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INNOVATION IN CRESCAS'S *LIGHT OF THE LORD*

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As Mark James suggests, “We might call Crescas a ‘textual reasoner’ to the extent that, without simply rejecting some antecedent ‘modern’ critique of ‘tradition,’ he seeks from Jewish tradition itself rules to sharpen and delimit this critique.”¹ I consider this collection a fresh inspiration for Jewish Textual Reasoning (JTR), because its exemplary essays identify features of Crescas’s work that could serve as resources for contemporary Jewish thought and reasoning. Within the space of this essay, I sample one source of inspiration: the volume’s attention to Crescas’s innovative reasoning.

My focus here is the logically innovative character of Crescas’s thought. James Diamond cites Eliezer Schweid’s characterization of Crescas’s “*innovative and revolutionary stance in philosophy.*”² Ari

¹ Mark James, “Crescas Among the Textual Reasoners,” *Journal of Textual Reasoning* 13, no. 1 (January 2022).

² James Diamond, “The Inexhaustible Metaphor of Light: Illuminating the Fault Lines between Crescas and Maimonides,” *Journal of Textual Reasoning* 13, no. 1 (January 2022); Eliezer Schweid, “Crescas” in *Our Great Philosophers: Jewish Philosophy in the Middle-Ages*, (Tel Aviv: Yedioth Ahronoth, 1999), 362 [Hebrew]; italics mine.

Ackerman notes that Crescas “does not passively receive philosophic sources but...actively stake[s] out innovative positions in the philosophic debates of his age.”³ Shalom Tzadik plumbs Crescas’s “new philosophical view” as a potential “new stimulus for religious Jewish philosophy.”⁴ The volume’s authors successfully draw our attention to the innovative center of Crescas’s work. But what does each innovation mean?

This essay’s primary thesis is that philosophic innovations are difficult to read, because such innovation involves changing the very logical conditions by which the validity of that innovation could be identified and tested.⁵ This essay’s primary method is to examine how our

³ Ari Ackerman, “Hasdai Crescas and Scholastic Philosophers on the Possible Existence of Multiple Simultaneous Worlds.” In his essay for this volume, Ackerman investigates Crescas’s innovation in a manner that is close to my reflexive approach. To gain insights into Crescas’s innovations, he seeks to uncover the assumptions of scholars who assay the innovations.

⁴ Shalom Tzadik, “Philosophy and Religion in R. Crescas’s *Light of the Lord*,” *Journal of Textual Reasoning* 13, no. 1 (January 2022). In this way, Tzadik’s effort parallels my reflexive reading of Crescas as potential inspiration to TR.

⁵ Kadish argues that “it was [Crescas’s] very refusal to compromise the truth of Torah as he saw it in favor of the regnant view among the educated class in his time that drove him to discover new scientific perspectives. This can and should be an inspiring model of intellectual integrity for traditional Jews today” (Seth Kadish, “Hasdai Crescas and Simeon ben Zemah Duran on Tradition versus Rational Inquiry,” *Journal of Textual Reasoning* 13, no. 1 [January 2022]). Rudavsky cites Weiss’s claim that “Crescas must be credited with introducing a series of new perspectives that altered the character of physical theory once and for all” (Tamar Rudavsky, “Crescas on Time, Space, and Infinity,” *Journal of Textual Reasoning* 13, no. 1 [January 2022]). Green addresses Crescas’s account of innovation in religious law “on the assumption that all future innovation derives from the wealth of opinions already debated in the Talmud” (Alexander Green, “Four Critiques of Crescas Against Maimonides and the Relationship of Intellect and Practice in Religion,” *Journal of Textual Reasoning* 13, no. 1 [January 2022]). Eisenmann addresses Crescas’s own reflections on the underlying processes of innovative thinking, which “excites the will”:

With regard to the factor of novelty, according to Crescas, when a person yearns to apprehend something new and actually does so, his pleasure is even greater. The yearning—the passion—“excites the will”; hence, the pleasure of the will’s emergence from potential to real will be greater in proportion as the distance that the appetitive faculty must traverse in order to realize the imagination. (Esti Eisenmann, “R. Hasdai Crescas and the Concept of Motivation in Modern

authors identify a sample of Crescas's innovations, and then test the overall hypothesis that readers can successfully identify Crescas's innovations only by raising *abductions* that go beyond what we may call the plain sense of Crescas's text. Adjusting some of my analytic vocabulary as the essay unfolds, I begin with the following set of terms.

Peshat. Stimulated in part by David Halivni's approaches to *peshat* and *derash*, I cite the terms as metaphors for a philosophic distinction between what I will call "plain" and "interpretive" readings of Crescas's texts.⁶ As defined for this essay, plain sense reading employs a variety of instruments (philology, grammar, semantics, history, and more) to contribute to a scholarly consensus about the probable meanings of each of Crescas's claims within their intra-textual contexts and within the likely linguistic practices that he shares with his contemporaries. Such plain sense reading should enable a community of scholars to explain their members' differing interpretive goals and claims as a result of applying identifiable interpretive practices to rereading a relatively stable and shared account of the text under study.⁷

Derash. As defined for this essay, interpretive reading is stimulated by its author's judgment that, in its plain sense, some text is challenging

Psychology and the Philosophy of Education," *Journal of Textual Reasoning* 13, no. 1 [January 2022]).

And Harvey cites Harry Wolfson's attention to the themes of innovation and pragmatism whose interdependence grounds my own essay's overall approach:

While Wolfson duly presented Crescas within his medieval milieu, he was also interested in him as an original philosopher who is relevant to our contemporary concerns.... Wolfson had originally been drawn to Crescas not because of his contribution to the history of natural science, but because of his proto-Pragmatic philosophy, which is "old wine that is even now bursting new bottles." (Warren Zev Harvey, "Wolfson's Pragmatic Crescas," *Journal of Textual Reasoning* 13, no. 1 [January 2022]).

⁶ David Weiss Halivni, *Peshat and Derash: Plain and Applied Meaning in Rabbinic Exegesis* (New York: Oxford University Press, 2019).

⁷ The scholars need not agree to each aspect of a plain sense reading, but they should be able to clarify the etiology of the differences. In these terms, the relatively stable plain sense serves as enabling condition for all reasonable interpretive readings.

to read. For example, its grammar or semantics appear inconsistent within its intra-textual context; it appears to introduce a set of inferences that would contradict other inferences within that context; or it contradicts beliefs and modes of inference within the reading community. A successful or strong interpretive reading enables members of a sub-community to re-read the plain sense as if it signified how to repair or adjust the sub-community's relation to the plain sense of both the text and the sub-community's existential setting or condition.

Abduction. I borrow the term "abduction" from Charles Peirce, who makes use of Samuel Coleridge's term to name the logic of innovative reasoning: reasoning that offers probable hypotheses about how newly observed, surprising phenomena could be explained if we revised our prevailing assumptions in some way.⁸ Seeking to correct what he considers binary tendencies in Western thought, Peirce expands Aristotle's deductive/inductive model of reasoning to an abductive/deductive/inductive model. In Peirce's day, J.S. Mill's definition of induction remained authoritative:

[Induction is] the operation of the mind by which we infer that what we know to be true in a particular case or cases will be true in all cases which resemble the former in certain assignable respects....The fundamental

⁸ In the words of Anglican theologian Daniel Hardy,

[Samuel] Coleridge introduced the term 'abduction' to refer to the capacity of our reasoning to be drawn by light, enabling us to 'see' more than perception allows....Coleridge never conceives of abduction operating apart from relation to God....At the same time, the divine is always implicated in whatever it transforms. For Coleridge, every knowing and all love involve abduction, from chaotic spontaneity, to the most rudimentary kind of volition, to the highest form, which is love. (Daniel Hardy, with Deborah Hardy Ford, Peter Ochs, and David F. Ford, *Wording a Radiance: Parting Conversations on God and the Church* (London: SCM Press, 2010).

For readers accustomed to Aristotle's syllogistic, Peirce diagrammed abduction as a probable inference that, if a certain fact B were the case, then the phenomenon C would appear as a consequence of our holding certain assumptions (major premises).

principle of induction is the proposition that the course of nature is uniform.⁹

Analogous to Crescas's critique of Maimonides, Peirce criticizes Mill for presuming the mind's capacity to intuit self-evident truths and for assimilating two different cognitive activities under the notion of induction. He labeled the first activity abduction, "which must cover all the operations by which theories and conceptions are engendered."¹⁰ It may be diagrammed in this syllogistic form: "(i) The surprising fact, C, is observed; (ii) But if A were true, C would be a matter of course; (iii) Hence, there is reason to suspect that A is true."¹¹ Peirce comments:

[T]he abductive suggestion comes to us like a flash. It is an act of insight, although of extremely fallible insight. It is true that the different elements of the hypothesis were in our minds before; but it is the idea of putting together what we had never before dreamed of putting together which flashes a new suggestion before our contemplation.¹²

According to Peirce, Mill assimilated abduction with a second activity, induction, experimentally testing the abductive suggestion or hypothesis. To prepare a hypothesis for testing, the inquirer first reasons deductively, inferring what else about the phenomenon—what effects—we might observe if the hypothesis were true. The next step is induction per se: the singular act of comparing expectations with results. If a sample of actual effects compares well with expectations, then the hypothesis is strengthened. The results of induction remain probable, even if very highly probable.¹³

⁹ John Stuart Mill, "Of Inductions Improperly So Called," in *A System of Logic, Ratiocinative and Inductive*, Vol. 1 (London: Charles Parker, 1851), III.2, 319.

