science, concordists will say, is somewhat worse vis-à-vis shifting sands than utilizing other disciplines, but even in science the changes are not large enough to single out science as a target of the shifting sands objection or delegitimize time-conditioned interpretation. Furthermore, let us not forget that, even if the concordist loses the debate over the posited analogy between science and linguistics and philology, the problem of incongruity and dissonance remains as an alternative rejoinder. And so, critics who caution against reading science into the Bible, in particular if they are scientists, cannot rely on a simple appeal to historical changes in science; they must develop another objection. Perhaps I should reiterate that whether, given the mutability of science, it is wise to *publicize* concordist readings and use them for *kiruv* purposes, is a different issue from whether it is admissible and appropriate to read the Bible the concordist's way.

"We Are Not Privileged"

The shifting sands objection having been deflected, critics of bold concordism may parlay our contemporary consciousness of historical changes in scientific thought into a different objection. The anti-concordist argument could be not that we today may be wrong in our science, but that, although we are *right* in our science, it is not credible that God would have withheld the true meaning of a whole section of the Torah—Genesis 1 in particular[48]—until a particular stage of human intellectual development.[49] Hence, we may be right in our science—but *a priori* we must be wrong in any interpretation based on that science. This is so for two reasons: (a) God is democratic, that is, egalitarian, vis-á-vis the generations of interpreters: "It is unreasonable to believe that God gave an account of creation that mankind was completely incapable of understanding for thousands of years."[50] (b) The *present* generation in particular does not deserve to know the meaning of a text that was not accessible to our ancestors. *We* are not worthy. By denying con-

cordism we preserve either a basic parity among generations or a sense of our own inferiority.[51]

Is it really obvious to a *Modern Orthodox* believer in the text's divinity that increased knowledge in secular domains will bring no enhancement in our understanding of verses and sections? A Modern Orthodox person who rejects concordism almost certainly believes that there were many *hiddushim* of individual exegetes through the ages based on material that was largely unavailable to their predecessors, such as new understandings of linguistics and philology.[52] Again, there are sections that are illuminated by archaeology. In the case of biblical predictions, presumably a later generation could understand some of those predictions in a way that earlier ones could not.[53] Also, have not modern psychology and literature opened new windows on interpersonal conflicts, parent-child relationships, and the like, as they appear in Tanakh? Have not modern literary approaches, though utilized to some extent by the Midrash and, according to at least one scholar, Nahmanides as well, provided new terminology and systematic classifications of literary method that have led to innovative interpretive insights and novel readings of biblical narratives?[54] Clearly the argument that "we are not privileged" would invalidate many literary, philological, linguistic, philosophical, and historical interpretive methods, necessitate a verdict of false regarding new interpretations based on new knowledge, and make interpretive progress impossible. Every generation would have to say to itself, "we are not privileged," and on that basis assume that novel interpretations based on new ideas are false! Admittedly, some may insist that, *in hakhi nami*, interpretation has long been in decline. But if we cannot contribute improvements or truth, then it is still not clear why we today engage in it at all. We may be dwarfs standing on the shoulders of giants, to invoke a standard image used in the context of *nitkattenu ha-dorot*, but *sof kol sof*, the dwarf arrives at worthy new ideas.[55]

The explications of Humash by, let us say, R. Joseph B. Soloveitchik *zt"l*, are proof positive that there are new, attractive ideas that our generation has been "privileged" to hear. In the Rav's case in particular, modern philosophy, which by definition was not available in earlier centuries, plays a significant role in his approaches to particular segments of the Bible (witness *Lonely Man of Faith)*. And are not some interpretations advanced by anti-concordists themselves new?[56] Furthermore, even bracketing medieval philosophical interpretations, Kabbalistic views maintain that only an elite few in a given generation

have a correct understanding of the Bible. It is not clear why this doctrine should be considered acceptable, if, as the anti-concordist claims, the thesis that the true interpretation may be bequeathed only to a particular generation should be rejected on the grounds that the Torah is democratic.

Finally: putting biblical interpretation aside, the fact that God "revealed" true science only late in the day, and thereby gave us an account of nature that even anti-concordists concede provides greater insight into His wondrous ways—this fact suggests that he does "privilege" certain generations with respect to apprehending His greatness. Why should exegesis be different? [57]

"The Torah Is Not a Science Textbook"

We come now to the heart of the matter, the most fundamental anti-concordist objection: "The Torah is not a science textbook."

Assertions along these lines (as we shall see, there are two main variants) are found in a motley range of writers—Galileo, R. Joseph H. Hertz, R. David Tzvi Hoffmann, Nehama Leibowitz, Yeshayahu Leibowitz, Shadal, R. Natan Slifkin, and the prominent contemporary philosopher Peter van Inwagen.[58] Van Inwagen's essay "Genesis and Evolution" is one of the liveliest and most eloquent expositions of an anti-concordist approach. I focus on it here despite its non-Jewish provenance because its formulations are so pointed.

Van Inwagen flatly concedes to his atheist adversary—typologically identified with Carl Sagan—that the Bible, taken literally, has a largely inaccurate account of the world's origins. For instance, it has the age of the world incorrect. But, he points out, the Bible's original readers were agricultural workers in ancient Palestine. How could they have understood an opening line like, "Ten thousand million years ago. . . ."? An "abstract Genesis"—a version of *Bereshit* that got the science right—would be too hard for most people then and across time to understand. Since the Bible has very urgent religious and moral teachings to convey, it could not wait until people could grasp the true science. The scientist forgets that, because he is egocentric:

> I wonder how many of us believe, at some level, that God . . . regards scientifically educated people as being somehow the human norm and therefore regards Amazonian Indians or elementary-school dropouts as being less worthy of His attention than we. . . . Everyone is of equal value to God and the Bible is addressed to everyone. . . .[59]

And then come these delicious lines:

> What would have been the value of [an abstract Genesis]? Only this: that a few saganists [followers of Sagan] in our own time would have had to find some other excuse to reject the Word of God than its disagreement with the fossil record. I do not see why God, who values any six holders of endowed chairs neither more nor less than He values any six agricultural laborers in Ancient Palestine, should have thought the price worth paying.[60]

Cast in Jewish terms, van Inwagen's thesis is that *dibbera Torah ki-leshon benei adam*: the Torah speaks in the language of (the large majority of) human beings—and not in the language of scientists. More precisely, his thesis forcibly calls to mind R. Kook's understanding of *dibbera Torah ki-leshon benei adam*: the Torah speaks in the language *of a particular people living at a particular time*, whose beliefs God for good reason chose to leave at a simple level.[61] Similarly, R. David Tzvi Hoffmann asserts that *peshuto shel mikra* refers to how the Torah was understood by the first generation that heard it.[62] R. Kook makes an additional point beyond the one about the truth's comprehensibility. He states that had people long ago been informed of the vastness of the universe, they would not have appreciated the special value of the human being.[63] Similarly, had they been told that the earth revolves around the sun, they would have feared falling off.[64] So God's withholding correct science can be explained not only in terms of the people's not grasping opaque terms and theories, but also in terms of the harmful impact that the true story may have had on the psyche of the masses.[65] In sum, it would have been pedagogically ineffective and in other ways harmful for the Bible to present the creation story accurately. The critics of concordism jettison the concordist's interpretive rule: they interpret the text in a way that makes the biblical narrative dissonant with scientific theories we believe. The saving grace, however, is that the Authorial intent *was* to say something dissonant—for valid reasons.[66]

Van Inwagen's thesis as just expounded coheres best with the view that our ancestors to whom the Torah was revealed read Genesis as an accurate narrative, and not as a contrived, inaccurate story meant only to convey moral and religious lessons. The thesis further implies that, if not for the limited capacities of our ancestors, God would have wanted to disclose the details of the creation.[67] From this it follows that, were the Torah given in 2008, its descriptions might include words like "bil-

lions" and descriptions of the "real" story, albeit only if (possibly contrary to fact) a large percentage of people had the necessary concepts in their repertoire.

