MONOTHEISM AND THE SPIRITUALITY OF REASON

by James Blachowicz

Abstract. In this paper I propose a cognitive interpretation of the emergence of monotheism. I first distinguish between two fundamentally different conceptions of representation: one intuitive, which favors an analog model of rational cognition, and one discursive, which favors a digital model. While both Hellenism and Judaism may have been instrumental in setting civilization on the path to reason and law, it is the discursive or digital conception of God as a single universal Judge, I argue, that provides the foundational axiom of the moral logic of the Hebrew Scriptures. That is, in monotheism, God came to be *represented* differently.

Keywords: analog representation; digital representation; Hellenism; Judaism; monotheism.

Roman culture, it is often said, lacked the aesthetic and intellectual sensibilities of Greek thought. The Romans' talents lay elsewhere—in civil affairs and engineering, for example. Different cultures embody different cognitive styles, and if circumstance should determine that the flowering of the talents of a given people should coincide with opportunities for influence on the world stage, that particular culture can define an entire era. Philosophical theory thus is forever associated with the Greeks and statecraft with the Romans. Something in the cultural character of Italy in the fifteenth century provided much of the foundation for the Renaissance, but this achievement was assimilated by significantly different cultures. In this sense we are all Greek and Roman and Italian.

What we have inherited from Judaism may be viewed in the same light. The extraordinary talent of a people who played a relatively minor role in Mediterranean political life combined with circumstance to produce what

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may have been the single greatest contribution of any such individual culture to Western civilization. This facet of our cultural heritage has its foundation in the morality and monotheism of the Hebrew Scriptures.

The emergence of monotheism, like the birth of Greek philosophy or the evolution of modern science, is sometimes taken as one of the essential stages in the progress of Western civilization from mythic naiveté to rational maturity. Even Karl Marx and Sigmund Freud, who questioned this simple view of the progress of reason, still shared much of its general orientation, for they sought to establish a "science" that would finally displace the romantic delusions of the past. Friedrich Nietzsche and Martin Heidegger and more recent philosophers of history, however, have questioned the presuppositions of Western rationality in a more fundamental way. More radical Freudians such as Norman O. Brown (1959), in the spirit of Nietzsche, have challenged Freud's "realistic" but sanguine scientism, whereas more radical Marxists such as Herbert Marcuse (1955), also guided by Nietzsche, have questioned the rationalist foundations of utopian political theory. This more radical tradition, in which non-Western spiritual disciplines and psychologies have a place, suggests that other, perhaps more fundamental, elements of human consciousness have been concealed beneath the apparent progress of reason. "Spirituality" or "religiosity" nowadays is often enough held apart from all that is theoretical, scientific, logical, or rational in human knowledge, for we sometimes associate what is "highest" in religious consciousness with the experience of the transcendental and mystical. In doing so, we risk depreciating the spiritual value of reason itself. This value was perhaps first consciously embraced in the moral system of the Hebrew Scriptures.

Jewish monotheism functions as the foundational axiom of a moral logic: the concept of a single universal Judge is an essential condition for a moral system that had itself uncovered the spiritual value of reason. While both Hellenism and Judaism may have been instrumental in setting civilization on the path to reason and law, it is Judaism's more discursive conception of reason, rather than the more intuitive conception we find in Hellenism, I argue, that underlies monotheism and its morality.

Factors in the Emergence of Monotheism

It is beyond my purpose to provide an anthropological or historical account of the development of monotheism. I want rather to consider monotheism in a new theoretical light by offering a hypothesis regarding its *cognitive* role. Still, before proceeding to this hypothesis, I would like to consider at least some historical factors, to highlight the fact that Jewish monotheism was indeed a unique phenomenon.

Any account of the origin and nature of a new religious form in a given culture must accommodate many influences and causal factors. The "mono-

theistic breakthrough" naturally owes a great deal to patterns of change more widely observed in the evolution of religions generally. I examine three such patterns here: those typical of the development of religious forms (1) from agricultural to urban societies, (2) from Bronze-Age to Iron-Age societies, and (3) from "robust" to "decadent" societies.

In primitive forms of religion, divinities and rituals embody quite basic material hopes and fears relating to such things as survival, fertility, war, and clan interests. In elaborate animistic and polytheistic systems, the proliferation of sacred and divine forces often reflects the variety of natural forces. As the society develops, with more time for higher cultural pursuits, however, religious forms may become purer—more spiritual, one is tempted to say. Religious accounts of experience may also be joined or even replaced by more theoretic or philosophical accounts, in which the explanatory principles are less mysterious and more abstract still. In the evolution of monotheism, the concept of Yahweh in its mature form probably represented such a distillation, consolidation, and spiritualization of earlier forms; but this process, while perhaps necessary for monotheism, was not decisive. Other religious systems experienced similar changes without the unique result we find in Judaism.