¹⁰ Charles Sanders Peirce, "Methods for Attaining Truth," in *Collected Papers*, eds. Charles Hartshorne and Paul Weiss (Cambridge: Harvard University Press, 1934-35), 5.457. Future references to this collection will be to CP, followed by volume and paragraph number.

¹¹ Peirce, "Pragmatism and Abduction," *CP*, 5.189 (1903).

¹² "Pragmatism and Abduction," 5.181.

¹³ "The operation of testing the hypothesis by experiment, which consists in remarking that, if it is true, observations made under certain conditions ought to have certain results, and

To return, then, to Crescas as innovator, my working hypothesis is that, because there is no way to identify Crescas's innovations through plain sense readings,¹⁴ the volume's authors will most likely offer interpretive readings of the innovations. Exceeding the plain sense of Crescas's text and of his interlocutors' plain sense vocabularies, such readings would entail abductive reasoning as well as attributing such reasoning to Crescas.

While the authors do not promote this type of reading explicitly,¹⁵ I am able to collect resources for such a reading from pieces and portions of all of the volume's essays. I devote the rest of this essay to presenting a sample of these resources, ordered so that, step-by-step, they illustrate three successive levels of an abductive method of assaying the character of each of Crescas's innovations. Note that my subject is a potential *method for assaying* the innovations, not a potential set of claims about the innovations themselves.

My inquiry traces three levels of abductive inquiry that do not appear explicitly in the plain sense of *Light of the Lord* or of the volume's essays, but that appear in a creative, interpretive reading of the essays. This reading may appear at first to be constructed as if out of thin air, but all the construction material is drawn from elements of the plain sense of the essays. The elements are gradually sewn back together so that, by the end of Level III, the construction should display a degree of coherence and explanatory power—at least enough to introduce a testable paradigm for interpreting Crescas's innovations.

then causing those conditions to be fulfilled, and noting the results, and, if they are favorable, extending a certain confidence to the hypothesis, I called *induction*" (Peirce, "Hume on Miracles," *CP*, 6.526 [1901]).

¹⁴ I argue above that interpretive readings are not once and for all. While they may have broader applications, they respond to questions that arise out of the readers' context of inquiry and apply fully only to those contexts.

¹⁵ While only Wolfson lays claim to such a reading, he does not articulate it but only points toward it.

Level I of Abductive Reading: The Elemental Analogues

As I envision it for this exercise, the volume's abductive reading begins by noting an analogy between Crescas's studies of Torah and of physics. At this stage, the perception of analogy remains in the eyes of the observer; there is as yet no observation of correlation—a mutual influence—between the analogues.

Torah Study Initiates Activities of Jewish/Rabbinic Reasoning

Roslyn Weiss's opening sentences capture the centrality of Torah study in *Light of the Lord*:

Medieval Jewish thinkers typically deploy biblical exegesis for two reasons: to find (or compel) corroborating prooftexts for their philosophic speculations, or to explain away difficulties in the biblical text that threaten these speculations. Even if Crescas is no exception to this general rule, what is striking about him is his championing of Torah—just as it is—as the fount of truth. The ingenuity of his biblical hermeneutics enables him to celebrate the Torah text rather than push it aside in search of a presumed deeper meaning concealed within.¹⁶

Torah study is the foundation of rabbinic text interpretation, and JTR revalorizes rabbinic Torah study as a foundation for academic studies of Judaism, as well as for fruitful dialogue among the sometimes-competing sub-disciplines of rabbinic, biblical, and Judaism studies, and among the sometimes-competing discourses of synagogue and academic Judaism. The font of JTR is the *text of Tanakh* as read and interpreted through the chains of transmission displayed in the Mishnah, Talmud, midrash, and subsequent commentary. For Crescas, as for JTR, Torah study initiates activities of Jewish/rabbinic reasoning that stand alongside humanity's great traditions of reasoning, such as the Hellenic and Indian philosophies and many more. These activities, which I will label "Torah-reasoning," constitute the people Israel's indigenous wisdom. At the same time,

¹⁶ Roslyn Weiss, "Hasdai Crescas's Philosophical Biblical Exegesis," *Journal of Textual Reasoning* 13, no. 1 (January 2022).

Torah-reasoning is also clarified and refined through certain (not all) instruments of philosophic and other disciplines.

This volume hosts a lively debate on Judaism's indigenous wisdom. Some essays identify Crescas as an antirationalist (perhaps fideist) rabbinic thinker,¹⁷ others identify Maimonides and Crescas as religious Jewish thinkers who deploy different philosophic arguments on behalf of different accounts of the goals of Torah.¹⁸ A third set of essays describes Crescas as reasoning out of Torah study while also fashioning new patterns of philosophic inquiry and placing them in service to Torah-based reasoning. Torah-reasoning is a prototype for JTR's practice of reasoning out of rabbinic text study while also engaged by Jewish and general philosophic questions.

Ackerman, for example, criticizes Baer's view of Crescas as an apologetic Jewish pietist:

[I]t seems wholly inaccurate to position Hasdai Crescas as antagonistic to philosophy. It is true that Crescas opposed certain Maimonidean philosophers who espoused radical theological positions. However, in certain respects, Crescas is more philosophical than those thinkers whom he criticized....Crescas' critique of far-reaching rationalism is deeply philosophic both in respect to his commitment to the philosophic tools of logical and syllogistic argumentation.

Similarly, James describes how the Torah gives rise to forms of human reasoning shaped by the encounter with divine wisdom:

¹⁷ Diamond gives one of the clearest accounts of the disjunct between Maimonides and Crescas, writing, for example, that "Crescas aims at undermining the Aristotelian philosophical framework within which Maimonides conducts his exegesis, seeking to liberate Judaism's scriptures from the strictly rationalist constraints with which Maimonides shackled them."

¹⁸ For example, Green notes how Crescas classifies intellectual perfection as a means toward properly fulfilling the commandments, while Maimonides identifies ultimate perfection with complete rationality. In this case, Crescas redefines rather than rejects the notion of intellectual perception. Tzadik's related approach is to distinguish the different philosophic approaches each takes, rather than portray them as displaying different religious commitments ("Four Critiques").

Crescas takes for granted that the Torah embodies divine wisdom, but ... he does not identify this wisdom merely with the content of the finite sentences of the Bible or authoritative rabbinic writings, but also with the *rules of reasoning and interpretation* by which the Torah's wisdom is infinitely unfolded and applied. If the content of revelation is unfolded through practices of human reasoning, and if human reasoning—particularly Jewish reasoning—is reshaped by the encounter with God's Torah, then there can be no ultimate conflict between revelation and reason. The infinite wisdom of the Torah is neither separable from, nor reducible to, human reasoning.

I cite little of Crescas's polemical arguments against Maimonides, because, for this exercise, I read these as situated within an intramural debate and intended for reparative purposes rather than for reifying a sharp disjunction and replacing it with only one side of the disjunct. In Ackerman's words, the disagreements "should be viewed as an intra-philosophic debate and not as a clash between Jewish faith and philosophic reason." I therefore read Crescas's polemic as seeking to re-situate philosophic and related inquiries as valuable instruments within the overall work of Torah-reasoning. I also read his philosophic practices as reshaping classical (Aristotelian) logic and epistemology so that they can receive rather than distort the logic and hermeneutic of Torah.

Natural Science Is as Significant a Part of Torah-Reasoning as Creation Is of God's Word

Seth Kadish summarizes Crescas's powerful commitment to science as well as Torah:

[Crescas] refused to compromise the integrity of tradition, but he equally refused to compromise scientific integrity and rigor. It was precisely this combination that allowed him not only to remain loyal to the tradition, but also to become an original thinker on the cutting edge of science....[W]hat drove him to discover new scientific perspectives was his very refusal to compromise the truth of Torah as he saw it in favor of the regnant view among the educated class in his time.

Ackerman emphasizes the non-disjunctive relation between Crescas's studies of Torah and natural science:

[By contrast with other medieval Jewish philosophers], Crescas was far more up to date with the developments in physics and metaphysics among his philosophic contemporaries. Using these new tools, he was willing to question orthodoxies regarding space, time, matter, free choice, creation and other scientific, philosophic and theological issues. In short, the disagreement between Crescas and Jewish philosophers who adopted what is considered prototypical philosophic positions regarding human perfection and God's nature and activities should be viewed as an intra-philosophic debate and not as a clash between Jewish faith and philosophic reason.

I argue elsewhere that such reformulations of logic and epistemology may anticipate contemporary post-Newtonian and multivalued logics.¹⁹ If Crescas had not offered viable alternatives to Aristotle's logic of science, then we might attribute some form of anti-rationalism and anti-logicism to Crescas, comparable to what scholars attribute to al-Ghazali's critique of Aristotle. In this case, the debate between Crescas and Maimonides could be an all-or-nothing affair. However, as noted in this volume, Crescas offers innovative alternatives to the predominant scholastic approach to the logic of science.²⁰ Once we identify these alternatives, we should be able to verify Crescas's having moved from Aristotle's *to* another form of logic — the way, for example, Werner Heisenberg moved from the Newtonian practice of logic to quantum logic. In Heisenberg's case, the new practice does not flatly contradict the old; instead, it introduces a much broader domain of formal inquiry, within which the Newtonian practice may be re-assigned to a smaller sub-domain within the limits of human experience. Crescas's relation to Aristotle could be characterized in similar ways. Crescas's formal studies — for example in the mathematics of infinity and the reality and infinity of vacuum²¹ —

¹⁹ *Inter alia*, Peter Ochs, "Beyond Two-Valued Logics: A Jewish Philosopher's Comments on Recent Trends in Christian Philosophy," in *Christian Philosophy: Conceptions, Continuations, and Challenges*, ed. J. Aaron Simmons (Oxford: Oxford University Press, 2019), 260-285; Peter Ochs, *Peirce, Pragmatism, and the Logic of Scripture* (Cambridge: Cambridge University Press, 1998), 281-305.