But, as I said earlier, there is another, contrasting construal of "the Torah is not a science textbook," one that is often conflated with the first. In this construal, even if the truths about creation could be rendered accessible, the Bible would not have taken the trouble to communicate them—because communication of scientific truths is not important to the Torah's aims, not important at all. In this argument, it is not only that the purpose of communicating could not have been fulfilled by God were He to give scientifically accurate accounts, but God had a different purpose in mind in giving the Torah, one that would be frustrated or sidetracked even by an easily comprehensible scientific account. On this view, the "ancients," who took Genesis as offering a description of events that actually occurred, were bad readers—they misunderstood the Bible's aims.[68]

In this latter anti-concordist approach, then, Genesis is not expected to convey any scientific truths at all, whether dense or not dense. ("Dense truth" denotes a truth that the masses of the ancient world, and for that matter the modern world, could not understand.) The approach is encapsulated in a remark attributed to Galileo: "The Bible teaches us how to go to heaven, not how the heavens go." On one reading, this is also the point of a clever discussion by the late British Chief Rabbi J. H. Hertz. Imagine, R. Hertz bids us, borrowing from a prominent biologist's description, that the Bible were to write, "Monera begat amoebae, amoebae begat synamobae, synamoebae begat the ciliated larvae. . . ." and so on and so forth. "Let anyone who is disturbed by the fact that Scripture does not include the latest scientific doctrine," writes R. Hertz, "try to imagine such information provided in a Biblical chapter."[69] (Actually, R. Hertz's argument could be construed as either of the two we identified—saying that the contrived paragraph would be too dense, or saying that it lacks the kind of edifying and inspiring moral message that characterizes the Bible.) And R. Samson Raphael Hirsch writes: "Jewish scholarship has never regarded the Bible as a textbook of physical or even abstract doctrines. In its view the main emphasis of the Bible is always on the ethical and social structure and development of life on earth; that is, on the observance of laws. . . ."[70]

At the risk of redundancy, let me sum up the discussion so far. There are two forms of the objection that "The Torah is not a science

textbook." In one, the critics' claim is that it would have been impossible for the Torah to convey accurate science and still be an effective teacher, since (a) the scientific account was too difficult to be grasped by the majority of readers at the time of the revelation, and God did not want to postpone His revelation (as if waiting till 2008 would have allowed for a revelation of the scientific truth that would be comprehensible to all!), and (b) the true scientific account would have a harmful effect on psyches. In the second form of the objection, the critics' claim is that even if the Bible could have communicated scientific truths effectively, it has aims other than conveying scientific truth and therefore would not write the science accurately.

In what follows, I assess both forms of argument.

1) *The dense truth argument:* According to this argument, the problem with concordism is not that concordists see the Bible as intent on conveying scientific truth, but that they see it as prepared to convey *dense* scientific truth.[71] A fundamental reply to this objection is that anti-concordists beg the question, that is, they assume the very claim at issue. Anti-concordists who point to the denseness of the scientific truth do not take seriously what medieval philosophers did, namely the concept of a multi-layered text whose genius and beauty lies precisely in its ability to communicate to both the educated and the ignorant. From a believer's perspective, cannot the Bible be written *that* way—with an inaccurate but easy to understand layer on top and a true but dense layer on the bottom, a layer that, as a result of figurative interpretation or (as the concordist more typically claims) the identification of non-obvious literal meaning, still counts as a cogent or at least admissible interpretation of the text? Rambam, of course, affirms this two-layer approach, albeit using the language of "outer" and "inner" meaning to designate the layers. In fact, as I noted earlier, the talmudic phrase "*dibbera Torah ki-leshon benei Adam*," which anti-concordists shove in the faces of concordists, was made famous by medieval concordists to explain why the inaccurate outer layer exists. Kabbalists affirmed the dual layer account as well. The two-layered account seems therefore to be a live option for concordists and does not exclude the principle of *dibbera Torah.* Given that concordists have worked out to their satisfaction interpretations of the "deeper" kind (example: "day" means epoch, "light" refers to the primeval fireball), it would be question-begging to object, antecedent to an examination of details, that the two-layered approach is false. Concordists may claim that the "dense truth" explanation is merely a *thesis* put forth by anti-con-

cordists to defend the Bible against the criticism that its science is inaccurate, but is ill-suited to serve as a good *argument* against concordism. (Van Inwagen does not say otherwise: he is not addressing concordism, let alone trying to refute it.)

Notice also that the anti-concordist cannot deny the in-principle appropriateness of a two-layer approach. For he himself sees two layers—the descriptive narrative, and the moral and spiritual truths. Clearly many people read the outer layer and see Genesis as a literally true description of creation; the more sophisticated anti-concordists see the inner moral/spiritual layer. Thus, the dispute between concordists and anti-concordists is not about whether there are multiple layers, but about what those two layers are. Furthermore—as I shall elaborate later—nothing prevents concordists from deriving the same moral and spiritual truths as anti-concordists by positing a third layer (moral/spiritual) which is related to either or both of the other two. Nothing needs to be missing from their understanding of the text.

The foregoing furnishes a concordist reply to the claim that the Bible could not give the correct science while reaching the masses. Another reply occurred to me while reading an interview with an anti-concordist. This anti-concordist denied that Eve was literally taken from Adam's rib, and asserted that the depiction is allegorical. But when pressed on what that allegorical meaning or moral import is, he confessed to ignorance.[72] Numerous readers today, across the spectrum, find in the Genesis text non-obvious moral and spiritual truths that were not previously proposed. The possibility this raises is that the moral and spiritual meaning of the text was not or could not be fathomed completely by our ancestors (or even us). And if God articulated spiritual and moral truths by means of a descriptive narrative that covered an inner layer consisting of those truths, some of which ancient readers did not grasp, perhaps he articulated, as well, in the inner layer, dense scientific truths that those people could not understand.[73]

2) *The "no interest in science" argument:* Let us move now to the other argument that an anti-concordist might wield, namely, that the Bible has no interest in conveying scientific truth, period—whether dense or not dense. Why is this? Two possibilities come to mind: one, that scientific truth, or at least the truths found in contemporary cosmology and evolutionary biology, is not important at all in itself; two, that although scientific truth is important, it is not important for the Bible's purposes.

As regards the first possibility, here is how van Inwagen presents the matter. Genesis, van Inwagen tells us, is right about a great many things and "wrong" about other things. But—and this is critical—"what Genesis is right about is of great importance, and . . . what it is wrong about is of little intrinsic importance." Genesis is "right," he tells us, that: the world is finite in space and time; it changed from a primal chaos into its present form; it owes its existence to an immeasurably powerful being who made it to serve His purposes; originally the world was simply good, not a mixture of good and evil; human beings are formed from the elements (one should restrict this to the physical aspect of the human being); the stars and the moon are inanimate and exist mainly to mark the seasons; all men and women are images of the divine; human beings have been given a special authority over the rest of nature; the divine images (that is, people) have disobeyed God almost from the beginning.[74] What Genesis is "wrong" about is that the earth is less than six thousand years old, that day and night existed before the sun, and the like. These matters are *of no intrinsic importance*, van Inwagen claims. ("For the life of me . . . I can't see that it is much more important to get the age of the earth right than it is to get the identity of the first European voyager to reach North America right."[75]) Of course, false beliefs can be instrumentally disastrous—leading to awful results—and "a false belief about the age of the earth could lead to a disastrous repudiation of the reliability of something that *is* reliable and whose reliability is important." Still, "the matter of the age of the earth is of little importance in itself."[76] So this claim against concordism rests on a value judgment about certain scientific truths. The Bible wants to convey only truths that have intrinsic importance, such as moral and spiritual truths, and the aspects of science at issue simply do not qualify.

Must concordists submit to a belittling of science? No, because science, from a religious standpoint, has great instrumental (even if not intrinsic) value. It leads, they maintain with Rambam, to love and fear of God.[77] Furthermore, the way scientists establish the age of the earth and other claims in evolutionary cosmology and biology is so tied up with scientific method generally that although the age might not be important in itself, it is clearly very important: as van Inwagen acknowledges, to reject the scientific account "could lead to a disastrous repudiation of the reliability of something that *is* reliable and whose reliability is important." That the age of the world (and perhaps other claims about natural history) is unimportant in itself becomes, well, unimportant in itself.

We should next look, therefore, at the claim that even though scientific truth *is* important in itself, it is not important *for the Bible's purposes.* Those purposes include the providing of religious inspiration and moral instruction, and the inculcation of certain truths such as "God created the world" and "the human being is the pinnacle of creation." Anti-concordists will doubtless maintain that these rank above scientific truth in importance, but their argument requires more—namely, that conveying scientific truth in particular does not serve the Bible's purposes, and the science is best omitted.

Let me advance a few points that cast doubt on the anti-concordist thesis.

a) It is difficult to see what harm could come from conveying scientific truth at a deep layer of the text. Moreover, if the argument is that the Torah aims at conveying moral and spiritual truth, it follows that God *would* reveal scientific truths in the Bible itself if doing so enables the Bible to fulfill the purposes it does have.[78] A concordist may seize an opportunity here. For some scientific truths conduce to religious and moral inspiration, and the truths of cosmology and evolution are among them. While secular evolutionary theorists deny that their story is a story about a *value* called "progress," but rather say that evolutionary history is value-neutral, R. Kook wrote that evolutionary theory fits kabbalistic teaching, for "how can one despair at a time that everything is developing and ascending?"[79] Here are a few lessons that a religious individual might glean from current cosmogony and evolutionary biology: the history of the world reveals purpose and "fine-tuning"—that is, the fact that impressive results, such as intelligent life and human beings' religious and moral capacities, evolved from laws of nature and initial conditions that seem "fine tuned" to produce such results testifies to the wisdom of the Creator in creating the original setup; all being is interconnected; human beings share a nature with lower animals and are to an extent part of the natural world, therefore they should be humble (though they should also understand that to be unique and rise above their animal nature they must submit to discipline).[80] Cosmological theories impress us with the vastness of the universe and remind humans of their insignificance yet simultaneously make man's special place in it all the more striking. In a variety of ways, then, studying science conveys a better sense of what it means to say the world is dependent upon God, that God is awesome and wise, and that the human being is the pinnacle and telos of creation. For this reason, even according

to the anti-concordist's view of the Torah's aims, the Bible would be expected to express the science.