Another important pattern of qualitative change in the forms of many religions is associated with the transition from the Bronze to the Iron Age. This pattern may be nothing more than an elaboration of the transition from primitive to more sophisticated forms just described, but here we may add some new elements, among them the shift from fertility-goddess cults to pantheons in which a male divinity is dominant. This dramatic move in religious consciousness, which is associated with equally dramatic social and political changes in the eastern Mediterranean at the beginning of the twelfth century B.C. but which undoubtedly required some centuries to complete, has always been the subject of highly speculative theories of human cultural change. Hesiod's account of the decline of human fortunes from the Golden and Heroic Ages to the Iron Age was perhaps the first such theory; Brown (1959) proposed a Freudian explanation of humanity's Oedipal transition to the Iron Age as the age of the Father, with its attendant loss of innocence and more sublimated (spiritualized) morality of guilt,[1] and Julian Jaynes (1977, chap. 3) has gone so far as to suggest that this turn in human culture at the beginning of the Iron Age represented nothing less than the birth of human consciousness as we know it, coincident with significant neurological changes in the organization of the cerebral hemispheres.

The religion of the Israelites probably experienced such a change in the same general time frame, that is, between the age of Moses and that of David. The fact that a strongly patriarchal religion with a single Father-God is associated with Moses is commonly seen as a reading back into these times of the more developed religion of the seventh century B.C. and

afterward. It is not impossible that Yahweh had a female consort in the Bronze Age, although the earliest Israelites were evidently less given to the cult of the fertility goddess than their Semitic neighbors, the Canaanites and Phoenicians. No doubt, the strong masculinity of the person of Yahweh and his position as the single supreme Father of his people contributes much to our general conception of early monotheism, but here again, this may not be decisive, for in other cultures—the Greek, for example—central Father-divinities evolved without developing monotheism.

The third relevant pattern of religious change focuses more on its later stages (the exilic period and after), in which monotheism becomes entrenched in what might be called a more transcendental form. The pattern to be noted here is found especially in the decadent period of major cultures, which is often a fertile time for "transcendental" religious cults and philosophies. When the material order of a culture decays, one looks to more transcendent ideals—in compensation, perhaps. A decadent Rome in late antiquity nourished the growth of Christianity, just as the shattered political structure of native American tribes may have encouraged the rise of the transcendent "ghost-dance" religions. Transcendent religious and aesthetic ideals thrive in oppressed cultures—in Poland for much of its recent history, for example, or among the Jews of the Babylonian captivity. Monotheism may thus be viewed in part as the response of a people to a state of continual political tension, crisis, and homelessness; theirs would be a moral victory ensured by the only true, universal God (see Lang 1983).

The factor in the rise of monotheism that I single out in the following discussion owes less to such anthropological and sociological patterns than to more purely cognitive or logical considerations. I argue that the concept of a single universal Judge is an essential condition for a moral system that itself has achieved an unprecedented level of rational maturity. A fruitful parallel might be struck between this formal moral system and the formal systems of rationality found in mathematics and logic. Monotheism (and its moral system) may be taken as an achievement that, like other developments and inventions—arithmetic, the alphabet, algebra, evolved legal systems, and excellence in commerce—by other Semitic peoples (Babylonians, Phoenicians, Carthaginians, Arabs), reveals a cognitive style tied more to formal reasoning and systematic rationality than to iconic imagination.

Before proceeding, I must issue two cautions. First, few generalizations concerning the distinctive style of a whole culture can be "demonstrated" to the degree that might be possible in matters of a narrower and less global character. One would be hard pressed to define in precise and unambiguous terms, for example, the peculiar qualities of the Renaissance or the Enlightenment, yet few would deny that there is something qualitatively distinctive about such individual cultural phenomena or that even imprecise characterizations of them may be useful and informative. Further, the

basis for such second-order, more speculative theories may be found less in the primary data that are the evidence for first-order religious and historical theories than in those first-order theories themselves. And, while the explanations I will provide may help establish the plausibility of the hypothesis I offer, I do not by any means suggest that they are sufficient to confirm it.

Second, there is always a danger of taking differences in cultural style as more fixed and absolute than they really are, a distortion all the more serious if a chance exists that such differences could become the excuse for judging a given culture to be superior or inferior to another. The necessity of rejecting such prejudicial judgments must not, however, lead us to the opposite extreme of denying the existence of cultural differences per se, which is perhaps equally destructive of genuine understanding among peoples. It should also be evident that, for the purposes of striking a contrast between cultural styles, I stress the differences and not the similarities, sometimes giving the erroneous impression that a pure theoretical opposition is being considered. This is obviously an artifact of the contrast itself and should be recognized as such.

Analog and Digital Representation

In Jewish monotheism God came to be *represented* differently. Cognitive psychology and philosophy of mind have acknowledged a distinction between two modes of representation (even if there is little agreement regarding the basis for this distinction). They have sometimes been described as *analog* and *digital*, terms first used to refer to fundamentally different operations in computation.[2] Computers today are essentially digital machines that represent the continuous physical variables of the processes they encode in terms of digits, or discrete numbers. An analog computer is not really a computing or calculating device at all but is an actual model or analog of the original object of analysis. Instead of trying to calculate exactly what the stresses might be on an individual support in a proposed design for a bridge, for example, we might build a model bridge whose materials (including their bearing capacities) are proportionately scaled down. We then would simply load weights in certain places to test the maximum stresses that individual members might withstand. We would really not deduce the answer at all but merely "read it off" the analog model.