²⁰ See citations above, pp. 213-214.

²¹ See Rudavsky, "Crescas on Time."

introduce a broader domain of inquiry, within which Aristotle's calculus may be re-assigned to a smaller sub-domain within the limits of finite measurement. There is a challenge, however: even scholars who agree that Crescas offers an alternative logic do not clearly identify this alternative. What to do?

This challenge accompanies almost every significant philosophic and scientific innovation—in Thomas Kuhn's terms, every significant paradigm shift²²—because each innovation introduces some new conditions for conducting inquiry, some new assumptions, axioms, and methods of reasoning.²³ Without new conditions, apparently new discoveries cannot be identified and verified. The new conditions must include some or much of the old, without which innovators would lack the rules of inquiry that led them to their new yet incompletely verified discoveries. But how do they add new rules? This is the question that led Peirce to despair of his contemporaries' logic of science and, with help from premodern forebears, to propose new models of induction and thus new logics of discovery.²⁴ How, then, do scholars identify Crescas's logic of discovery and, applying this logic, identify his alternative to Aristotle's logic of scientific inquiry?

One thesis of this essay is that the plain sense of Crescas's *Light of the Lord* does not provide any clear label for his alternative. If there were a

²² Thomas Kuhn, "The Priority of Paradigms" and "The Response to Crisis" in *The Structure of Scientific Revolutions*, 3rd edition (Chicago: University of Chicago Press, 1996), chapters V and VIII.

²³ Eisenmann writes:

The novelty factor is also expressed in the fact that even when one achieves a goal for which one worked hard, the pleasure decreases after it has been reached, and one needs to find a new source of novelty: "When we attain new knowledge of which we had previously been ignorant, we experience joy, for we have made a sudden transition from ignorance to knowledge. Indeed an indication of this is that the joy is more intense when the apprehension is fresh, but the pleasure fades following the apprehension" ("R. Hasdai Crescas and the Concept of Motivation," Citing *Light of the Lord* I.III.5, 117).

²⁴ Ibid.

label, it would be the product of an interpretive reading of the text's plain sense. A second thesis is that the appropriate method for interpreting Crescas's logic belongs to a dimension of the logic itself and, thus, to conditions and assumptions that accompany the logic. The question reappears: what is the appropriate method? A third thesis is that the analogies introduced above—between reparative rabbinic reasoning and abductive studies of scientific reasoning—offer a means of identifying the appropriate method for reading Crescas's logic.²⁵ The analogies provide no plain sense or direct²⁶ account of the method. Instead, they stimulate a practice of abductive reasoning, back-and-forth between the analogues.²⁷ This practice generates conditions for identifying the method and the logics it discloses. Because these are conditions for interpretive rather than plain sense reading, their product belongs to some intellectual and historical setting. The method is not "out there" for all to see the same way from whatever setting; it is identified interpretively, with respect to a finite, reparative inquiry and in relation to a finite group of inquirers. It may be identified, again, in another way with respect to another finite inquiry, such that each identification relates to another only by way of analogy.²⁸ To see how the volume's authors move to interpretive readings of Crescas, we must turn to a second level of abductive inquiry.

²⁵ I claim it is "a" method, not that there are no other fruitful methods. It remains for scholars to test various approaches and see which offers the strongest answers to their questions.

²⁶ Here, "direct" in the sense of intuitive or inductive in Mill's sense (above, 216-17).

²⁷ Inspired by Mikhail Bakhtin, Steven Fraade writes of a dialogic relation between the rabbinic darshan and the text of Tanakh, and of the contemporary scholar's shuttling back and forth between the ancient text and the contemporary context of the scholar's reason for engaging that text. I think of the abductive reasoner shuttling back and forth in that sense. See Steven Fraade, *From Tradition to Commentary: Torah and its Interpretation in the Midrash Sifre to Deuteronomy* (Albany: SUNY Press, 1991), 13-22, 25.

²⁸ John Deely, philosopher of the Latin West and the history of semiotics, examines what I consider a parallel development in late Scholastic logic, extending in the schools from Thomas Aquinas (1225-1274), through Domingo de Soto (1494-1560) and others, to John of Poinsot (1589-1644). The development includes an undeveloped suggestion by Aquinas from which de Soto derives a definition of sign (*signum*) "as anything which brings into awareness what it itself is not," and which Poinsot extends *into a layered account of novelty within tradition*: that "interpretation is an activity coextensive with the life of the mind," that the object and

Level II of Abductive Reading: Signs that the Elemental Analogues May Be Correlatives

As I envision it, the volume's second level of abductive inquiry is to read back and forth between the two analogues, Crescas's studies of Torah and of science. I hypothesize that this dynamic process of reading and reasoning uncovers signs that the analogues (identified only through the appearance of resemblances between them²⁹) may be correlatives (where an account of each one influences or entails aspects of an account of the other).³⁰ To observe such correlatives is not yet to make an empirical claim about the mutual relationship of Torah and science in the world; it is to introduce conditions for the possibility of making such claims at another stage of inquiry.³¹ This is not a *mere* possibility (something only

instrument of interpretation is the *sign*, that the sign brings the interpreter into relation to what is not, so that interpretation is an instrument of novelty (laying claim to what is not) within the interpreter's tradition (epistemic and religious), but that by way of interpretation the novel enters *into* tradition rather than supplanting it (Citing John Deely, *New Beginnings: Early Modern Philosophy and Postmodern Thought* [Toronto: University of Toronto Press, 1994], 54-65).

Deely points out that Peirce's work on non-binary logic, semiotics, and abduction continues and extends this line of inquiry on tradition, signs, and novelty. Crescas scholars might note parallels between these developments and Crescas's approach to innovation, and *Crescas's philosophic innovations may inspire text reasoners to integrate medieval religious sensibilities with post-Newtonian logics of inquiry.*

²⁹ Within Pierce's pragmatic semiotics, what I am calling analogies are identified only through iconic signs, resemblances as we see them, as yet without empirical evidence of their effects on one another.

³⁰ Correlatives may share in the type of dialogic activity discussed above in note 27.

³¹ In Kantian terms, it is to introduce a transcendental argument for the possibility of this mutual relationship. I learn from the essays that it may be helpful to categorize Crescas as a proto-transcendental reasoner and, thereby, to distinguish the objects of this dimension of his work from the objects of Aristotelian claims about the world. As illustrated in Kant's First Critique, transcendental objects are of the world (they identify conditions for making empirical claims) but are not in the world (they are not the objects of truth-conditional claims). One may engage in zero-sum debates about empirical objects, but not about transcendental objects—another reason not to engage in all or nothing arguments about Maimonides versus Crescas.

conceivable), but what Peirce calls a *real possibility*: that which belongs to the capacity of a thing and would occur under certain conditions. By way of illustration, Peirce asks:

What else does the entire teaching of chemistry relate to except to the “behavior” of different possible kinds of material substance? And in what does that behavior consist except that if a substance of a certain kind should be exposed to an agency of a certain kind, a certain kind of sensible result *would* ensue, according to our experiences hitherto.³²

Applying Peirce’s terms, I would say that to observe Crescas’s Torah and Crescas’s science as correlatives is to anticipate that, on certain occasions, his study of Torah will influence his study of science and vice-versa, and that this mutual influence is not accidental. If the mutual influence is not accidental, then it may be an index of some activity not yet noted. But whether it is or is not such an index is a question for another level of abductive inquiry. On Level II, I illustrate only how the volume’s essays may depict the correlativity of Crescas’s studies.

Citations from the volume typically integrate features of Crescas’s work that this abductive inquiry segregates into two sets of features: those that would be disclosed by a second level of abductive reading and those that would be disclosed only on a third level. On the second level of reading, I try to attend only to features that appear singly in Crescas’s studies of Torah or of mathematical science and to claims that singular features of one study are correlative to those of another. On the third level of reading, I focus on efforts to identify the enabling conditions of this correlativity; as we will see, these include the inquirer’s relation to God. While I am loathe to impose a reading that intrudes on each author’s admirably integrated discourse, I do so only for the sake of illustrating what an abductive reading of Crescas may look like. I am not questioning the authors’ claims in their plain senses.³³

³² Peirce, *CP*, 5.457.