Listen, too, to the words of R. Samson Raphael Hirsch, who was not a bold concordist. If evolution were proven true,

> Judaism in that case would call upon its adherents to give even greater reverence than ever before to the one, sole God, who, in His boundless creative wisdom and eternal omnipotence, needed to bring into existence no more than one single, amorphous nucleus and one single law of "adaptation and heredity" in order to bring forth, from what seemed chaos but was in fact a very definite order, the infinite variety of species we know today. . . .[81]

But if knowing that the species arose through a single amorphous nucleus teaches about God's "boundless creative wisdom and eternal omnipotence," then why wouldn't we expect so important a truth to be found in the text, at least at the non-obvious literal level? Or, at the very least, shouldn't we be *open to* the claim that the truth is found in the text? Ironically, the points I have made about how a bold concordist reading conduces to religious purposes are the very points that anti-concordists use to illustrate their thesis that evolution not only is compatible with Torah but provides spiritual inspiration.

In short—as anti-concordists themselves often concede—the truths of cosmology and evolution carry positive religious messages.[82] So, even if scientific truth is not *intrinsically* valuable for the Torah (truth for truth's sake), it is instrumentally valuable in fostering religious attitudes.[83] If anti-concordists deny that these messages exist in cosmology and evolutionary biology, then, since *ex hypothesi* they believe in the truth of evolution, they are left with the contention that the way the world actually came to be bears no religious or spiritual import. This, I suggest, is not only contrary to what they write (as when they quote R. Hirsch), but is an uncomfortable position to be in, although it is logically tenable. Torah u-Madda enthusiasts are fond of saying that through the study of science we see the hand of the Creator in the world. If this message can be extracted from the science taken alone, it can be extracted from a biblical articulation of scientific truth. The notion that "the Torah is not a science textbook" does not entail that the Bible could not impart religious messages *via* scientific truth.

One might retort by asking—and this is reminiscent of the medieval question of why revelation includes truths knowable by rea-

son—why the inspiration cannot be derived from science alone, without being put into the Bible. Indeed, we can find the science in the Bible only if we believe it prior to confronting the text. The answer is that its placement in the context of the Bible augments its inspirational and religious value and makes the religious dimension of science discernible in the text (with the "right" interpretation). Why, though, does the Bible not incorporate chemistry and physics, given that Torah u-Madda advocates find those inspiring as well?[84] Wouldn't the Bible's including them add inspirational value? A concordist can reply that: (i) Cosmogony and evolutionary biology are especially important because it is specifically those fields that are most relevant to the Genesis narrative. They are, in a word, part of that narrative. To say, with concordists, that the Bible *is* a science textbook is to say that, when it comes to events the Bible needs to record, the science is accurate. (ii) Perhaps truths of physics and chemistry cannot be conveyed by the two layer approach—words that would be accessible might not lend themselves to a non-obvious literal meaning that involves equations. (iii) A concordist need not answer *every* question about why did God did X and not Y. Such a demand would quash all aspirations to develop a theology.

b) There is another weapon in the anti-concordist's arsenal. He may argue that, notwithstanding Rambam and his *confreres*, certain classical sources are anti-concordist. The view that science is irrelevant to the Bible's purposes is implicit in R. Yitshak's famous question cited in the first Rashi in Humash: why did the Torah begin with a description of the creation rather than with the first *mitsva?* Ramban thinks that this question does not apply to the story of creation per se, that is, the fact of creation, since after all it is necessary to establish that God is the Creator. Nonetheless, he says, there is a question as to why we were told what was created on each day and also why the narratives about Adam and Eve, Cain and Abel, the generation of the Flood, and so forth were necessary. Rashi's answer, based on R. Yitshak's—that the verses establish God's prerogative to give the land to whomever He wants, thereby negating non-Jews' claims to Israel—does not necessitate a fully accurate creation narrative. Nor does Nahmanides' answer to his question about the necessity for narratives, namely that they establish a pattern of sin-punishment-exile, necessitate a fully accurate creation narrative (although he stresses that belief in creation *ex nihilo* is a "*shoresh ha-emunah*"). Even though Nahmanides thinks it important to establish the fact of creation, he does not seem, so far, to

be committed to holding that the details be entirely accurate. In fact, Nahmanides writes in his commentary to Gen. 1:1: "the story of creation is a deep mystery not to be understood [a bit later he adds: completely] from the verses." One could take this to mean that the verses do not contain the whole truth (more on this shortly) and that the deeper truth found in Kabbalah is not in the verses. Rashbam believes that the total truth about creation is given in mystical sources, but he studiously gives his explanations of the verses only in terms of *peshat* and the sensible world, holding that the creation narrative is necessary only to establish the *mitsva* of Shabbat to be observed on the seventh day. If we follow his path, the verses should be explained in a literal manner, and they do not give the real or full truth. Like concordists, Rashbam maintains that understanding how creation occurred requires an extrabiblical body of knowledge, viz., Kabbalah; but unlike concordists he does not say, as anti-condordists interpret him, that the text's true interpretation is convergent with this body of knowledge.[85] Finally, R. Kook had this to say about accounts of the world's origins that conflict with the Torah's:

> It makes no difference for us if in truth there was in the world a Garden of Eden, during which man delighted in an abundance of physical and spiritual good, or if actual existence began from the bottom upward, from the lowest level of being toward its highest. . . . We only have to know that there is a real possibility that even if man has risen to a high level, and has been deserving of all honors and pleasures, if he corrupts his ways, he can lose all that he has, and bring harm to himself and to his descendants for many generations.[86]

R. Kook notes, as well, that Bereshit has been said by Hazal to embody *sitrei Torah,* and adds that "if all these narratives were taken literally, what secrets would there be?"[87] All the aforementioned sources suggest a lack of concern by the Torah with details of creation, contrary to the concordist's attempt to find them in the text. They establish a precedent not so much of interpreting the verses figuratively (though R. Kook's statement above would encourage this approach), but of driving a wedge between the truth about creation and the meaning of the verses. And thus, concordism runs up against certain great authorities.[88]

Quite apart from the fact that the sources cited establish only a permission to reject concordism and do not nullify the support that concordists derive from medieval rationalists, one of the sources, and a rather authoritative one, provides the seed of an argument *for* con-

cordism. Specifically, the use that anti-concordists made of Ramban in the previous paragraph is probably mistaken. Rather, Ramban believes that once one knows Kabbalah properly, one can interpret the verses in light of that special body of knowledge; thus, the verses themselves express the truth. This means that Ramban's view is parallel to the bold concordist's: the text properly understood contains the truth, and a special body of knowledge enables us to understand it. This brings Ramban, as opposed to Rashbam, into the camp of concordists, notwithstanding the difference between a secular theory that allows us to interpret the text (contemporary cosmology/cosmogony and evolution) and a religious one (Kabbalah) that enables us to do so.[89] Indeed, we may say that for Ramban, Kabbalistic interpretation often is the *peshat*—just as concordists claim that the scientific exegesis is the (non-obvious) *peshat*. In David Berger's words: "Nahmanides displays a pronounced tendency to equate *peshat* and *sod* by finding that the plain meaning of Scripture can be explained satisfactorily—or most satisfactorily—only by resorting to Kabbalistic doctrine." Thus Ramban is a precedent for concordism after all.[90]

To sum up this section, there are two interpretations of "the Bible is not a scientific textbook"—one, that the Bible does not reveal dense truths; two, that the Bible does not reveal scientific truths at all since this is not among its purposes. On neither interpretation does the anti-concordist have a knockdown objection; among other things, in light of the possibility of a two-layered approach, his objection begs the question. Furthermore, scientific theories lead to spiritual insights, as R. Hirsch, R. Kook and others state, so why not expect them to be in the text? Finally, the scientific concordist's approach runs on parallel tracks with Ramban's, giving concordism an added measure of legitimacy.

Specific Problems in Concordist Interpretations

Until now we have been examining abstract, general objections to concordism that are based on antecedent views about what the Genesis narrative could or could not be. One of the abstract objections we examined was based on the *premise* that the Torah is not a science textbook; from that premise anti-concordists concluded that concordism is false. But, as we saw, this premise cannot merely be asserted without argument, for if it is, it begs the question against concordists. Another way of arguing against concordism, however—mentioned only fleetingly until now—is to show that approaching the Torah as a science text-

book simply does not work. For concordists are not in fact successful at showing that the biblical text corresponds to the views of scientists today, and, quite the contrary, examination shows that the biblical and scientific narratives contradict. Whereas in the abstract mode of argument, "the Torah is not a science textbook" was a *premise*, affirmed in advance of hearing the concordist reading, in the second mode of argument, "the Torah is not a science textbook" is a *conclusion*. The first mode says that concordism is wrong in principle, the second that it is wrong in practice.