A slide rule is analog, whereas an abacus is digital.[3] Pictographic scripts can be analog (because the pictograms can be visual models of the referents), while syllabaries and alphabets are digital (because the referents are represented first in an auditory code—spoken words—and then in a script that no longer models or is like the original). A circle drawn on paper is an analog representation; its algebraic equation is a digital representation. The

advantage of representing a circle in algebraic terms is clear: such a symbolic or digital representation embodies a greatly enhanced precision in which the abstract principle of circularity is encoded; but the loss of the analog perception is not to be neglected—purely theoretical expressions become difficult to visualize. On the other hand, although in testing an analog model we have the advantage of testing a version of the original directly (given the accuracy of the scaling down), so that when and if it fails there is no doubt of how and where the failure occurred, we may still not thereby have understood the principle or abstract cause of the failure. In a digital calculation such understanding is given, but we must take extraordinary care in the selection of which elements of the original to represent in digital form. The digital calculation may have been performed flawlessly, but if we erred in singling out precisely which features of the concretely perceived analog context were pivotal (in constructing a bridge, for example), or if we did not adequately represent those features, the result will not be trustworthy.

The basic drawback of excessively analog representation, therefore, is that it fails to achieve a sufficiently "principled" or abstract understanding of the original, and the danger of an excessively digital representation is that it may lose touch with what it is intended to explain. The former, kept close to experience, suffers a loss of understanding, while the latter, more removed from experience, suffers a loss of reference. In general, pictorial, iconic, or maplike representation is analog, whereas encoded, descriptive, linguistic, or mathematical representation is digital. The shift in the representation of God in monotheism may be taken as a shift from an analog to a digital mode. I explain this below.

Percepts and images are predominantly analog, and concepts, whether verbal or mathematical, are predominantly digital. The evolution of language beyond the capacity for pure sense imagery and the replacement of pictographic language with syllabic and alphabetic scripts may be seen as part of the progressive digitalization of perception. Perception relies on spatiotemporal continua for distinguishing its elements and embodying its information; conception yields non-iconic symbolic entities: letters, words, propositions, formulae. It would be wrong, however, to identify the analog/digital distinction with the division between perception and thought, for there may be analog properties of abstract thought as well as digital properties of pure perception.[4]

Earlier, I promised to distinguish between Hellenic and Judaic conceptions of reason; I now move to prepare for that contrast by distinguishing between analog and digital conceptions of reason.

Intuition and Inference

Sensation rests on *empirical intuition*, through which data are given immediately—without steps, without inference. Intuition at the intellectual

level is also often relied on to explain thought that may not be analyzable in terms of discursive or inferential processes; such intuition suggests, rather, a kind of intellectual "sight."[5] The elements of an intuited perception are not grasped in any strict order or sequence, which is essential for inference and digital processing, but more or less simultaneously. The sequencing of symbols and symbolic operations is prominent in such digital media as language (syntax, not meaning), mathematical analysis, and chess, whereas holistic apprehension is more evident in analog functions: aesthetic perception, drawing (not writing), and language (meaning and metaphor, not syntax).

Those for whom reason is inherently tied to inference and discursive thinking may reject intuition and imagination as irrational. Yet it has also been argued that reason is more properly to be identified with intuitive insight than with intellectual calculation. I will consider such a view, taken by Pierre Duhem, shortly. First, however, I must consider a complication that threatens to confuse matters.

The facility and speed with which digital calculations are carried out may lead to the mistaken impression that no calculations have occurred at all—that the cognition has been intuitive. We need only think of the chess master's quick grasp of the proper sequence of moves or of the algebraist's similar insight.[6] The speed of their moves may suggest that they are not "figuring" anything out at all but are simply "seeing" the result directly. Those who do not excel at calculation may need to take their steps painstakingly, one at a time, in order to achieve a result that one adept at formal reasoning could gain more quickly. However, this does not mean that the latter relies on holistic nonsequential processing while the former operates only inferentially. Quite the opposite is the case.

This may be appreciated by considering Blaise Pascal's distinction between *l'esprit de géométrie* and *l'esprit de finesse*—a distinction, I would claim, that is quite parallel to that between an analog and digital "mind" (1950, §§ 247–50). The "geometric" mind needs a clear and immediate understanding of the principles with which it is concerned, whereas the "finesse" mind does not. This can be compared to the analog mind's need to keep in touch with clearly imaginable ideas and the digital mind's ability to calculate at a far remove from what is simply imaginable. Because intellectual intuition may be taken as the conceptual equivalent of analog perception, Platonic or Cartesian theories, which rely on such an intuitive apprehension of truths, may be characterized as predominantly analog models of reason. Inference and deduction in René Descartes' system clearly play a subordinate role to this fundamental intuition, as dialectic often seems to do in Plato's.