³³ One challenge concerns citations that associate features of correlativity with features of God’s attributes. My rule of thumb is to refer the latter features only to Level III, since such attributes would anticipate abductive inquiry into the inquirer’s relation to God. To respect authorial discourse, I try to retain Level II references to God when they may be associated

God's Word Is One and Also Two: Torah and Creation as Correlatives

In her introduction to the translation, Weiss identifies our first correlative: "For Crescas, one thing is certain: God is the author of nature; all existence and all existents owe their being to Him, and everything that exists is utterly dependent on Him."³⁴ This is rabbinic doctrine, as in the words of Morning Prayer (*Shacharit*), *Barukh she-amar v'haya ha-olam*, "Blessed is the One who speaks and it is." The acts of divine speech (*dibburot*, דברות) include *briyut* (בריות), creatures of the world, as well as words of Torah. *Crescas's science is therefore devotion to the God who speaks creation, maaseh b'reshit* (מעשה בראשית) as well as to the God who speaks commanding words, *aseret hadibbrot* (עשרת הדיברות). This Creator is also the God of renewed creation, as Crescas says:

The sweet singer said: "The heavens declare the glory of God, and the firmament shows His handiwork" (Ps. 19:2). For the firmament indicates that which is beyond doubt, namely, that it is the work of God's hands. This is what the Rabbis instituted in the formulation of the benedictions: "He who renews each day, constantly, the work of creation" —since the creation of the totality of existence not from a thing is constant.³⁵

Crescas's Torah-reasoning attends to the correlativity of Torah and creation. The texts of Torah are not only about human obligations to God and to each other but also about the human as creature, so that, for example, *halakhah* requires attention to the space-time conditions of human action. The way aesthetics challenges untested conventions about human perception, natural science challenges untested assumptions about the space-time conditions of our behavior. Crescas's lesson to textual reasoners is that to pay exclusive attention to the human side of Torah study is to ignore or veil one half of the divine word.

singly with either Torah study or science, rather than as a source of unity of those two studies.

³⁴ Roslyn Weiss, "Introduction," *The Light of the Lord*, 3.

³⁵ *Light of the Lord*, III.2, 277. Crescas cites the traditional morning liturgy: בְּטוֹבוֹ מְחַדֵּשׁ בְּכֹל יוֹם תְּמִיד מַעֲשֵׂה בְּרֵאשִׁית.

Crescas's approach to Torah and creation is neither conjunctive nor disjunctive. He neither assimilates one to the other nor divides the two into independent spheres. Instead, he attends to them as two words of the one living God or, we might say, two languages of God's single word: *leshon hakodesh* (לשון הקודש), i.e. Biblical Hebrew) and mathematics (as displayed in alphabetic Hebrew numerals).³⁶ To cite Ackerman again, "Crescas' multifaceted treatment of creation does not support an understanding of Jewish philosophy that distinguishes between outside philosophic sources and an original, authentic Jewish core."³⁷

The actual infinite marks Crescas's science as correlative to his Torah. Describing Crescas's scientific innovations, the volume's essays attend in detail to Crescas's account of the infinite. Read abductively, this attention marks the correlative character of Crescas's Torah seen from the perspective of his mathematical science. Crescas's mathematical infinite is correlative to rabbinic references to God's infinite glory and infinite Torah. As the essayists argue, Crescas introduces his infinite in opposition to Aristotle's. On a second level of inquiry, Crescas's account of the infinite may bear a significant mark of this opposition: the singularity of Crescas's infinite. Aristotle's infinite tends to retain Hellenic assumptions that human knowing is limited to the finite, so that references to the infinite mark only the absence of knowledge. In these terms, the infinite is a singular term for the not known. While *Light of the Lord* is animated by Crescas's real infinite—the subject of complex inquiries in Torah and in mathematical science—the infinite remains a singular notion on Level II, and the volume's authors do not, on a plain sense reading, distinguish different types, modes, or quantities of infinity as we might observe in the work of mathematicians and philosophers from the mid-19th century on.³⁸

³⁶ *Light of the Lord*, II.6, 219.

³⁷ Ackerman, citing the overall implication of Crescas, *Or Hashem* 3:1:1 (Jerusalem: privately published, 1990), 274-318.

³⁸ There are exceptions in the volume, for example, Tzadik's observation that "R. Crescas replaces the definition of 'infinite' as something without any borders with a more nuanced definition as something that lacks borders in some dimensions but may have borders in other dimensions."

To perform this essay's abductive inquiry, I must, however, draw a distinction between features of Crescas's infinite that are displayed in the second-level study of correlatives and features that may appear only when the inquirer desires something more: evidence about how and why studies of Torah and science are correlative, including insight into conditions for the possibility of such correlativity. I refer to desire, because the study of correlatives does not lead necessarily to a third level of inquiry; such inquiry follows from the inquirer's desire and will and, as we will see in the third level, desire and will are also implicated in what the inquirer discovers. The third level is also a reflexive activity, and reflexivity also emerges as one of its subjects. Successive features of the infinite are disclosed through the process of inquiry: the infinite as one name for the correlatives' shared, enabling condition; as unity in multiplicity; as attribute of God's word; and more. It therefore becomes difficult to assimilate its features to a single general account that is independent of successive contexts of inquiry.

Mathematics provides the elemental language for natural science.

As Rudavsky writes elsewhere about Spinoza and Galileo:

[P]erhaps the most important point is Spinoza's shared interest with Galileo in the mathematization of nature as a whole. Galileo reflected a new ideal according to which the ultimate aim of science was a mathesis universalis—an unequivocal, universal, coherent yet artificial language to capture our clear and distinct ideas. The demand to see nature as "written in mathematical letters" coincides with this aim. Even more, nature itself was expected to reveal mathematical order and harmony.³⁹

Some scholars argue that Galileo may inherit Crescas's insights.⁴⁰

³⁹ Tamar Rudavsky, "Galileo and Spinoza: Heroes, Heretics, and Hermeneutics," *Journal of the History of Ideas* 62, no. 4 (Oct. 2001): 611- 631, 619.

⁴⁰ Rabinovitch writes:

In evaluating Galileo's study of the paradoxes of the infinite, Carl Boyer declares that his "role was that of a Moses who led his readers within sight of the promised land, but who could not himself enter it." The fact that an infinite set is equinumerous with a proper subset of itself is often called Galileo's paradox, because he drew attention to it in his *Dialogues Concerning Two New Sciences*. It is

The dominant, Aristotelian account of the infinite is an inadequate resource for both natural science and theology. This is the defining feature of Crescas's correlative infinite: that it is the subject of Crescas's effort, in both Torah study and science, to correct his forebears' Aristotelian accounts of the infinite. In Tzadik's words:

R. Crescas had a keen scientific mind and is considered a central figure in the rejection of Aristotelian physics, with this rejection eventually paving the way for the advent of modern science. For example, R. Crescas replaces the definition of "infinite" as something without any borders with a more nuanced definition as something that lacks borders in some dimensions but may have borders in other dimensions. We can imagine this kind of infinite by imagining a rectangle with one side extending infinitely and all other sides finite, as a regular rectangle. This difference in mathematical definition has important philosophical and religious impact, because some Maimonidean proofs for the existence and the uniqueness of God are dependent on the Aristotelian definition of "infinite."

The simplicity of the infinite. I use the term "simplicity" in Maimonides's sense of the utter simplicity of God's name. Read abductively, this simplicity is an indexical sign of the God who is, but is otherwise unknowable: a sign of existence without predication. The Crescas-Maimonides debate on the reality or unreality of infinity operates within the terms of Maimonides's category of simplicity. They do not debate the degree of the infinite; the infinite is simply present in this world or absent.

of interest that more than two centuries before Galileo, the promised land was glimpsed. Rabbi Hasdai Crescas...writing in Hebrew and struggling with the same problems, was led to reject the Aristotelian concept of the infinite and to anticipate the foundations for transfinite arithmetic....Was there any influence by Crescas on Galileo? Without going into this matter deeply, it suffices to point out, as Wolfson does, that Giovanni Pico Della Mirandola in his *Examen doctrinae vanitatis gentium* quotes frequently from Crescas, whom he refers to as Hebraeus R. Hasdai. The extent of Galileo's indebtedness to Pico is an issue between the experts, but Galileo may have known through him or others of Crescas' ideas. In any case, no real progress beyond Crescas' insight on this topic was made for a long time. (Nachum L. Rabinovitch, "Rabbi Hasdai Crescas (1340-1410) on Numerical Infinities," *Isis* 61, no. 2 [Summer 1970]: 224-230, 224).

Within the context of Torah study, Weiss writes:

For Crescas, the Torah when read straightforwardly leaves no doubt that God knows particulars...Once it is established that God knows particulars, says Crescas, then it follows necessarily that God's knowledge encompasses the infinite since it is evident that particulars are infinite.⁴¹

Here, it is assumed that, were one to count all the particulars, the counting would continue endlessly, so that the quantity counted would be infinite. As displayed within Level II, the correlative infinite is a limit concept: an abstraction associated per hypothesis with the limit of an imagined but not yet experienced process of numeration. It would be inappropriate to identify this concept with the real infinite displayed in Level III. The co-presence of simple and non-simple notions of the infinite could be read as signs of an aporia either within certain passages of *Light of the Lord* or within scholarly readings of them. Such aporias may stimulate abductive readings—for example, midrashic commentary on a puzzling text of Tanakh. In this essay, I shall read this aporia as one stimulus for a Level III rereading of Crescas's account of infinity. Within Level II, I read Crescas's correlative infinite as a transitional mark of his critique of Maimonides en route to a third-level, reflexive account of infinity.