The "in practice" refutation is easy to state. The Genesis narrative diverges from evolutionary theory in crucial respects, notably the sequence in which things appeared in the world. Contrary to science, the Bible says that earth and water preceded the sun and the moon, that vegetation did so as well, and that birds preceded terrestrial animals.[91] Although concordists are hardly unaware of these difficulties, their solutions are unpersuasive. For example, they attempt to define the Hebrew word "*of*" (fifth day) as "insects" rather than "birds" in order to maintain that the Bible did not say that birds preceded terrestrial animals (created on day six). But R. Natan Slifkin shows that this rejoinder fails because winged insects (which the concordist now assigns to day five) did not, according to science, precede terrestrial insects (which are assigned to day six).[92] Given such disparities in sequence, we must conclude that the Bible is not a scientific textbook. Also, the Bible's selection of which events to include and which not seems arbitrary if we consider accepting concordist readings.[93]

This argument seems so simple, so neat, that a reader may ask about this paper: "*mah kol ha-ra'ash ha-zeh?*"—why all this noise about shifting sands, God's egalitarianism, dense truths, the Bible's purposes and the like, when a simple jab of the finger (R. Slifkin's) will bring the house down?

Here are several reasons. First, as I indicated at the outset, there are people who are certain in advance that bold concordism is wrong, independently of the details of bold concordist interpretations. We need to discern what arguments they might adduce if challenged to justify their visceral reaction. Second, those arguments and the issues they generate are interesting and worthy of pursuit in their own right. Assessing them, I think, sheds light on how biblical interpretation should be conducted, and highlights the time-conditioned nature of much interpretation, an important concept. Third, to return to the theme of shifting sands, our cosmogony and evolutionary theory may

change in its details and revive the possibility of true concord. Fourth, concordists may devise some new ingenious understanding of the verses or of why the sequence is out of order. Fifth, from the fact that Genesis 1 (or 1-2) is not a science textbook, it does not follow that *the Bible* is not a science textbook. There will be other sections of the Bible which make scientifically objectionable assertions or carry scientifically objectionable implications, and we confront the question of whether those should be reinterpreted in light of science. Galileo proposed, probably without sincerely thinking that this is the Bible's intent, that, when Joshua stopped the sun's movement, what he stopped was not what was erroneously thought to be the sun's rotation around the earth, but instead the sun's rotation on its own axis.[104] Was Galileo foolish in supporting, via scientific exegesis, a literal interpretation of the verse, albeit a non-obvious one—in his proposal, after all, the sun did in a clear respect stand still—or should he have just said "the Bible's science is wrong, but the Bible is not a science textbook?" Sixth, and finally, I hope it is not unfair to anti-concordists to note that their main proposition—that the narrative in Genesis is not trying to convey the truth about how creation occurred—might, when scrutinized, give rise to questions and problems. It may turn out that neither concordist nor anti-concordist readings are problem-free; and concordism will look better if the critic's competitive edge is narrowed. If this were to happen, the failure of "in principle" arguments would take on added importance. For these six reasons, the claim that concordism can be known antecedently to fail as a genre warrants, and has here received, careful examination.

III. CONCLUDING SUMMARY[95]

This has been a complex paper due to its back-and-forth, highly dialectical character. I have considered six arguments, two for concordism and four against. Let me recapitulate the discussion, beginning with section I, where pro-concordist arguments were advanced.

The issue before us was whether concordism can be dismissed as an illegitimate genre of biblical interpretation even without examining specific concordist readings. My ultimate position is that it cannot. Concordism fails, but only on the level of details. It can be rejected only on the grounds that the verses do not accord with the sequence of events depicted by modern science.

Section I: Here the concordist put forth two arguments. One was based on the precedent afforded by *rishonim;* the other, on a plausible exegetical principle that one's first assumption should be that the Torah should be interpreted in a way that makes its assertions come out accurate. Concerning the first argument, viz. that rationalist *rishonim* read Scripture as expressing the then contemporary science, the anti-concordist pointed out that some *aharonim* declined to treat the verses as accurate and opted to understand the creation chapters in accord with the principle "*dibbera Torah ki-leshon benei adam.*" Since both concordists and anti-concordists have support on their side, concordists cannot claim that their position is mandated. Still, because they emulate the hermeneutic practice of *rishonim*, they can claim that concordism is an *admissible* genre of biblical interpretation. With regard to the concordist's second argument—that the Torah must be interpreted in a way that makes its assertions come out accurate—the anti-concordist responded that, yes, the Torah expresses truth, but that truth may be moral and spiritual and need not be scientific. To convey moral and spiritual truth, the Torah spoke *ki-leshon benei adam*. Nonetheless, the concordist is entitled to read the verses as expressing scientific truth in addition to moral and spiritual ones, unless given good reason not to. We noted also that the concordist too accepts the idea of *dibbera Torah ki-leshon benei adam*, but posits that beneath the simple meaning which the masses can grasp, there lies, besides a level of moral/spiritual truth, a nonobvious literal meaning which expresses truths of contemporary science. Ultimately, then, the concordist may reasonably hold that the Torah expresses scientific and not only moral or spiritual truth.

Section II: Here we examined four arguments against concordism. The first three were based on abstract considerations and were unsuccessful; the last was based on the failure of particular concordist readings and was successful.

The first anti-concordist argument was that scientific theories change. After clarifying some ambiguities in the argument and in the objector's position on how Bible should be read, and after also observing that medieval interpreters did not have our contemporary historical consciousness, we noted three concordist replies to the shifting sands objection. (1) Concordists can simply announce that their readings are tentative and revisable. (2) The objector's approach is incongruous or dissonant since in all likelihood he or she believes

scientific theories. (3) There are changes in other fields that are needed to interpret the Bible—philology, linguistics and more—but this does not prevent us from interpreting the Bible by our best lights. So, too, even though science changes, we interpret the Genesis verses by our best scientific lights. The anti-concordist tried to destroy the concordist's analogy between philology and linguistics and other fields on the one hand and science on the other, but although the analogy is not perfect, the concordist can claim it is good enough to meet the shifting sands objection. Interpretation is conditioned by the theories we have at a given time.

The second anti-concordist argument was that God would not privilege one generation with the correct interpretation of Genesis, or else that He would not privilege our lowly generation in particular with this reading. To this the concordist replied that new interpretations regularly come on the scene that earlier generations did not offer, but surely this does not prevent us from interpreting the verses in these new ways.

The third anti-concordist argument was based on the assertion that the Torah is not a science textbook. There are two versions of this assertion. In one, the critics' claim is that it would have been impossible for the Torah to convey accurate science and still be an effective teacher, since the scientific account is too difficult to be grasped by the majority of readers. In addition, it could adversely affect them on a psychological plane. In the other version of "The Torah is not a science textbook," the critics' claim is that even if the Bible could have communicated scientific truths effectively, it has aims other than conveying scientific truth and therefore would not write the science accurately. The main concordist reply to the first form of the objection is that it begs the question (i.e., assumes the very claim that is at issue). The concordist claims that the Bible is a two-layered text. Underneath the simple outer meaning is a deeper and scientifically accurate inner meaning. This was the position of Rambam and other *rishonim*. Without examining the details of concordist interpretations of particular verses, the anti-concordist cannot rule out this two-layered account. The claim that the Bible is not a science textbook serves well as a defensive maneuver designed to repel an objection by atheists, but as a proactive argument against concordists it is unconvincing. In addition, the concordist pointed out that often the moral and spiritual meaning of the text will not be ascertainable by the masses or even the learned, but this does not prevent the Torah

from writing verses that presumably incorporate these elusive moral and spiritual messages.

As for the second version of the "Torah is not a science textbook" argument, nothing prevents the concordist from extracting the same moral and spiritual truths from the Bible as the anti-concordist does. In fact, the scientific account may bring out these truths more forcefully than a reading that is not based on science. Finally, although certain sources such R. Yitshak's question cited by Rashi, and Rashbam's belief that the full theory of creation is not given by the verses, seem to be anti-concordist, the concordist drew an analogy between his position and that of Ramban. This analogy adds Ramban to the group of *rishonim* who held that the deep truth is in the verses.

The fourth anti-concordist argument was that particular concordist readings fail because, for example, the Bible puts forward a sequence of creations that does not match the sequence asserted by contemporary science. Concordist attempts to finesse these objections are not successful. Here we have a successful argument on the anti-concordist side. But I explained why discussion of the earlier "in principle" objections is desirable nonetheless.