Pascal's distinction was appropriated and developed by Duhem for the purpose of striking a contrast between the methodologies of English and French physics. Duhem's treatment, however, suffers from his tendency to

favor those examples of the geometric mind that stress exclusively intellectual operations and those of the finesse mind that stress mostly perceptual operations. For this reason, he initially sees the geometric mind as more abstract and the finesse mind as more tied to sensuous memory and capable of holding in its "imagination" a collection of disparate objects (Duhem 1962, 55–56). He thus seems to tie the contrast between geometric and finesse minds to the contrast between abstract thought and imagination—precisely the opposite of the way suggested here. Let me try to turn this around.

The finesse mind, Duhem observes, is found in diplomats and generals like Napoleon who can grasp a multiplicity of details and use their judgment to guide them to appropriate courses of action. He also includes the chess player among those talented in finesse, which indicates that he mistakes the quick grasp of a situation replete with detail (a battlefield or a chessboard) as an intuitive act of an analog mind, when it is really the quick apprehension of appropriate digital sequencing. As already mentioned, those unable to apprehend such sequencing quickly have to resort to laborious, step-by-step operations to confirm a result easily achieved by a digital mind, but these deductions are really the signature of the analog mind's incapacity for quick sequencing, not evidence for any facility in such calculation. The Cartesian emphasis on deductive reasoning, therefore, does not automatically qualify his approach as digital.

Duhem himself enables us to correct the misleading impression that finesse/digital minds quickly apprehend sensual details (thereby *appearing* to be analog) while geometric/analog minds abstractly generate deductions (thereby *appearing* to be digital) by singling out what he takes to be one of the greatest tools of finesse—algebra. Instead of deducing, he observes, algebraists calculate:

> The algebraist is not concerned with analyzing abstract notions and discussing the exact scope of general principles, but simply with combining skillfully, according to fixed rules, signs capable of being drawn as he writes. In order to be a great algebraist, there is scarcely any need for intellectual strength; a great ampleness of mind [finesse] suffices, for skill in algebraic calculation is not a gift of reason, but an ornament of the imaginative faculty. (Duhem 1962, 76)

It is now easier to see the source of Duhem's misidentification. Duhem sees "deduction" and "analysis of abstract notions" as operations that provide essential insight into the nature of phenomena (but as such, these are really analog), whereas the "imaginative faculty" to which calculation belongs is seen as that which gives up such insight for the benefit of productive manipulation and successful sequencing of moves (a digital process). This, in fact, bears directly on the purpose of Duhem's discussion, which is to decry the short-cut, model-building methods of English physics, which seem disconnected from the referent of their algebraic formulations, and reaffirm the reasonableness of French physics, which at every step demands

clear and distinct insight into the meaning of the formal expressions used (1962, 78–81). The English rely on models; but let us not be misled again into thinking of these as mere analogs, for they include highly algebraic versions that permit them to calculate results without comprehending them. The French demand such comprehension, by which Duhem means an insistence on grasping the meaning of all expressions used at any time.

It is surprising that Duhem did not embody the contrast he was striking between English and French physics in the persons of their two most prominent early representatives—Newton and Descartes. Of course, had he done so, he would not have been able to sustain his case for the strengths of French over English methods in the way he wanted. Both Bernard le Bovier de Fontenelle and Denis Diderot, in their classic comparisons of these two men,[7] realized that the demand for clear and distinct intellectual insight into the meanings of physical terms (such as *gravitational force*) actually hindered a productive employment of scientific method. The maturation of this method in Newton's algebraic theory was the great victory of digital calculation over analog insight. Both Pascal and Duhem affirmed the capacity of the finesse mind to grasp a wealth of detail; and both Fontenelle and Diderot recognize this as one of the main strengths of the Newtonian system over the Cartesian.

Duhem claimed that algebraic calculation is "not a gift of reason but an ornament of the imaginative faculty"; the view that excludes intuition from reason by taking reason as a calculus is thereby turned upside down.

These, then, are the two conceptions of reason (related to analog and digital modes of representation) that are relevant for appreciating some of the cognitive differences between Hellenism and Judaism.

Greek Geometry and Semitic Algebra

Pascal might well have expressed the basic contrast he intended as that between the "geometric mind" and the "algebraic mind." The spatial imaginability of geometric figures upon which Greek mathematics insisted may be as much an indication of their analog disposition as are the formal algebraic or arithmetical systems that Semitic mathematics developed an indication of their digital preferences. The Greeks, Otto Neugebauer observed, tended to solve arithmetic problems geometrically, whereas the Babylonians tended to solve geometric problems arithmetically (1969, 45, 149). Freud actually considered the suggestion that the aniconic attitudes of the early Israelites (later found in Arabic culture as well) may have enabled them to contribute to the invention of the alphabet (1939, 51). Greek culture seems to have a richer heritage of pictorial art than other contemporary cultures of the eastern Mediterranean, and where we do find significant early Jewish art, as for example at the synagogue at Dura in the third century A.D., we find Hellenistic influence.[8] Oswald Spengler suggested

that the geometric imagination of the Greeks was manifest throughout their creation of ordered forms in all domains, perhaps most especially in their spatial art and in Platonic metaphysics (1926, chap. 2); he contrasts this to the "Faustian," "algebraic" thinking of modern man (p. 34). Werner Jaeger makes almost the identical assertion in his discussion of the Greek compulsion to see the cosmos as a whole, in contrast with the "calculative" methods of modern science (1945, xxii).