The infinite as actual/existent. Is there an actual infinite? This is a question about our relation to potential objects of knowledge. Do we know things in the world, where "things in the world" is a synonym for "existent/actual things"? Crescas joins Aristotle and most philosophers by assuming this is the case. Do we know only finite things in the world? Aristotle assumes that we do, continuing Hellenic assumptions that the objects of human knowledge are necessarily finite. Crescas shares the assumption that we know finite objects, but he finds no good reason to assume that the objects of human knowledge are necessarily and exclusively finite. For most Hellenic thinkers, the infinite is by definition excluded from the domain of human knowledge: hence a philosophic

⁴¹ Weiss, "Hasdai Crescas's Philosophical Biblical Exegesis."

tradition that applies the principle of non-contradiction to claims about the finite and infinite. Crescas famously questions these assumptions. Since claims about the infinite are not precluded *a priori*, they must be evaluated on the basis of evidence for or against. It may be the case that the object of our knowing is at once finite and infinite. We know the finite by way of the senses and cognition, but what evidence can be brought for our knowledge of the infinite? To answer this question, Crescas introduces innovative philosophic practices that are not available in Aristotle's and Maimonides's work. Because innovations both employ and re-fashion assumptions and discourses of the day, I suggested earlier that innovations cannot adequately be identified within the bounds of those discourses and assumptions. They cannot be identified through plain sense readings of the day, but only through interpretive readings that typically begin with piecemeal observations of their effects on immediate and future thought and practice. As suggested by the following citations from the volume, Crescas's innovations do not introduce new objects,⁴² but new ways of measuring and thinking about objects.

The correlatively infinite Torah. James illustrates how, in the case of Torah study, Crescas introduces his innovation by enacting lines of reasoning from what his readers recognize about the *halakhah* to what they might not yet have considered:

No determinate rule...can determine its own application in every possible context....If the Torah is to guide Jewish life reliably, it must...include the "exponential expansion" of the commandments using "its orally transmitted signs and exegetical techniques." When the Torah's commands are read in light of these rabbinic rules of reasoning...the community can acquire definite legal knowledge, which for Crescas involves three things: "grasping the commandments easily;

⁴² To be sure, innovative thinking is often stimulated by the discovery of phenomena that appear not to have been observed previously, and many such discoveries are made possible by the construction of new instruments of observation and measurement. But, adopting Crescas's logic—if not also his tendency to pragmatism—we would argue that claims to have observed new phenomena belong to a chain of inferences that presuppose the observer's assumptions and habits. To verify the novelty is to have introduced and tested new assumptions in addition to prior assumptions. See above, notes 5, 8, 22, 25-27.

attaining precision with respect to them; and remembering and preserving them." [Failing to attend to these three]...Maimonides undermines the community's grasp of these methods of reasoning, and hence the community's ability to be guided by the infinite Torah in ever new situations.

Crescas practices a type of maieutic teaching we might call "infinity thinking," apparently common-sense reasoning that, without saying so, displays the effects of his new assumptions. If the reasoning seems to make sense, the reader may acquire new suspicions about strictly finite thinking, including thoughts that each *halakhah* has only one unchanging meaning. Some Hellenic assumptions loosened, the reader may allow hints of the non-finite to enter in, such as hints of multivalence or indefiniteness.

The material infinite. James notes:

Crescas calls into question the Aristotelian denial of the possibility of the existence of an actual infinity (and by implication, the finite Aristotelian cosmos)...Crescas shows instead that it is conceivable that bodies exist in an infinite continuous vacuum. In so doing, Crescas developed a concept of space that would prove decisive for the development of early modern physics.⁴³

James identifies what I am calling a transitional notion of the infinite. From one perspective, the correlative notion negates Aristotle's denial, producing an abstract sign of existence without further predication. From a second perspective, the sign displays the force of an emergent mathematics of infinite space, defined in Level III.

⁴³ By way of illustration, Rudavsky writes, "Space is construed by Crescas as an infinite continuum ready to receive matter. Because this place or extension of bodies is identified with space, there is no contradiction in postulating the existence of space not filled with body, i.e., the vacuum or void" (Rudavsky, "Crescas on Time," citing *Light of the Lord* I.1.1, 30-46).

Level III of Abductive Reading: Reflecting on the Enabling Conditions of Correlativity

The third, reflexive level of reading is a search for the enabling conditions of correlativity, conditions named by way of successive sub-levels of research. If the abductive discipline is maintained, each sub-level concludes, from one perspective, with a finite, worldly response to the concrete and location-specific concerns that animated it, and that response includes tests of its adequacy. The reflexive inquiry continues beyond the conclusion of each such response. However, it is animated not only by subsequent worldly concerns, but also by a reappearance of the reflexive, and in that sense abstract, search for the enabling conditions of reflexivity. Inquirers may anticipate that this elemental search will also reach its conclusion within the inquirers' worldly space and time. There is no way for us, in an exercise like this, to anticipate if, when, and where that search would end or if and how it would continue. I suspect that abductively oriented seekers may look to rare inquirers like Crescas, because such inquirers appear not only to acknowledge and embody the actuality of this search, but also to voice powerful and innovative discoveries that they made while searching. But what cause, need, or impetus initiates the search for correlativity's enabling conditions? And by what means is the search extended or transmitted to other groups of inquirers, thereby giving evidence that it has not concluded? I learn from the volume's essays that Crescas may refer to desire and will as agents of the search and that, for him, the search may at some point examine this desire and will and seek to identify its enabling conditions. I also learn that, along its indefinitely extended path, the search may come to examine the infinite in a new modality as an enabling condition of correlativity, and it may come to examine the unity of God's word and name in a related and perhaps ever-extended way.

Level III inquiry continues to search for the enabling conditions of correlativity. But, leaving behind Aristotelian disjunctions between inner-outer and object-subject, the inquiry's focus of attention is reflexive, no longer conducted as if gazing "outward." *Re-examining the subjects of Levels*

I and II, the inquiry identifies—by way of abduction—the following subjects that were previously assumed but undisclosed.

Desire and Will

From the start, the inquiry must have been propelled by desire and will, since there was no necessity to seek beyond the dynamic interactions of Torah study and science. Desire and will are observed in the activity of the inquirer as agent of the inquiry. A central abduction of Level III is that *this agency is one of the enabling conditions of correlativity*. It is an astounding possibility that the inquirer is a factor in the subject of inquiry. Is the inquiry therefore a matter of mere subjectivity? That possibility was already discounted in Level II; the inquirer must therefore be a part of the subject-object of the inquiry. In the terms of Level II, subject and object are correlative, but the goal of Level III is to identify the enabling conditions of that correlativity. De Souza alludes to the subjectivity of desire in Crescas's philosophic theology:

[In receiving spiritual reward,] the soul's constant attachment [to God] will be strengthened for infinite time. The ranks of individuals will differ [in their pleasure] in accordance with how their love and [the strength of] their bond differed while they lived their lives of body-and-soul. Similarly, the soul of the rebellious transgressor, after it separates from the body, will experience severe pain as it dwells in a darkness contrary to its nature.⁴⁴

De Souza explains that, for Crescas, the soul that lives on after death "is something more akin to an emotional soul, the experience of pleasure or love derived from attachment from God." Paraphrasing Gabriella Berzin,⁴⁵ he adds: "Crescas separates the intellect from pleasure, deviating from the Aristotelian association of the two that was also adopted by

⁴⁴ *Light of the Lord* I.1, 286, cited in De Souza, "'I Feel Love': Hasdai Crescas on Reward and Punishment," *Journal of Textual Reasoning* 13, no. 1. (Words in brackets added by Weiss.)

⁴⁵ Gabriella Berzin, "Happiness, Pleasure, and Good in Maimonides and Crescas," in *Shefa Tal: Studies on Jewish Thought and Culture*, eds. Zeev Gries, Hayim Kreisel and Boaz Huss (Beer-Sheva: University of Ben Gurion Press, 2004) [Hebrew], 105.

Maimonides. True pleasure is love as an emotional experience in connection with God—and not an intellectual apprehension of God.” De Souza concludes, “In this sense, I argue that the *Light of the Lord* constructs a picture of a religious believer that is deeply preoccupied with the emotions and, by extension, with the self.”

Is this mere subjectivity? If a believer’s inquiry emerges out of concerns of the self, how can the inquiry mine the depths of Torah study and science, let alone explore the sources of their correlativity? Anticipating Kant,⁴⁶ one of Crescas’s central innovations is to challenge binary, either-or models of the human knower’s relation to the natural world. To interpret De Souza’s reading in this light, we may distinguish how such models appear through the three levels of abductive inquiry. In the terms of Level I, Crescas challenges Maimonides’s account of “intellect,” but in terms that may both reverse and replay Aristotelian binaries.

Diamond captures this dimension of a zero-sum debate between them:

The most important dimension of the Torah [for Crescas] from a qualitative point of view “concerns neither views nor deeds absolutely,” but rather “love of God and true fear of Him.” The Torah “illuminated” this idea that love “is distinct from intellection.”⁴⁷ Commandments perfect that love, as prescribed by the verse to love God “with all your heart and with all your soul” (Deut. 10:12). That very same verse conveys for Maimonides the contrary notion that knowledge exhausts the meaning of love of God.... As he states toward the end of the *Guide*, “he who has no intellectual cognition at all of God is like one who is in darkness and has never seen the light.”

In terms of Level II, however, the activity of the intellect in Torah study would be correlative to its activity in science. With respect to correlativity, the intellect would not be characterized, in Aristotelian fashion, as that which is utterly separate from the embodied soul. Its characterization would evolve in ways that may disclose conditions of correlativity that include the embodied soul, pleasure, desire, the intellect, and the God

⁴⁶ One of whose forebears on these matters is Augustine.