In conclusion, the objections that seek to refute bold concordism in principle, without examining specific verses, draw on slogans and catchphrases—"science changes," "we are not privileged," and "the Torah is not a science textbook"—whose argumentative effectiveness withers under scrutiny. To be sure, the in-practice refutation of bold concordism is swift and effective, and it suggests that, indeed, the Bible (or at least the creation narrative) is not a science textbook. Even so, studying and assessing the in-principle objections can enrich and deepen our understanding of the relationships between science, morality, spirituality, and biblical interpretation.

NOTES

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And I thank, as well, R. Walter Wurzburger z"l. For me, he was a warm and witty senior colleague, a caring friend, a moral exemplar, and a penetrating thinker whom it was a privilege to know. Over the years, R. Wurzburger's writings led me to ponder many questions about *Torah u-Madda*, including the complex question of how Judaism relates to science. This essay, in part, reflects his inspiration.

1. Yehuda Halevi provided a trenchant statement of modest concordism: "Heaven forbid that there should be anything in the Bible to contradict that which is manifest or proved" (*Kuzari* 1:67). "Concordism" is a Christian term that has no precise Jewish equivalent I know of, and of late Jewish writers often use the word.
2. Whether this "view" is one about cosmogony (the origin of the world) or cosmology (the structure of the world) is discussed briefly later in this paper.
3. I borrow this convenient wording from Sara Klein-Braslavy, "Bible Commentary," in *The Cambridge Companion to Maimonides*, ed. Kenneth Seeskin (New York: Cambridge University Press, 2005), 255.
4. In what follows I focus on concordism with respect to science and set metaphysics aside.
5. Nathan Aviezer, *In the Beginning: Biblical Creation and Science* (Hoboken, NJ: Ktav, 1990); also *Fossils and Faith* (Hoboken, NJ: Ktav, 2001), chapters 2, 4, and 6. See also Gerald Schroeder, *The Science of God* (New York: Broadway Books, 1997), and *Genesis and the Big Bang: The Discovery of Harmony Between Modern Science and the Bible* (New York: Bantam Books, 1990); Andrew Goldfinger, *Thinking About Creation: Eternal Torah and Modern Physics* (Northvale, NJ: Jason Aronson, 1999), chaps. 7, 9, 25; Yosef Horwitz, "Midrash Kozmologi al Ber'iat ha-Olam," in *Darkhei Shalom: Studies in Jewish Thought Presented to Shalom Rosenberg*, ed. by Benjamin Ish-Shalom and Amichai Berholz (Jerusalem: Beit Morasha, 2007), 193-201. (I thank Warren Zev Harvey for the reference. Horwitz deals with midrashic commentary as well as Genesis itself.) Shubert Spero advocates a less detailed version of concordism than Aviezer. For Spero, Genesis is describing an evolutionary process that could be called "guided punctuated equilibrium" (he places great emphasis on "guided") and in which "[t]he story of Creation as contained in the first 31 verses of *Genesis* is an historical description, in common-sense language, of what happened during that singularity. However, the terms must be 'stretched' considerably so that the text may accommodate the discoveries of cosmology." See

Shubert Spero, "The Biblical Stories of Creation: Garden of Eden and the Flood: History or Metaphor?" *Tradition* 33:2 (Winter 1999),16. Spero also submits that the story of the Flood is a metaphor that points to the destructions and mass extinctions described by science and the survival only of life forms useful to man.

6. In truth, Jewish literalists and non-literalists alike—and it should go without saying that this a necessity—draw substantially on *ma'amarei Hazal* and classical *mefarshim* to interpret verses. This does not, to my knowledge, affect my discussion right now.
7. I say "at another point" rather than "at the other end" because, as can be inferred from what follows, (a) there is a view, to be discussed later, that the Torah account is inaccurate through God's own design. Arguably this is the true opposite of literalism. (b) Concordists do interpret some, indeed many, verses literally (in non-obvious fashion) and affirm their truth, bringing them closer to literalists. (c) Some interpreters may adopt figurative readings of verses, arguably putting *those* interpreters at the opposite end of the spectrum.
8. There is an important difference between what words mean and what they refer to. The "water" above the firmament may refer to ice, but it doesn't *mean* "ice." Despite this and other complications, such as defining the word "obvious," the terms "obvious literal meaning" and "non-obvious literal meaning" will I believe make the presentation intuitive and are good enough for our purposes. Yehuda Gellman suggests rendering the desired distinction as "linguistic meaning vs. intent." I thank Josef Stern for discussion of the issues.

   Complicating matters still further, individual words in an allegory very often have their ordinary literal meanings. In a larger discussion, metaphors and parables would merit consideration as well. For an illuminating treatment of these topics as applied to the Bible, see Mordechai Z. Cohen, *Three Approaches to Biblical Metaphor: From Abraham Ibn Ezra and Maimonides to David Kimhi* (Leiden and Boston: Brill, 2003).
9. In what follows, I will confine myself to Torah *she-bi-ketav*, but, famously, issues about literalism arise with regard to *ma'amarei Hazal* as well.
10. The same question I raise about Orthodox reflex-like rejection of concordism applies to Orthodox people's reflex-like rejection of Bible codes before subjecting them to, or without ever knowing about, the powerful criticisms of the codes genre now found in the literature.
11. There may appear to be an irony in a modern Orthodox Jews's *defending* concordism. Usually, opponents of secular studies like to cite Ben Bag Bag's statement, "*hafakh bah va-hafakh bah de-kullah ba*" (Avot 5:26) as reason not to study secular studies, or at least not to have to study secular studies. Modern Orthodox Jews respond that surely physics, chemistry and biology cannot be found in Torah. Here, though, in the case of evolution, we find an instance of modern Orthodox Jews finding contemporary science in Torah! The irony is neutralized, however, by the fact that the secular knowledge allegedly is needed to interpret the Torah, so one is not straightforwardly finding science in Torah.
12. The *kiruv* function of concordism is stressed and criticized by Shai Cherry

in "Crisis Management Via Biblical Interpretation: Fundamentalism, Modern Orthodoxy, and Genesis," in *Jewish Tradition and the Challenge of Darwinism*, ed. Geoffrey Cantor and Marc Swetlitz (Chicago, 1996), 166-87, esp. 182-87. See also Ira Robinson, "'Practically, I Am a Fundamentalist': Twentieth-Century Orthodox Jews Contend with Evolution and Its Implications," in Cantor and Swetlitz, 86-88.

13. Readers should be aware that throughout this paper I take the retrieval of authorial intent to be a criterion of a correct interpretation or at least a desideratum in the enterprise, at least with regard to the Bible.This is the approach of Nicholas Wolterstorff in his *Divine Discourse* (Cambridge U. Press, 1995), chaps. 8-9. Other approaches exist, however, and a full discussion would necessitate treating my topic in their light.
14. More precisely, "analytic" philosophy.
15. These and other authorities are quoted extensively in R. Natan Slifkin's book, *The Challenge of Creation* (Brooklyn, NY: Yashar Books, 2006). (A new edition of this book has just appeared [April 2008], but it is too late for me to use it in this essay.) My listing is in chronological order. There are *rishonim*, too, who drive a wedge between the correct scientific theory and the correct scriptural interpretation; see, for example, the view of Rashbam which is cited later on. Note that the modern anti-bold-concordists we are considering do endorse *modest* concordism, since their efforts are directed towards reconciling Genesis with science by denying that the text is to be interpreted literally.
16. R. Menachem Kasher writes: ". . . With regard to matters connected to the acts of Genesis, there are many details for which we have no tradition from our Sages, and permission is given to everyone to explain and expound the explanation of the verses, for there are seventy facets to Torah." See R. Kasher, "Shabbat Bereishit ve-Shabbat Sinai," *Talpiot* 2 (1944):385, as cited and translated by Slifkin, 201.
17. Concordists may protest that the *aharonim*'s rejection of concordism was a result of their not being able to hit upon an interpretation of the Genesis text that would fit the science. Had they realized how such a reading could proceed, concordists will say, they would have been concordists. But this thesis of the concordist would be speculative and, to a degree, cynical.
18. Slifkin, chap. 14.
19. *Milhamot Hashem* VI:2, esp. VI:2:2, 8.
20. Cf. *Hagigah* 12a and *Bereshit Rabbah* 1:15.
21. R. Slifkin (pp. 192-94) adds R. Dessler and Ramban to the "nonsequentialists" (on R. Dessler's interpretation of Ramban).
22. See *Guide* 2:30. As is well known, numerous interpreters through the centuries have thought that Maimonides' true view is that the world is eternal, as Aristotle said, and not, as Rambam outwardly professes (*Guide* 2:25), that it is created *ex nihilo*. For these readers, it is obvious that Maimonides must construe Genesis 1 nonsequentially. Needless to say, the matter of Rambam's "true position" is highly contested and the attribution of belief in eternity highly non-traditionalist; in our context concordists are entitled to take Maimonides at his word both with regard to whether the world

was created as well as with regard to whether Gen. 1 describes a sequence. Moreover, the issue of eternity is moot as regards the options open for present-day interpretation, since according to Big-Bang theory, the universe did have a beginning. See also note 24 below.