Spengler's contrast of Greek and modern sensibilities in terms of the former's relatively static and the latter's relatively dynamic worldviews is also found in Thorlief Boman, but Boman locates this contrast more specifically in the difference between the basic orientations found in Greek and Hebrew thought. He argues that Greek perception of the world is essentially spatial and static in character and that seeing (the preeminently spatial sense faculty) is the paradigm for both sensible and intellectual apprehension: "Principles and symbols in the earliest Greek philosophy were visually construed and are not concepts in the later European meaning; the same is true of the *elements* of pre-Socratic thought and of the Ideas of Plato" (Boman 1970, 115). The True must also be Beautiful. He goes on to remind us of Aristotle's assertion in the *Protrepticus* that *theoria* is to be esteemed more highly than other faculties, just as sight is higher than other sense faculties. Time itself, to be rendered intelligible, had to be spatialized (Plato's account of time as the "moving image" of eternity). In all of this reliance on vision and space, we can recognize the preferences of the analog style.

Boman suggests that Hebrew perception and thought, on the other hand, are more temporal. He goes to great lengths to demonstrate the essentially dynamic character of Hebrew verbs and insists that "motionless and fixed being . . . does not exist for them" (1970, 31). While J. Barr (1961) is probably correct that this thesis cannot be defended on formal linguistic grounds, Boman's overall contrast is tied to literary as well as to (dubious) linguistic arguments.

Yet even here, Boman may not be correct in his supposition that it is the *temporal* nature of Hebrew thought that distinguishes it from Greek thought. Rather, it may be the discursive (as opposed to the intuitionist) character of Hebrew thought that is a more plausible basis for the differences Boman points to. It is because sequencing of symbols is vital for digital processing that a one-dimensional time line (where things proceed in sequence without reversal), as opposed to a multidimensional spatial medium, is a more likely (and more efficient) medium for such processing. Inference and reasoning in general also lend themselves to such linear representation, for sequencing is likewise a vital element. Cognition that involves holistic (analog) apprehension more and element sequencing less, on the other hand, is more easily represented (if only metaphorically) in two and three dimensions—spatially, for example.

The spatializing Greeks treated history as the object of their contemplation—a kind of natural science; the Hebrews experienced history more immediately and came to view even nature essentially as the habitation of humans (Boman 1970, 181). Greek epic is expansive—a vast plain of events in which all can be surveyed at once, at least from the point of view of the destiny that orders all ends. Hebrew epic, on the contrary, is filled with individually decisive moments of psychological unpredictability. Because so much is concealed (often including the nature and will of Yahweh), the burden on individual responsibility of inferring and pursuing the right course becomes acute. The tenseness of these truly historical situations, in which the outcome of such choices in the face of temptation is always in doubt, contrasts with the spectacle containing the Homeric heroes, who seem relentlessly "storm-tossed." This is why, Erich Auerbach suggests, the personages of the Hebrew Scriptures are more concrete than those of the *Iliad* and the *Odyssey*, despite the more sensory qualities of the latter (1954, 17); such concreteness derives from the sympathetic recognition of the identity of these moral crises with our own—crises made meaningful by the genuineness of human freedom implicit in them. History is not a natural but a moral science.

Although the differences between such digital and analog styles might initially lead one to expect the higher achievements of the early Hebrews to be more abstract and intellectual than those of the Greeks (in the way, for example, that algebra is more abstract than geometry), we should remember that the moral and practical sense that may be this culture's greatest contribution was itself codified in a predominantly digital or formal system.[9] This contrast between the theoretical Greeks and the practical Jews was the basis for what Matthew Arnold called "Hellenic" and "Hebraic" elements in culture.[10] It is, Arnold suggests, the difference between intellect and energy, between a desire to see the whole of things and the compulsion toward proper conduct and obedience (1965, 163–65). For this reason, he observed, the Hellenic mind is expansive and spontaneous, whereas the Hebraic mind is concentrative, strict, and consistent. The digital conception of reason valued by Hebraic thought caused it to fasten, as Arnold put it, on the "one thing necessary" to achieve its aims—as relentlessly as a chess master pursues his goal.[11] While each conception of reason had its strengths, Arnold observed, each was also in danger of succumbing to characteristic extremes.[12]

The moral system of the Hebrew Scriptures and its later complex elaboration is certainly as great a digital achievement as Arabic algebra. For the contemplative mind, right action flows naturally from true seeing; the practical mind is not so sanguine about the efficacy of intuition and is more sensitive to what can go wrong—to moral failure, sin, and guilt. The basis for faith is not "vision," and without direct insight into the nature of God we are thrown back onto our mortality and finitude—which is the defining

dimension of the moral. Where we are not able to see, we must infer. Moral involvement moves beyond analog contemplation to a digital preoccupation with responsibility, compulsion, and execution, which require a temporal sequencing of a kind proper to the moral dimension. Moral reasoning hinges on such linear sequencing no less than does logical implication; in each, one must be ever mindful of the necessary connections between successive acts. The necessity that logicians seek to preserve in their inferences appears in the moral order in the context of retribution and compensation in accordance with universal law. This moral world is filled with analyses of antecedents and consequents.