⁴⁷ *Light of the Lord*, VI.1, 220.

whose word speaks not only Torah and Creation but also the ground of their interrelationship. Harvey captures this dimension of Crescas's innovative reasoning:

Intellectual pleasure, like any other pleasure, is not, as the Aristotelians thought, something *in actu* or static, but rather is something dynamic: it is not intellectual cognition in itself, but rather it is the *transition...from potentially knowing to actually knowing.*"

The difference between intellectual pleasure in the transition and in the immediacy of intuition must be examined on the three levels.

Intellectual Pleasure

According to Level I inquiry, Maimonides and Crescas adopt contradictory positions on the pleasure of intellection, which, for Maimonides, is also the pleasure of prophecy. For Maimonides, following Aristotle, intellection is intrinsically pleasurable, so that a desire for knowledge is fulfilled in intellection itself. But "Crescas separates the intellect from pleasure, deviating from the Aristotelian association of the two that was also adopted by Maimonides."⁴⁸ According to Level II inquiry, Crescas reforms Maimonides' account by redefining its terms. Green's account is illustrative:

[According to Maimonides,] the Torah aims at welfare of the soul (correct opinions) and welfare of the body (morality and politics), guiding people to the ultimate perfection "to become rational in actu, I mean to have an intellect in actu; this would consist in his knowing everything concerning all the beings that it is within the capacity of man to know in accordance with his ultimate perfection." In contrast, Crescas argues in *Light* that intellectual perfection is necessary as a means toward properly fulfilling the commandments.⁴⁹

⁴⁸ Berzin, 105, cited by De Souza, "I Feel Love."

⁴⁹ Green illustrates Crescas's account of study vs action:

In the Preface, Crescas cites the conclusion of the Talmudic debate between Rabbi Tarfon and Rabbi Akiva over the issue of study versus action. However, his interpretation of the Rabbis' conclusion is that although the performance of action

For Crescas, intellectual and practical action are correlative, and the intellect serves as an instrument of a subject's desire to fulfill the commandments. Level III situates this correlativity in enabling conditions that include the subject's desire to renew the intentionality of *performing* the commandment for God's sake. The pleasure of fulfilling the commandment is neither in the intention alone nor the performance alone, but in the transition from apprehending toward attaining the intention and performance:

[T]he pleasure that exists in our life arises from the attainment of something for which we yearn. The person is in potentiality with respect to the apprehension of intelligibles, and he yearns for them. This yearning is nothing other than the excitement of the will...in anticipation of attaining the thing for which it yearns.⁵⁰

In Harry Wolfson's reading of Crescas, "Intellectual pleasure consists in the transition from a state of perplexity to that of certainty, in the unraveling of a problem, in the suspense and repose we experience after a state of confusion.... We can have no intellectual pleasure unless we are conscious of its coming."⁵¹ Here, the innovation of Level III is to number the inquirer's embodied desire among the enabling conditions for correlativity: the desire to perform the commandments with intentionality conditions the inquirer's correlative observance of Torah and pursuit of science. Level II studies of Torah and of science must be reexamined in light of this innovation.⁵²

is the end goal, it requires understanding of the action for it to be fully meritorious. This is why he writes "since it is the performance of the commandments that leads to this perfection, but there can be no performance of them without an understanding of them." ("Four Critiques").

⁵⁰ *Light of the Lord* VI.1, 221.

⁵¹ Harry Wolfson, "Maimonides and Halevi: A Study in Typical Jewish Attitudes towards Greek Philosophy," in *Jewish Quarterly Review* 2 (1912), pp. 297-337, at 335-336. Cited in Harvey.

⁵² De Souza notes that, like Crescas, Ibn Paquda posits a radical distinction between intention and act. Furthermore, as it might be surmised, the duties of the heart concern interior psychic states rather than physical performance of the *mitzvot*. Ibn Paquda, like Crescas, does not do

The Agency of Torah Study

As noted in Level II, Crescas argues that “the infinite content of the Torah could not possibly be expressed in a finite list of commands....According to Crescas, the commandments of the Torah must encompass all *possible* cases and circumstances, a domain which is infinite.”⁵³ In Crescas's words:

Since the great part of the commandments are in the category of the possible, a category broader than the sea, and since knowledge cannot encompass their details which are infinite in number, it appears that, were a single detail of those mentioned there [i.e. in the *Mishneh Torah*] to change, we could not reach a sure determination. Indeed, just as there is no comparison between a finite number and an infinite, so, too, there is no comparison between what is grasped of the finite details that are recorded there, and what is not grasped of the infinite details that are not recorded there.⁵⁴

Level III seeks to identify the subject's role in that infinity. De Souza notes:

[Crescas's] shifting the location of reward/punishment from physical acts to intentions makes Judaism largely a matter of cultivating the right disposition to some action. It is an ethics of the self that emphasizes states of mind, and it necessarily leads to a process of self-analysis[T]he practitioner must turn to inner dispositions and to emotional states as the sites of proper religious observance....[Here,] the status of the *mitzvot* is not just that of a commandment to do something, but also—and maybe overwhelmingly so—a commandment to desire or to intend something.

The subject's observing the halakhah therefore requires choice, judgment, and abduction as well as desire, will, and obedience.

While each halakhah is therefore non-finite, James notes that, “for Crescas, the infinity of the Torah's wisdom is not indeterminate in such a way as to give rise to *halakhic* uncertainty or unserious intellectual play.”

away with observance entirely: “what determines the punishment is the participation of both heart and body in the act” (91).

⁵³ James, “Crescas Among the Textual Reasoners.”

⁵⁴ “Introduction,” *Light of the Lord*, 21.

Inquiring what is to be done in real-time, the subject's own search is not infinite, but it contributes to the infinity of the halakhah. Receiving the plain sense of the halakhah as incompletely defined with respect to immediate conditions; the subject (as individual or community) must decide and envision how a halakhic rule is defined and thus enacted in current conditions. This decision and its consequences, along with the history of all other such decisions and consequences, constitute the infinity of the halakhah. Green cites Moshe Halbertal: "From the given material of revelation—both oral and written—the Sages, equipped with rules of derivation, deduce new norms which in turn become part of the accumulative material of halakhic knowledge."⁵⁵

The Indefinite Torah

As noted in Phase II, the infinite Torah is not "infinite" in the sense of a general and determinate law or pattern that repeats continuously until the end of time. Like the object of the inquirer's desire, it is *indefinite*: the end of desire that is not yet present but *could be* given certain conditions. If its presence were *merely* possible, then in any future we would expect that it could equally be present or not present, and there would be no measure of the conditions for its movement from lesser to greater

⁵⁵ Moshe Halbertal, *People of the Book: Canon, Meaning and Authority* (Cambridge, MA: Harvard University Press, 1997), 60. Green provides significant detail on the indefinite character of the halakhah:

Crescas is also critical of Maimonides' *Mishneh Torah* for only presenting the conclusions of rabbinic debates and not the debates themselves, thereby omitting the original sources and reasoning behind these discussions. The core issue behind this debate is whether the legal disputes can be simplified in order to place a greater emphasis on the intellectual knowledge of God as the true goal of the Torah or whether the legal controversies over the proper practice of the commandments are the essence of the Torah itself....Crescas' position on the nature of debates in Jewish law and the nature of the Torah build upon those of his teacher, Nissim of Gerona...[who] argues that all the debates contained in the Oral Torah were given at Sinai to Moses, such that controversy is part of the structure of revelation itself, including future controversies. This suggests that each generation has to derive new norms out of the options given to them in the debates of Torah. ("Four Critiques").

possibility. For Level III inquiry, the object of desire is *really* possible, which means that features of the current inquiry serve as indexical signs of the reality of that object. Such signs mark the existence of that object but without clear predications: signs that it is, but not yet of what it is. The object of Level III inquiry is a case in point: the correlativity of Torah and science are signs that the enabling conditions of correlativity exist, but not yet signs of what those conditions are. The object of this inquiry is prototypically indefinite: it already exists, but, at best, it will reveal itself only little by little through the long run of inquiry.

So far, we have seen that the inquiry is reflexive, so that the inquirer belongs to the object and that the object is indefinite. Observing that the Torah is indefinite, we may assume that it, too, belongs to the object, and we may infer that, as its correlate, scientific inquiry should also belong to the object of Level III inquiry, and it should also display a manner of reflexivity and thus subjectivity and indefiniteness. Such inferences would be verified through additional stages of inquiry, strengthening Crescas's conclusion that halakhic statements must be indefinite, conditional, and defined anew with respect to new conditions of conduct.⁵⁶

The Agency of Scientific Inquiry

For Level III, there is an order to the correlatives. Torah introduces the language of creation as God's creating word, and the word of creation guides the rabbinic inquirer's trust in the necessity of scientific inquiry: "The heavens declare the glory of God, and the firmament shows His handiwork" (Ps. 19:2), for the firmament indicates that which is beyond

⁵⁶ Crescas recognizes, against the grain of the classical tradition, that the real infinite illustrates the reality of the possible. Once again, his innovative logic anticipates that of Charles Peirce, who distinguished between the "universal" (or the strictly general) and what he terms the "indefinite," or the *individuum vagum*, the as-yet unidentified or undefined individual. For Peirce, a prototype is the indexical sign that points to an existent individual, *hic et nunc*, of which we can as yet offer no necessary predication. Such an individual is *really possible*.

doubt, namely, that it is the work of God's hands."⁵⁷ The inquirer locates the primary language of science in mathematics, which I associate, in this essay, with the creator's word. When examining the characteristics of a vacuum, Crescas is a mathematical scientist and also rabbinic scholar. In Rudavsky's words, "Crescas regards the scientific account of reality, embedded in the Aristotelian theory of necessity, essentialism, and causation, as a threat to his theological world-view."⁵⁸ Crescas's scientific innovation is conditioned by his devotion to the God of Torah. Reread in the context of Level III inquiry, Crescas's innovative, non-finite mathematics signals this devotion.