23. Note, as an aside, that whereas medieval nonsequentialist readings relied heavily on the science of the times, contemporary nonsequentialist readings (e. g., Slifkin, 218-30) utilize very little science. The anti-concordist arguments we will consider in section II virtually render the omission of science necessary for advocates of those arguments. Consequently, when anti-concordists cite the medieval nonsequentialist readings of Rambam (on the esoteric reading) and Ralbag as support for contemporary nonsequentialist readings, but leave out science from their exegesis, they in essence reject the nature of the nonsequentialist interpretations adopted by these *rishonim* while following the nonsequentialist path. The anti-concordist's use of Rambam and Ralbag is thus selective. Such selectivity is not necessarily illicit, but is worth noting. Cf. Slifkin, 202.
24. There is another issue to consider. Since Rambam and Ralbag both interpret the Torah in the light of science, one might argue that we cannot ascertain what they would have said had they held, as we now maintain based on evolutionary cosmology and biology, that creation did not take place all at once, but rather different sorts of entities evolved over billions of years. Perhaps in our day they would have felt a need to read the chapter as sequential. (See also n. 22.) To dismiss this possibility we would need to know just why they read the chapters nonsequentially and whether that reason would carry over to today. Answers to these questions are not easy to produce. However, Haim Kreisel noted to me that the Torah's assertion that the luminaries were suspended on the fourth day could account for the move to a nonsequential interpretation. But nonsequential interpretations may not be better on this score, since, as Ralbag asks (but then seeks to explain), the luminaries are higher on the cosmic hierarchy than "previous" creations. See *Milhamot Hashem* VI:2:8. I thank Prof. Kreisel for his generous discussion of sequential vs. nonsequential interpretations. Cf. Slifkin, 202.
25. Wolterstorff, *Divine Discourse*, 239. Here is a simple and oft-used illustration, albeit involving philosophy rather than science: the overwhelming majority of theologians deny anthropomorphism (the view that God has a body), notwithstanding its ostensibly sound biblical grounding. This is because they believe on philosophical grounds that anthropomorphism is false and interpret the text to fit that fact.
26. I say all this while fully cognizant that rationalist philosophers not infrequently adopted figurative interpretations. They interpreted biblical texts figuratively when they had no other way to harmonize science and those texts. But, again, one's first assumption is that the text is factually accurate, and as long as one thinks he has a way of displaying this accuracy on a non-obvious literal level—as bold concordists think they do in the case of Genesis 1—one opts for this literal reading. This would be the case even if in chapter 2 the concordist opted for a figurative interpretation in order to resolve the ostensible contradictions between the chapters.

27. See *Yevamot* 71a; *Sifrei*, Numbers, 112. Several scholars have noted that the medieval application of this phrase to issues like anthropomorphism not only goes far beyond its talmudic application, but even contradicts how the term is used by Hazal. The earliest appearance of this point is in Josef Stern, "Language," in *Contemporary Jewish Religious Thought*, ed. Arthur Cohen and Paul Mendes-Flohr (New York: Charles Scribner's Sons, 1987), 549-50.
28. For Rambam, one meaning of "adam" is "the masses." See *Guide* 1:14.
29. See *Perush Shadal al Hamishah Hummeshei Torah* (Tel Aviv, 5726), p. 11. I thank Fred Klein for this reference. Although many other Jewish thinkers (e. g., R. Hirsch, R. Kook) point to the mutability of science as a reason not to fear scientific developments that conflict with Judaism, I cite Shadal in particular because his is an explicit, frontal attack on the exegetical methods of *rishonim* who were bold concordists. Concerns about shifting sands are sometimes invoked in halakhic contexts as well. See, e.g., R. Abraham Isaac ha-Kohen Kook's skepticism concerning medical opinion about *metsitsah* in *Mishpat Kohen* (Jerusalem, 1985), #140, #142.
30. Locke, *A Second Vindiction of the Reasonableness of Christianity*, quoted by Wolterstorff, *Divine Discourse*, 226. The problem is not only changes in belief across time, but disparate views in different societies even at the same time.
31. Kuhn, *The Structure of Scientific Revolutions (*Chicago: University of Chicago Press, 1962 [first publication]).
32. My appreciation of this issue was stimulated by the incisive and elegant formulation by Dr. Mechy Frankel in a letter to the editor, *Tradition* 31:4 (Summer 1997): 84.
33. The philosopher Karl Popper maintained that scientific activity consists in trying to show that preceding theories are false. See, e.g., his *Conjectures and Refutations* (New York: Basic Books, 1965).
34. The path to literalism paved by the shifting sands objector is different from the usual one pursued by literalists. Typically, literalists *start* with the assumption that the Torah must be interpreted literally and *then* on that basis reject science; next, to meet the objection that science shows otherwise, they denigrate scientific theories by appealing to their fallibility. By contrast, the anti-concordist being considered here starts with the fallibility of science, and then says that since science is fallible, we cannot use it to interpret the verses, leaving the Bible to be interpreted on its own terms, which for him means: literally.
35. My thanks to Shalom Carmy for suggesting that an anti-concordist might hold this position.
36. Berger also proposed an analogy to a statement by Nahmanides concerning Messianic speculation. Nahmanides says of his own projected date that it is "*divrei shema ve-efshar*," as distinct from "*ma'amar halut*"—and that it is precisely this explicit pronouncement of uncertainty that justifies him in proffering a date despite Hazal's admonition against calculating the end. So too, Berger suggests, interpreters of the Bible, concordists included, may put forward interpretations formed by their best lights, with the caveat that they are "*divrei shema ve-efshar*." (See Ramban, *Sefer ha-*

Geulah, in *Kitvei ha-Ramban*, ed. Chaim B. Chavel, vol. 1 [Jerusalem: Mossad HaRav.Kook, 1963], 190.) In this connection, it is, I think, revealing that some scholars I know who specialize in the field of *parshanut* generally say that a *mefaresh* "suggests" such-and-such rather than "asserts" —this, notice, despite the fact that the *mefaresh* proffers arguments for his favored reading.

37. *Ha'amek Davar* (Jerusalem: Volozhin Yeshiva, 1999), introduction (*Kidmat ha-Emek)*, p. 4, section 4(end) and section 5. Netsiv asserts that this mandate to investigate is what is meant by "lishmor ve-la'asot"; the phrase "lishmor la'asot" or "lishmor ve-la'asot" is found in several places—see, for example, Deut. 28:13. (The editors of the 1999 [5759] edition of *Ha'amek Davar* say that they added material from annotations that the Netsiv handwrote on a copy of his commentary and on his Humash, which may explain why the words "it is a *mitsva* to investigate [nature] as much as is possible" do not appear in an earlier edition.) R. Tsadok ha-Kohen maintains that in different eras the Jewish people will have different interpretations. See *Tsidkat ha-Tsaddik*, p. 90, cited by Slifkin, 195.
38. Again, it should go without saying that the views of Hazal and *mefarshim* will be very important as well.
39. The shifting sands objector has two other options for interpreting biblical verses, neither of them persuasive in my opinion. His (all together) third option is to say that the correct interpretation of Genesis 1 is the literal one, but that this literal reading does not yield a correct picture of the world and is not meant by God to be accurate. Rather, *dibbera Torah kileshon benei adam*—the Torah is speaking in the only language that people of that time and even our own could comprehend. Whatever the true theory of creation is, it is not to be found in the verses. The option of *dibbera Torah* was raised earlier and is discussed again later on. Notice, however, that the impetus to say "*dibbera Torah"* about a particular section of the Bible would have to be based upon the fact that modern science is not consistent with a literal reading. The shifting sands objector therefore cannot appeal to science to justify his resorting to *dibbera Torah*. After all, he holds that we cannot have confidence in science.

    Finally, a fourth position a "shifting sands" objector may take as to how to interpret the creation narrative: the objector could interpret Genesis 1 (a) as a metaphor for something other than the true scientific theory, or (b) as a presentation of a conceptual hierarchy, a la Rambam (on the esotericist reading) and Ralbag, and claim that he is interpreting the Bible in its own terms. His reading of Genesis 1 will not contradict scientific theory, but it will not integrate the theory into the interpretation since the theory is fallible. I do not give much credence to the idea that a nonliteral or nonsequential interpretation would be the fruit of reading the Bible on its own terms; indeed, it would seem that a sense of the account's inaccuracy when considered "in its own terms" is what would power such alternative interpretations. More fundamentally, it is widely accepted that figurative interpretations should be resorted to only when a literal reading conflicts with what we know through science or other extra-biblical sources. If scientific teachings are not accepted because sands shift, there is no stimulus for a fig-

urative interpretation. So, of the four ways a shifting sands objector could interpret Genesis 1, a literalist reading seems to be the only tenable one.