The righteous path is prescribed or at least outlined by the moral logic found in the Hebrew Scriptures. In the service of moral life, all manner of behavior and right action are appended, including dietary practices and other detailed regulations of everyday life. Such a corpus of rules, W. F. Albright observed, represents "the greatest existing monument of empirical logic"—a logic "more exact than formal logic in some important respects" (1968, 177).

Monotheism and Moral Logic

Yahweh is the embodiment and guarantor of this moral logic. This, Lenn Goodman has suggested, is the end result of the development of monotheism itself. A dialectic leads from multiform diverse pantheons to more transcendent and nobler ones: "The gods of the sky and justice triumph inevitably over the tellurian and sylvan gods of terror and panic fear, since justice can rule, preside, [and] create order where divinity *per se* (in its minimal sense) can only peer forth from its lurking places" (1981, 6). The crucial next step is the purging of the aboriginal elements of evil and irrationality from the concept of God. In the end, Yahweh leaves behind the sensuous colorful content of other divinities and comes to be identified with his highly transcendental role as moral Judge; Yahweh's will is known—he is called to do justice, "a demand addressed less to God than to the (moral) logic of the concept of God" (pp. 9–11). There is only one Justice and therefore one God; two "justices"—a double standard—would be incompatible with the meaning of Justice. Without the mediation of a metaphysics or logic, and from the thrust of moral ideas alone, Goodman claims, the Israelites achieved an outcome comparable to but more consistent than that of the theoretical monism of Greek ontology as formulated, for example, by Parmenides (p. 21).

Goodman provides an interpretation of Yahweh's testing of Abraham that is consistent with this view and with the interpretation I am proposing. He rejects the suggestion that this episode centered around some nonrational Kierkegaardian "leap of faith"; rather, it is the very rationality of the situation in which Abraham found himself that Goodman takes to

be the key. It is not blind allegiance but the "strengthening of Abraham's conviction in this inner logic of a Perfect God" that is the point (1981, 15). Abraham could believe the angel's report that Yahweh was just testing him (rather than believe Yahweh's original command and disregard the angel's explanation) because the angel's report was consistent with this new concept of a God who is just without exception. Abraham had to come to know that "God is Good" is analytic and hence universal and necessary (p. 16). This moment, whenever it may really have occurred, was a decisive breakthrough in the spirituality of reason.

This new attitude is in evidence throughout the Hebrew Scriptures, each time a supplicant is perplexed by the fact that he or she has followed the right path but is still beset with trials and suffering (see Ballantine 1983, 51, 54). We often find such an afflicted individual taking the tone of a student catching a teacher in an inconsistency and insisting on the rules, in sharp contrast to the tolerance shown by the followers of other gods to their frequent whimsy and arbitrariness. Such situations are often resolved, as in the case of Abraham, with the realization that Yahweh had set a riddle for his people by means of which they were to be educated, much in the way a father will tease and challenge his son for the same purpose: so that the father can delight in the son's demand that the father be consistent.

The price of such consistency can be high. In the end, Paul Tillich observed, Yahweh "proves his universality by destroying his nation in the name of principles which are valid for all nations—the principles of justice. This undercuts the basis of polytheism" (1951, 227). The Israelites were the chosen people of Yahweh, but Yahweh is not a partisan God; if he were, he would be but one among many such gods. Yahweh's singularity is born of his universality, which in turn is the embodiment of impartial Justice; and this system of Justice, I suggest, recognizing also the halo of mercy and loving kindness that surrounds it, resembles in certain respects the formal systems found in logic and mathematics. Such a moral system is the link between a predominantly digital conception of reason and monotheism.

The turbulent relation between Yahweh and his people is in marked contrast to the objective distance between a Greek theoretician and his object of contemplation. The intensely interactive component of this relation must not be underestimated; there is more genuine dialectic and dialogue in the Hebrew Scriptures than in all of Plato. In such authentic interchange, the sequencing of move and countermove resembles a kind of moral chess or, better, the gaming one finds in marketplace bargaining. It was through such successful bargaining, for example, that Abraham won a commitment from Yahweh to spare Sodom even if it held a mere ten righteous souls. Abraham reminded Yahweh that, according to universal Justice, the Lord of all the universe could not destroy the innocent with the

wicked. This sequencing of moves governed by fixed rules is also found in contests with equals on the battlefield (or in friendlier arenas, as in the exchange of riddles between Solomon and the Phoenician king Hiram). "Historical facts," Mircea Eliade concludes, "become 'situations' of man in respect to God and as such they acquire a religious value that nothing had previously been able to confer on them" (1954, 104). Eliade suggests that monotheism may therefore itself entail the linearity and irreversibility of historical time—the victory, we may say, of a linear, digital sequence of historical events over a cyclical analog cosmos.