Mathematics and Torah

Nahum Rabinovitch cites an illustration of Crescas's nonfinite mathematics, beginning with his response to a challenge by the Muslim philosopher al-Tabrizi:

al-Tabrizi formulated another proof to establish the impossibility of the existence of an infinite magnitude—the proof from attachment—which runs as follows. If we were to posit a line infinite on only one end, and were to attach to it another infinite line beginning from a point near the finite end of the first, then one infinite line would turn out to be longer than another infinite line. But this is impossible, for it is well-known that one infinity cannot be greater than another.⁵⁹

Crescas responds to al-Tabrizi:

Although the existence of one infinite greater than another is indeed impossible, this is so only from the point of view of measure.... When we suppose that one of them is relatively greater, we intend greatness in measure, but there is no measure in the case of something infinite. Therefore, one line is not greater than another, since neither is subject to

⁵⁷ *Light of the Lord* III.2, 377.

⁵⁸ Rudavsky, "Crescas on Time."

⁵⁹ *Light of the Lord* I.I.1, 37.

measure as a whole. And so one cannot be greater than the other even if it is augmented at its finite end.⁶⁰

Rabinovitch explains:

It is clear that al-Tabrizi has set up a one-to-one correspondence $n \leftrightarrow n+1$ and has thus arrived at a paradox.⁶¹ Crescas observes that the root of the paradox lies in the assumption that "the lesser equals the greater" is impossible for infinite magnitudes as well. Therefore he proceeds to demolish this assumption.... "The greater is not equal to the lesser" applies only to finite "totalities," for they are measurable; this does not apply to an infinite "totality," which is not measurable.⁶²

In Crescas' words, "that which is infinite is without measure," so that $n = n+1$, that is, adding a finite element does not change the infinite.⁶³

From the perspective of Level III, Crescas's debate with al-Tabrizi is about assumptions and assumed processes, not about objects. The debate is not about characteristics of an actual infinite (the infinite as empirical object), since al-Tabrizi seeks to prove its nonexistence and therefore the illusory character of what opponents claim to observe. Crescas first addresses al-Tabrizi on his own terms, joining the thought experiment

⁶⁰ Ibid., III.1, 73.

⁶¹ $n \leftrightarrow n+1$ refers to the paradox that an infinite and a greater infinite would be indistinguishable. Crescas's response, $n = n+1$, refers to his innovative counter-argument: that adding or subtracting a finite amount does not change an infinite. The infinite is beyond finite measure.

⁶² Nahum L. Rabinovitch, "Rabbi Hasdai Crescas (1340-1410) on Numerical Infinities," *Isis* 61, no. 2 (Summer 1970): 224-230, at 226-228.

⁶³ Crescas argues, "However, as for Altabrizi's proof, which he called the proof of correspondence, it is obvious that his conclusion does not follow. For, the impossibility of one infinite being greater than another is only with respect to measurability, that is to say, when we use the term greater in the sense of being greater by a certain measure, but that which is infinite is without measure. In this sense, the first [one-sidedly infinite] line is not greater than the other, for neither of them is measurable in its totality. Thus, indeed, the former line is not greater than the latter, even though it extends beyond the latter on the side which is finite. This is self-evident." (I.I.1, Harry Wolfson's translation in Harry Wolfson, *Crescas's Critique of Aristotle* [Cambridge MA: Harvard University Press, 1929]). Cited in Rabinovitch, 226).

about infinite lines. He then changes the terms of the experiment by challenging the primary assumption upon which it is built: that both finite and infinite magnitudes would be measured by the same instruments. For the Aristotelian al-Tabrizi, all instruments of measurement are finite, so that comparative measurements obey the principle of non-contradiction that applies to all finite claims. For Crescas, it is self-evident that finite objects may be measured by finite instruments and that part/whole relations apply to such objects. But there is no evidence that real infinities could be measured by such instruments. However, if the infinite is immeasurable, what is its relation, in this world, to measurable entities? *To reply, we must refer to the role of the inquirer in the process of measurement. The earthly inquirer conditions the correlativity of the immeasurable infinite in Torah study and science.*

Role of the Inquirer

The reflexive inquiry of Level III discloses several ways to identify the irreplaceable role of the inquirer in Crescas's account of the infinite. *The infinite is the indefinite. God knows finite particulars, such as things of the world in space and time. As noted earlier, "Once it is established that God knows particulars, says Crescas, then it follows necessarily that God's knowledge encompasses the infinite since it is evident that particulars are infinite."*⁶⁴ *The infinite therefore includes finite particulars. Furthermore, the earthly inquirer numbers/counts finite objects (whether actual or possible).* In *Light of the Lord*, references to measurement or numbering are presumed to be activities of an inquirer who measures or numbers. For example, Crescas says, "If we were to posit a line infinite on only one end and were to attach to it another infinite line." Here, the infinite line is posited or imagined, but the finite actions are assigned to an agent *who "attaches."* Inquirers may therefore number members of infinite collections/sets; but Crescas distinguishes innovatively between finite numbering and what Rabinovitch labels "the mathematics of non-measurables":

⁶⁴ Weiss, "Hasdai Crescas's Philosophical Biblical Exegesis."

The infinite number is not one of the natural numbers. In fact, one can construct an infinite set of natural numbers each of which is necessarily finite. The totality of such a collection...is described by an infinite number, but that number has properties quite different from those of natural numbers.⁶⁵

The mathematics of the infinite differs from that of finite quantities. Building on insights from Levi ben Gerson, Crescas explains, for example:

When we maintain that one infinite is not greater than another, we did not mean that they are equal [since]...the term equal does not apply. What we mean is that it is not in the nature of an infinite to describe it as greater or smaller than another infinite.⁶⁶

Rabinovitch suggests that, in modern terms, Crescas is saying that the cardinal number of an infinite set, “the infinite in its totality,” is not increased by adding elements to the set. In terms of set theory, we may suggest that Crescas distinguishes between the character of an infinite set and its members: the character is “infinity” as an unchanging character, but the members may be finite, in which case they may be numbered. This distinction is significant, because only an agent — a creature or God — enumerates the members of the set, but the finite agent cannot enumerate the infinite.

Within Level III inquiry, one may conclude that an infinite set is a source of enabling conditions for the correlativity of Torah and science, actualized when an abductive inquirer imagines an infinite (that is, indefinite) set whose members are finite, so that subsets of them may be counted by the inquirer. Such an inquirer cannot number the set’s infinity

⁶⁵ Rabinovitch, 227, citing *Light of the Lord* I.2.2:

[A]ctual number — that is, things counted by number — are limited. And anything limited is necessarily finite. But for things that are subject to number — that is, things that are in their ordinary course subject to being counted — but are not actually counted, infinity is not impossible, even if it is assumed that they are even or odd, for it is possible for even and odd to be infinite.

The assumed reference is to an inquirer counting.

⁶⁶ *Light of the Lord* III.1.4.

but can identify the set as a sign of its infinity. I reiterate that this infinity should be identified with the property of indefiniteness, since the end of an indefinite series is a real possibility (as opposed to the mere possibility of an imagined infinite).

By way of illustration, Rudavsky remarks:

Crescas agreed with Maimonides that time is cognized by the intellect, but he added, as we saw, that it can be cognized without actual motion. The continuity of time depends only upon a thinking mind.⁶⁷ *It is indefinite, becoming definite only by being measured by motion.*⁶⁸ This last point is reinforced by the use of the term *hitdabbekut*, which connotes continuity or duration. Were we not to conceive of it, there would be no time. Crescas emphasizes that “it is necessary that time depend on our conceiving of a measure of continuousness, whether in motion or in rest.”⁶⁹

Crescas’s phrase, “thinking mind” may be misleading. In the context of Level I reading, the phrase connotes the human subject, alone, independent of the “external” world. In the context of Level II, this mind is correlative to worldly processes. For Level III, I am unable to perceive how Crescas could accept a subjective idealist notion of time, that is, an idealism independent of the correlativity of mind and world. I recognize Crescas’s apparently subjective idealism in *Light of the Lord*; I simply cannot integrate it with the correlativity of his Torah and science. In the terms of the latter, the human measure of time would serve as a measure of mere possibility unless the measure were indefinite, that is, a sign of the real possibility that a measurement would be corroborated by subsequent observations of associated phenomenon. As we have seen in the broader study of Crescas’s innovations, examining the indefinite infinite entails reasoning between poles of correlativity. The enabling conditions of such reasoning include the inquirer’s desire to serve God in the practice of science as well as Torah. We might therefore expect Crescas’s study of

⁶⁷ The notion anticipates Kant’s account of internal time consciousness.

⁶⁸ The notion anticipates Werner Heisenberg’s account of quantum uncertainty and complementarity.