40. On the other hand, some historians and philosophers of science see science as growing by accretion—again, that is the thesis that a new theory adds to the old rather than replace it (e. g., Newtonian physics is just a special case of Einstein's)—so that successive theories are progressively closer approximations of truth.
41. Specifically, this explanation of how *rishonim* could justify concordism is only as good as the thesis that concordist *rishonim* did not view theories as fallible. This thesis has been evaluated as regards Rambam by Menachem Kellner in two highly nuanced treatments: "Maimonides on the Science of the *Mishneh Torah*—Provisional or Permanent," *AJS Review* 18 (1993): 169-94, and "Maimonides' Allegiances to Science and to Judaism," *The Torah u-Madda Journal* 7(1997) 88-104. I put aside the question of how the shifting sands objection deals with changes in religions (and Judaism in particular) over historical periods, such as the rise of medieval rationalism or of Hasidut, phenomena which reduce the contrast between religion's unchangingness and science's ephemerality.
42. For the various sides of the realist/instrumentalist controversy, see Jarret Leplin (ed.), *Scientific Realism* (Berkeley, CA: University of California Press, 1984).
43. On this example, see also Woltersorff, chap. 13.
44. "Inter alia" is important here. Views of Hazal and classical *mefarshim* obviously are crucial to anyone's study of Tanakh. But modern Orthodox students and teachers of Bible also incorporate additional approaches, and this is the group whose methods I am describing. I suppose a shifting sands objector could try to "*pasel*" (delegitimize) any method I name on the grounds that sands shift. But it is not clear why a concordist has to accept such a blanket dismissal. First of all, some of the methods are used by interpreters whom the shifting sands objector accepts. Second, as I note in the text, understandings we have of Hazal and *mefarshim* change (and *mefarshim* sometimes suggest new understandings of Hazal). Third, as my "dissonance" argument implied, if the shifting sands objection is taken with full seriousness, the objector must live without any theory of philology and linguistics in *any* domain (not just Torah); likewise, the objector must live without any historical method and without any method for interpreting literary works of any kind, whether religious or secular. Basically, the shifting sands objector must confess to knowing nothing in many, if not all, fields.
45. I thank Mordechai Cohen for this example.
46. See Maimonides, *Guide* 2:42.
47. An anti-concordist might respond by drawing a distinction. Yes, current approaches in philology, linguistics, philosophy and psychology are fallible and may be replaced. But without using those approaches, we cannot interpret at all; hence we are *forced* to interpret in their light. By contrast we are not forced to find fallible scientific theories *in the text*. As Yehuda Gellman wrote to me, "there is a distinction between interpreting *in light of* our best theories so far, and interpreting the Bible as *stating* our best theories so far." We have no choice but to do the first. It does not follow,

however, that we must do the second, that is, posit that the Bible would set out to *state* our current theories. After all, it does not *state* our linguistic and philological theories.

A concordist can reply as follows. In the case of Genesis, interpreting "in light of" our best theories necessitates, by the nature of the case, finding that the scientific theory is stated by the text. Here is why. We come upon Genesis 1. Taken in its obvious literal meaning, by our lights it's got the science all wrong. We don't want the Torah to be scientifically inaccurate—we hold to the exegetical principle that the Bible is accurate. So we try to interpret the verses so they come out true by our lights. So of course we end up saying that the contemporary theory is stated by the text, because the text is a description of how the world came to be and we are interpreting "in light of" our best theories of how that happened. It is different from, say, using our best psychological theories to understand Isaac's attitude and behavior toward Esau and Jacob. There, parallel to the philology-linguistics case mentioned in the previous paragraph, we embrace a particular interpretation of the narrative using our lights, but we do not assert that the narrative states the psychological theory in question. If we are permitted to follow our lights, as in the case of philology and linguistics, then we end up reading Genesis 1 as stating the contemporary theory, and permissibly so.

48. I have been leaving Gen. 2 out of the picture. Cf. n. 26.
49. In like fashion some people argue that insofar as many or most alleged Bible codes could not be discovered except in the age of computers, it is implausible to think they are really embedded in the text. In the case of codes, though, the meanings of the verses are not at stake.
50. Slifkin,186.
51. R. Reuven Bulka pointed out to me that a "smaller" generation might be granted new and improved understanding precisely because it needs that understanding. This possibility refutes the argument that since the generations have declined, therefore our generation cannot have a true understanding.
52. After the daughter of Pharaoh rescues the baby Moses from the water, we are told that "she named him Moshe, because I drew him from the water [meshitihu]" (Ex. 2: 11). Netsiv heard that, based on Egyptian, "Moshe" here means "boy," and thanks to that bit of information, rendered the meaning accordingly. Another example: archaeologists discovered some stones that persuaded them that the word *pim* in Samuel I 13:21 connotes a certain weight and not, as had been thought earlier, a filing tool. (I thank Shnayer Leiman for this example and for broader discussion.)
53. I thank Sarah Pessin for this point.
54. On Nahmanides' use of literary method, see Michelle Levine, *Nahmanides on Genesis: The Art of Biblical Portraiture* (Brown University Press, forthcoming).
55. For a selection of views on, inter alia, the status of *hiddush*, see R. Nathaniel Helfgot, "Al ha-Derush ve-al ha-Hiddush," *Rinat Yitshak* 1 (1989): 9-15. Latter day statements are especially significant, such as Netsiv's statement noted earlier that "*lishmor ve-la'asot*" is to be interpreted as

"*le-vaer u-lehaddesh ba-Torah kekhol ha-efshar*," to explain and innovate in Torah as much as possible. See also Rashbam's famous phrase, "ha-peshatot ha-mithaddeshim be-khol yom," in his commentary to Gen 37:2.

56. See, for example, Slifkin, 218-20 (see n. 66 below), 224-30, and the references on p. 225 n. 2, the earliest of which is the Vilna Gaon. Slifkin does cite *Bereshit Rabbah* 11:8, but the modern interpretations go beyond that.
57. Interpreters were not always ready to acknowledge that their readings were unprecedented. Medieval rationalist interpreters saw themselves as recovering an ancient tradition. See e. g. Maimonides, *Guide of the Perplexed* 1:71. But even here, they were devising the interpretations on their own, the older tradition having been lost.
58. See Galileo, "Letter to Castelli" and "Letter to Grand Duchess Christina," in *The Galileo Affair: A Documentary History,* ed. and trans. Maurice Finocchiaro (Berkeley, CA: University of California), 49-54 and 87-118, respectively; R. J. H. Hertz, *Pentateuch and Haftorahs* (New York: Metzudah Publishing, 1941), vol. I, 193-95; R. David Tzvi Hoffmann, *Sefer Bereshit* I (Bnei Brak, 1969), 30-31 (I thank Nathaniel Helfgot for this reference); Peter van Inwagen, "Genesis and Evolution," in *God, Knowledge and Mystery* (Ithaca, NY: Cornell University Press), 128-62. For Shadal, see the passage cited in note 29. Regarding Nehama Leibowitz, R. Nathaniel Helfgot communicated to me the following story: "In 1987, when I was studying in the RIETS Semicha program at the Gruss Institute in Jerusalem, I was privileged to take a class with Prof. Nehama Leibowitz *z"l.* One time in class she related that someone had asked her: 'If the Torah is indeed the repository of all wisdom, how is that we do not find the theory of relativity or Newtonian physics explicated therein?' Without missing a beat, she responded: 'Because it has more important things to teach us, like how to behave and how to act within the natural world.'" The affinity of her answer to the views of her brother, Yeshayahu Leibowitz is clear.
59. Van Inwagen, 140.
60. *Ibid.* 143.
61. R. Kook, *Eder ha-Yakar* (Jerusalem, 1985), 37-38.
62. See R. Hoffmann, 30-31. R. Nathaniel Helfgot noted that it is not clear from traditional sources exactly when during the Jews' sojourn in the desert the various narratives (as opposed to mitsvot) were communicated.
63. R. Kook, *Iggerot ha-Reayah* I (Jerusalem 1985), #91, p. 106.
64. *Ibid.*
65. One question for anti-concordists who use this argument is whether they wish to make exceptions for the elite. But whatever the answer to that, the Torah was given to all.
66. Joel B. Wolowelsky mentioned another oft-discussed form of the *dibbera Torah* approach, one that views the creation and flood narratives in the context of epics told by other peoples of the period—the "*leshon benei adam*" of all the people living in that time and place, including the Israelites. In Wolowelsky's formulation, to send religious messages, the Torah concentrated on changes (which were obvious to the reader of that period) in parts of the pagan narratives and not on giving a fully accurate scientific or historical account. See Wolowelsky, "Teaching Evolution in

Yeshiva High School," *Ten Da'at: A Journal of Jewish Education* 10:1 (Spring 1997):33-40 (available at http://www.daat.ac.il/daat/english/education/evolution-1.htm); also, "Teaching the Flood Story: The Importance of Cultural Context," *Ten Da'at* 9:1 (Winter 1996):87-92 (available at http://www.lookstein.org/ articles/flood.htm). See also Slifkin, 218-20.