A formal, religiously based moral system may rest on monotheism much as formal logic and mathematics rest on the principle of identity. *God is God* can have as little real content as *A is A*. The contentlessness of this God is manifest in Yahweh's ineffability. Jews were treated as atheists not simply because they denied the gods of others but also, Goodman suggests, because of Yahweh's invisibility (there is no analog representation in art or otherwise of He Who Is). Goodman reminds us of Maimonides's insistence that even children should be instructed from a very early age that God is not a person or thing. "He knows God best," Goodman observes, "who knows and can demonstrate that he knows Him least, who knows that only when the Sanctum is empty of all things and notions can it be most truly said to be the dwelling place of God" (1981, 22–23). The same argument might be made regarding the Law of Yahweh: it is not the content or details of this Law that was the point of its devotional analysis; rather, the foundation of the Law was the concept of Law itself.

Yet spiritual life can no more be reduced to contemplation of a vacuous God than the practice of formal logic can be reduced to the contemplation of the principle of identity. Logic and mathematics are exceedingly complex elaborations of the consequences of this latter principle. The contentlessness of God does not, therefore, condemn the believer to equally empty religious experience. Moral and mathematical life are made interesting through exploring the rational implications in complex directions of what is an absolutely simple principle. While Yahweh is simply He Who Is, the principle of reason that he embodies in his law can generate extraordinarily rich and varied effects.

Tillich presents the Trinitarian conception as precisely that which preserves a living content in the concept of God—in contrast with what he calls the "exclusive monotheism" of Judaism (1951, 228–29). Goodman would counter that Christianity, by reintroducing a visible (analog) dying God, may have sacrificed some of the gains achieved by spirituality in its emergence from the mental imagery of its mythic beginnings (1981, 27). This need for some relief from the emptiness of the digital God and its exacting rationality has been felt strongly within the mystical traditions of Judaism itself. Gershom Scholem relates the story of a scholar of philology who went to Jerusalem to make contact with a group of Kabbalists in order

to learn their doctrines. He was told that there would be only one condition—that he ask no questions. Scholem observes:

> A body of thought that cannot be constructed from question and answer—that is indeed a strange phenomenon among Jews, the most passionate questioners in the world, who are famous for answering questions with questions. Here perhaps we have a first oblique reference to the special character, preserved even in its latest forms, of this thinking which expounds but which has ceased to inquire. . . . (Scholem 1969, 87)

A "thinking which expounds but which has ceased to inquire"—insight without inference and experience without the discursive benefit of dialogue and analysis—these are analog rather than digital avenues of enlightenment, and the Kabbalists were attacked as heretical polytheists who returned to myth from true religion (1969, 94).

Yet even within this mystical analog imagery, one finds a strong digital current. Scholem describes a complementarity in Kabbalistic symbolism:

> The processes which the Kabbalists described as the emanation of divine energy and divine light [a spatial/analog image] was also characterized as the unfolding of the divine *language*. This gives rise to a deep-seated parallelism between the two most important kinds of symbols used by the Kabbalists to communicate their idea. They speak of attributes and spheres of light; but in the same context they speak also of divine names and the letters of which they are composed. (1969, 36)

This latter mode is digital symbolism, in which it is not the significance but the syntax or sequencing of linguistic symbols that is invoked.

Such digital symbolism is tied to *codes*, to expressions that are themselves unlike their referents but that "secretly" represent those referents. The symbols themselves are discrete and individual—it is in their endless *combinations* that one seeks to unlock these secrets.[13] The Kabbalists believed that each aspect of reality was represented by a divine name, a code formed from some appropriate combination of the twenty-two letters of the Hebrew alphabet (Scholem 1969, 166–68). The manipulation of these combinations was ipso facto the manipulation of reality: this is digital magic, and the magic is effective to the extent that the code's reality matches or surpasses that which it was taken to represent. The letters of the Torah, it was believed, were, before creation, originally in no sequence or order at all; creation occurred as the letters arranged themselves. The Torah itself is the magical algebra of creation; changes in history (like the fall of Adam) are reflected in changes in the letter combinations of this "absolute" Torah (pp. 71–76). It was by discovering the secret combinations of the Torah code that Abraham earned Yahweh's attention and the right to covenant with Him (p. 170). Scholem relates a story of the second century A.D. in which an old rabbi cautions a scribe of the Torah: "My son, be careful in your work, for it is the work of God; if you omit a single letter or write a letter too many, you will destroy the whole world" (p. 39). One may add

the magical algebra of Kabbalistic mysticism to the moral algebra of orthodox rationalism as another fundamental expression of the spirituality of digital reason.

Conclusion

"The desert is monotheistic." In this judgment Joseph Renan expressed the view that Yahweh was the god of the country, of a conservative people without urban color who needed to resist the pressures of assimilation in order to survive (see Lang 1983, 17–20). This need was all the more vital in the face of a continuing threat of political extinction. Such conservatism is a form of survivalism. Bernhard Lang sees the origin of monotheism, therefore, in the cult of "Yahweh-alone," which arose in crisis but remained as the crisis was taken to be permanent (1983, 35). The conservatism of this people may very well have been intensified and their self-identity confirmed, thereby enhancing their chances for survival, by the digitalization of the concept of God: a God freed from analog familiarity—aniconic, unseen, hidden, contentless; a God whose system of commandments fostered in his people an unprecedented practice of moral inference; a God whose Justice and Judgment could be no less universal and necessary than the principles of logic; a God who did not remain an aloof object of some timeless intuition but constituted irreversible historical time by the sequences of his moves and his people's countermoves; a God for whom, like the system of rationality itself, there was no alternative—a God who was *One*. If it was not Yahweh himself, therefore, at least it was the concept of Yahweh and the moral system it engendered that may have ensured the survival of his people.