⁶⁹ Crescas, *Light*, I.2.11, 90.

time to be conditioned by this relation, consistent with something closer to an objective idealism—or, for Harry Wolfson, a pragmatic idealism—where there is no measurement of time without subjective imagination, but where the imagination operates in the context of a subject's multileveled relations to God, Torah, social conventions of measurement, and more. If those relations are not evident in *Light of the Lord*, then I may be mistaken or Crescas's innovative account of time might take some centuries to mature. Rudavsky's reading of Crescas in light of McTaggart and Husserl may illustrate the latter: that, just as Thomas Aquinas and Maimonides mark a millennium of Aristotelian studies, so too Crescas may merit his own millennium.

The past two centuries of post-Newtonian mathematical science may provide appropriate vocabularies for joining and extending Crescas's millennium.⁷⁰ For the concluding pages of this essay, I experiment with this latter option. I hypothesize that, on a Level I reading, Crescas situates time in the subject, independent of any hint of an externalized account. For Level II, I hypothesize that subjective time emerges as correlative to the role of the interpreting subject of rabbinic *derash* and that each subject is conditioned by its relation to worldly conditions: time in relation to worldly events and the space they occupy, each rabbinic midrash in relation to its historical and societal setting. For Level III, these correlations are actualized only in relation to the enabling condition of God's creating and commanding word. In these terms, mind as well as time does not belong exclusively to the human subject but emerges only in God's dynamic, multileveled relations to the subject, to creature, and to world. In Level III, reflection on co-relation turns to reflection on relation (*yachas* טח"א).

⁷⁰ Including, for example, Peirce's logic of relations, Werner Heisenberg's principles of uncertainty and complementarity, and, in fact, the axioms of contemporary quantum science overall, including quantum biology, quantum chemistry and so on.

The Reality and Irreducibility of Relation

In this essay, “relation” refers to an epistemic condition that modern Jewish philosophers do not always examine in their accounts of nature and natural science: that inquiry in science as well as ethics and Torah is a function of the inquirer’s relation to the object of inquiry. With respect to such a relation, natural science is neither “strictly external” nor “strictly internal/ideal,” and the study of Torah is neither “strictly human” nor “strictly of God.” To cite Ackerman again, “Crescas’ multifaceted treatment of creation does not support an understanding of Jewish philosophy that distinguishes between outside philosophic sources and an original, authentic Jewish core.”⁷¹

In the context of Level III, to say that God knows particulars is also to allow for the possibility that God knows individual creatures, including the inquirer. From this perspective, Crescas’s debate with Maimonides includes different accounts of what mediates the inquirer’s relation to God. Crescas rejects Maimonides’s claim that the separable intellect, alone, mediates this relation. From the perspective of Level I inquiry, Crescas argues for the obverse position: the heart mediates, the heart is not intellect. For Level II, the soul’s intellect and heart are correlative, so that we may speak, at once, of the heart-mind (*lev*, לב) and of the embodied heart, center of emotion and passion. For Level III, that correlativity is not a precondition for relation to God; to the contrary, relation to God enables that correlativity. When reflexive inquiry identifies the self as its own object—self-reflection apart from relation to God—only then might the inquirer identify the intellect with reflexivity, dividing the soul into subject and object, intellect and non-intellect, collaterally identified with body and emotions. From this perspective, Crescas’s alternative is to identify the soul’s relation to God as an enabling condition of reflexivity, so that reflexivity is not self-reflection but the integrated soul’s prayer and confession before God, before whom the human soul is ever in transition from potential self-division, of many kinds, toward unity in relation to

⁷¹ Citing the overall implication of *Or Hashem* 3:1:1.

God.⁷² In terms of Crescas's visceral account of the soul, prayer and confession are accompanied by the greatest pleasure, because they are enabling conditions for the integration of intellect, emotions, and passions within the soul's relation to God. As our essayists explain, Crescas's associates this pleasure with love (*ahava*, אהבה, or when most intense, *cheshek*, חשק). For Crescas, "True pleasure is love as an emotional experience in connection with God—and not an intellectual apprehension of God,"⁷³ and "The ranks of individuals will differ [in their pleasure] in accordance with how their love and [the strength of] their bond differed while they lived."⁷⁴ In Eisenmann's words, "Crescas sees the intellect purely as a preparatory means for the acquisition of human perfection, which is manifested in love and especially love of God."⁷⁵ Here, love names the fulfillment of desire and will, and "the pleasure that exists in our life arises from the attainment of something for which we yearn. The person is in potentiality with respect to the apprehension of intelligibles, and he yearns for them. This yearning is nothing other than the excitement of the will."⁷⁶ And Eisenmann pinpoints the place of novelty in this yearning:

With regard to the factor of novelty, according to Crescas when a person yearns to apprehend something new and actually does so, his pleasure is even greater. The yearning—the passion—"excites the will"; hence, the pleasure of the will's emergence from potential to real will be greater in proportion as the distance that the appetitive faculty must traverse in order to realize the imagination.

⁷² Note that it is unity before God rather than unity in God.

⁷³ Berzin, "Happiness," 105. Cited in De Souza, "I Feel Love."

⁷⁴ De Souza, "I Feel Love," paraphrasing Crescas.

⁷⁵ Eisenmann, "R. Hasdai Crescas and the Concept of Motivation"; Crescas, *Light of the Lord*, II.II.1, 146: "[The] theoretical intellect...is the greatest vital force for the acquisition of human perfection."

⁷⁶ *Light of the Lord*, cited above.

Seeking to uncover the enabling conditions of correlativity, entering the depths of reflexivity, and remembering in those depths God's sustaining presence, the inquirer may, only then, gaze toward the end of this inquiry.

Abduction in the Inquirer's Relation to God

I introduced this essay as a reflection on this exquisite volume's attention to Crescas as innovator. I posed this question: since Crescas composed *Light of the Lord* within the vocabularies his interlocutors would apply severally to Torah study and scientific inquiry, how could a plain sense reading of his words clarify what was in fact innovative in his innovations? I then posed this hypothesis: that readers must go beyond the plain sense of Crescas's text in order to interpret how his innovations could be explained within the unpredictable contexts of the readers' assumptions. Such interpretations would compare to rabbinic interpretations of the plain sense, where one must go beyond the plain sense to identify how a *halakhah* would be enacted in unforeseen empirical settings. I offered this essay as a thought experiment, testing my hypothesis through a reading of the volume's accounts of Crescas's innovations. My goal was not to evaluate his innovations but only to assay the volume's methods of identifying what was new in his work. I observed what appeared to be three methods of inquiry practiced within each of the essays, and I hypothesized that these methods could be assigned to three corresponding levels of what I called abductive reading, where each level disclosed a different dimension of Crescas's innovations. By abductive reading, I meant reading that interpreted the probable meanings of his innovations. I assigned plain sense explanations to what I called Level I of abductive inquiry, which tended to read Crescas's innovations as in direct opposition to Maimonides' claims. These readings also served as resources for identifying analogies in Crescas's approaches to Torah and science. I observed other readings that explored the plain sense and then culled hypotheses about additional implications of Crescas's claims. I divided this group of readings into two levels. Level II readings serve as resources for identifying Torah and science as correlatives in Crescas's work. These readings tend to reread Crescas's critique of Maimonides as

an effort to refine Maimonides's approaches to both Torah and science, prototypically by assigning the intellect a role in service to the heart rather than outside it. Re-examining Levels I and II, Level III seeks, finally, to identify the enabling conditions of correlativity, which also enable abductive inquiry into the meanings of Crescas's innovations. Among these conditions, we have so far identified the infinity of Torah and of creation, the indefiniteness of the infinite, reflexivity and with it the irreplaceable role of the inquirer, the inquirer's desire and will and the pleasure that accompanies their proximity to fulfillment, the instrumental role of the intellect toward this fulfillment, and the reality and consequence of the inquirer's relation to God. Within the limits of this essay, there is only one additional condition to examine: the place of novelty—innovation and abduction.

Where is innovation in the reflexive soul's passage toward relation with God and in the condition of correlativity between Torah and science? Whatever I write next would stimulate only more questions and more levels of inquiry. For momentary closure, I conclude with this hypothesis. In the preceding levels of inquiry, there is evidence of a relational activity that includes all the enabling conditions, from Torah and creation to novelty and desire and to the embodied subject. This activity includes the embodied inquirer and God, but not as either appear exclusively in Levels I and II. The God who enables correlativity is not the God of Torah alone or of creation alone, and the subject who enables correlativity is not the student of Torah alone or of science alone. This God and this subject must share mutual relations, and they must share in novelty. The abductive inquiry identified in Level III would fill both these conditions: the inquirer's encounter with God's love through the indefinite spiral of abductive inquiry as driven by desire to see the enabling conditions of correlativity. So far, we learn from Level III that the God who engages the inquirer in this manner is present only in what is new, that the inquirer engages God in this manner only when engaged in abductive inquiry, and that, in the scope of Jewish philosophy and in Crescas's antecedents to Jewish textual reasoning, these abductions must address Torah and creation, Torah study and science *in their mutual relationship, not by*

themselves alone. God's spoken word is a partner to the renewal of science and the created world is a partner to the renewal of Torah study.

If the abductive inquirer were embodied in our contemporary historical period, such a partnership would be uncommon. This volume's study of Crescas uncovers a wisdom and a warning I had not anticipated: no science, no renewed Torah; no divine love, no renewed science.