67. Van Inwagen thinks that the Bible's authors are human beings who were responding to the divine spirit. It is understood that this is not the view of the anti-concordists we are considering!
68. I thank Michael Segal for very helpful correspondence about how Genesis 1 was understood in ancient times.
69. Hertz, *Pentateuch*, I, 195.
70. "The Educational Value of Judaism," in *Collected Writings* VII, trans. Gertrude Hirschler (Jerusalem: Feldheim, 1984), 264; also quoted by Slifkin, 285. For an analysis of this and other writings of R. Hirsch on evolution and science in general, see Lawrence Kaplan, "Torah *u'Mada* in the Thought of Rabbi Samson Raphael Hirsch," *BDD* 5(Summer 1997): 5-31. For an interesting discussion of using moral fruitfulness and existential vitality as criteria of interpretation, see Leonard Levin, "Affirming God As Creator," *Conservative Judaism* 54, 2 (winter 2002): 40-43.
71. The anti-concordist's explanation of the inaccuracy of Gen. 1 targets an *example* of a dense truth—" ten thousand million years ago." Nevertheless, it is obvious that an anti-concordist can also explain why *other* scientific truths are contradicted by a literal reading of the Bible. In every one of those cases, he will maintain, were the real truth stated in the text, it would not be comprehensible to the masses or would be dangerous to them. The "dense truth" approach works well when applied to such examples as the assertions that Joshua stopped the sun and that dew falls from the heavens. (The dew example was proposed by Jerome Gellman. Dew is really condensation caused by the difference in temperature between the ground and air just above the ground. The masses could not grasp this description.)

    Concordists will have trouble with these cases because I presume they cannot find a deep non-obvious literal meaning which yields the truth about the sun or about dew in the same way that Aviezer finds the primordial fireball in Gen.1. Why, then, on their view, is the Torah inaccurate with regard to the sun and the dew? In the Joshua example, a concordist may say, in the spirit of "modest" concordism (see the opening paragraph of this paper), that the verse is describing how the scene appeared to the people and is therefore reconcilable with heliocentrism. Something else took place, which the text has no need to spell out. But the dew example is more difficult. Perhaps the concordist will say—when push comes to shove—that "dew falls from heaven" refers to the role of the air in forming dew. This is strained, I think, but not necessarily strained enough to force concordists to relinquish their overall view that the Bible presents science accurately. Another strategy for dealing with the dew example is to regard it as a metaphor. But concordists should explain the cash value of the metaphor, and how they know that Genesis is not mere metaphor. To this last point, I think the concordist's answer would be that Genesis is susceptible to a non-metaphorical reading but verses about dew are not. All in all,

the example is challenging and requires more deliberation. My thanks to David Berger for a helpful discussion of the cases.

72. I do not know how *concordists* wish to interpret the story of Eve's creation from Adam's rib either, but I do not think that affects my point that moral and spiritual truths can be dense or difficult to discover, just as scientific ones are.
73. Wolowelsky's position (see note 66) seems less vulnerable to this objection.
74. R. Hertz has a similar list.
75. Van Inwagen, 137.
76. See Dr. Johnson: "[W] are perpetually moralists, but are geometricians only by chance . . . our speculations about matter are voluntary and at leisure." (Quoted by van Inwagen, 138.)
77. See Maimonides, *Mishneh Torah, Hil. Yesodei ha-Torah* 2:2, a passage which many religious scientists affirm based on their own experience of studying nature.
78. To say that truth is not important to the Bible at all, not even instrumentally, is to open the floodgates to criticism of the Bible's historicity and doubts concerning aspects of its metaphysics. After all, one might argue, historical and metaphysical truths are not important for the Bible because the Bible's purposes are better served by false accounts, just as in literature. From an Orthodox perspective this is a problem that those who stress the Bible's moral and spiritual purposes and the scientifically inaccurate character of biblical verses must be aware of when they develop their view. Concordists face the same problem. For an interesting attempt to draw the limits of nonliteral interpretation, see Joshua Golding, "On the Limits of Non-literal Interpretation of Scripture from an Orthodox Perspective," *Torah u-Madda Journal* 10(2001):37-59.
79. *Orot ha-Kodesh* (Jerusalem, 1985), 2:537.
80. See R. Joseph B. Soloveitchik, *Family Redeemed*, ed. David Shatz and Joel B. Wolowelsky (New York: Toras HoRav Foundation, 2000), 3-103, as well as *The Emergence of Ethical Man*, ed. Michael S. Berger (New York: Toras HoRav. Foundation, 2005).
81. "The Educational Value of Judaism," 263-64.
82. This will be true as well if evolution includes divine interventions, as a bold concordist would allow. However, the fine tuning argument works most smoothly when no divine interventions are needed—a position that is extreme.
83. Add to this the awe that can be inspired by the realization that the Bible knew contemporary science, shifting sands problems aside.
84. See also the story about Nehama Leibowitz in note 58. Shalom Carmy has written: "If the Torah were intended primarily as a textbook in these subjects, it should have been a lot more explicit and detailed regarding scientific data and theory." See Carmy, "A Religion Challenge by Science' —Again? A Reflection Occasioned by a Recent Occurrence," *Tradition* 39:2 (Summer 2005).
85. See Sarah Kamin, "Rashbam's Conception of the Creation in Light of the Cultural Currents of His Time," in her *Jews and Christians Interpret the Bible* (Jerusalem: Magnes Press, 1991), 27-68. I thank Mordechai Cohen

for this reference and Rachel Friedman and Martin Lockshin for discussion of Rashbam's view. Note that if, as appears to be the case, Rashbam held that the account yielded by the *peshat* is not truly antithetical to the Kabbalistic narrative—that is, it is not false but rather incomplete—the anti-concordists' use of Rashbam to illustrate the difference between the text and the true theory is less compelling.

86. R. Kook *Iggerot ha-Reayah* I, #134, p. 163; the translation is from *R. A. Y. Kook: Selected Letters*, translated and annotated by Tzvi Feldman (Ma'aleh Adumim: Ma'aliot Publications). See also *Eder ha-Yakar*, 37-38.
87. *Iggerot* I, #91, p. 105 (Feldman p. 5).
88. The arguments of course discredit literalism too, since the obvious literal meaning is now held to be at least partially inaccurate.
89. Carl Feit writes, however, that Ramban's true interpretation is not a sequential one, but rather describes different levels of the *sefirot*. See Feit, "Modern Orthodoxy and Evolution: The Models of Rabbi J. B. Soloveitchik and Rabbi A. I. Kook," in Cantor and Swetlitz, 221. This would not affect the point that the truth is buried in the text. See also Feit, "Darwin and *Drash:* The Interplay of Torah and Biology," in Shatz and Wolowelsky (ed.), *Mind, Body and Judaism* (New York: Yeshiva University Press, 2004), 43-56 (originally in *The Torah u-Madda Journal* 2[1990]).
90. See David Berger, "Miracles and the Natural Order in Nahmanides," in *Rabbi Moses Nahmanides (Ramban): Explorations in his Religious and Literary Virtuosity*, ed. Isadore Twersky (Cambridge, MA: Harvard University Press, 1983), 112, n. 19. Though he does not discuss Gen. 1, Berger adduces other passages in which Kabbalah, according to Ramban, explains the plain meaning of a text (Gen. 6:4, Ex. 6:2-3, Num. 20:1, Job 32:3). He stated to me that likewise Kabbalah provides the *peshat* in Gen. 1. Slifkin too affirms that the mystical meaning of Gen. 1, according to Ramban, is the literal meaning—the terms in the text refer to mystical entities and processes (195-97).
91. See Slifkin,184-86. These problems were pointed out earlier by others, beginning with T. H. Huxley (see Slifkin, 186, n. 1). See also Feit, "Darwin and Derash," 51-52.
92. Slifkin, 185 n. 1. See also 231-33 on the appearance of dinosaurs. See also Cherry, "Crisis Management," 169-77. As mentioned earlier, Slifkin, following his reading of Rambam and Ralbag, maintains that Genesis 1 is not giving a sequence at all, but rather a conceptual ordering.
93. See, e.g., ibid., 184, n. 2. It must be conceded that the interpretive problems that Aviezer adduces (e. g., what is the light in Gen. 1:3? How can darkness be separated from light, if it is not a substance? What are "the waters above the firmament"?) are hardly trivial, and that his understanding of these verses makes clean sense of several of them. But arguably anti-concordist readings of Genesis treat these verses adequately, and the problems Slifkin cites make the bold concordist thesis unlikely even with regard to cosmogony, insofar as in the biology parts, the Bible does not seem to be presenting science.
94. See Galileo, "Letter to Castelli," 54; "Letter to Christina," 114-18.
95. I have added this section at the suggestion of R. Reuven Bulka, editor of this special issue.