The digitalization of religious concepts, like that of concepts proper to other spheres of experience, no doubt constituted a decisive advance in Western rationality, but this appraisal is incomplete. If both analog and digital capacities contribute to the fullness of human cognition, we might look for a similar collaboration in spiritual life. Analog spirituality may provide experiences very different from those of the digital variety, and it will not do to suggest that the history of spirituality is the history of the replacement of the "primitive" analog by the "civilized" digital. Even if the history of religions often seems to exhibit this pattern, this does not mean that something vital has not been lost or that the analog may not be retrieved (along with the digital) in some more evolved form. This in fact forms much of the substance of the challenge that today faces Western spirituality.

NOTES

1. See p. 126, for example. Brown's view develops Freud's original theory of instinctual renunciation in *Moses and Monotheism* (1939).
2. I provide a fuller discussion of this distinction in "Analog Representation beyond Mental Imagery" (1997) and in chapters 10 through 13 of *Of Two Minds: The Nature of Inquiry* (1998).
3. The Latin word for a small stone or pebble is *calculus.* The use of such pebbles in an abacus or similar counting device embodies the numerical discreteness essential to digital "calculation."
4. See my argument in *Of Two Minds* (1998), chaps. 10–14.
5. Vision, naturally, is the sense most appropriated to represent metaphorically the immediacy of intuition and imagination, because the spatial expanse that is the object of visual experience does indeed seem to be apprehended in its totality "all at once." A sense with a greater temporal and smaller spatial component, such as hearing, might require more attention to the order or sequence of elements apprehended—a characteristic associated more with inference and discursive thinking. Yet moments of inspiration or intuition expressed in auditory terms still convey an impact of immediacy: one has heard "a voice" or "the word," rather than lengthy argument.
6. Although it might seem that facility at chess requires more of an analog skill in visualizing various basic configurations of pieces on the board—a problem-solving technique that advanced computer simulations of chess strategy have adopted—this capacity for spatial memory is not the sort one would find in the visualization of the organization of the parts in a piece of furniture, for example. While both cases obviously require visual memory, in chess this memory cannot be separated either from the functions of the various pieces or from the sequencing of moves that is necessary to deploy and mobilize these pieces. Even poor chess players may be able to remember complex visual displays of differentiated objects, such as chess pieces are; it is their limited ability to process information sequentially, I believe, that hampers them. If visual memory were sufficient for chess, artists and photographers should, all things being equal, be better-than-average chess players.
7. Fontenelle observed that Descartes "began with what he understood clearly in order to discover the causes of what he saw" but that Newton "began with what he saw in order to find its cause, be it clear or obscure. The self-evident principles of the former did not always lead him to phenomena such as they actually are; the phenomena of the latter did not always lead him to sufficiently evident principles" (cited in Vartanian 1953, 141). Diderot saw that the principles of Descartes (whom he calls "Olibri"), "at first glance, have a most seductive simplicity; they give a broad interpretation of principal phenomena, but prove false in application to details" (Vartanian 1953, 141). As for Newton (whom Diderot calls "Circino"),

> . . . he seems to depart from an absurdity; but it is only the first step that is troublesome. His system is strengthened by the same minute details that ruined that of Olibri. He follows a path obscure at the beginning but that becomes progressively clearer as he advances. The path taken by Olibri, on the contrary, clear at the outset, becomes increasingly darker as it goes on. His philosophy requires less effort than intelligence. But to be a disciple of the other, much intelligence as well as effort is needed. No preparation is necessary to enter the school of Olibri; everyone possesses the key to it. The school of Circino is open only to the best geometers. Olibri's vortices are within the reach of every mind. The centrifugal forces of Circino are intended only for algebraists of the first rank. There will therefore always be a hundred vorticosians for every attractionist; and one attractionist will always be worth a hundred vorticosians. (Vartanian 1953, 141–42)

8. In this respect, there is some irony in the pejorative use of the term *philistine*. The Philistines, as their surviving pottery shows, clearly possessed a markedly more decorative style than that of their Israelite neighbors; Philistine culture was itself closely linked with Aegean and Mycenaean Greek traditions.
9. One might even defend the view that, in contrast to more primitive pre-moral sensibilities, a genuine moral sense requires a corresponding grasp of more abstract principles of value, even if these principles are merely implicit in one's practice and not codified into any formal theoretical system.
10. Arnold maintained a rather friendly contact with Jewish intellectuals as well as with Louisa Rothschild (the length of their correspondence was comparable to that conducted with his family members). The respect he seemed to have received from the Jewish community for his knowledge of Hebrew (and his advocacy of its role in secular education), his aid in obtaining funding from the British government for the Jewish Free School (he was inspector of schools), and his

obvious devotion to the Hebrew Scriptures all contribute to the picture of a rather positive place that Arnold holds in the eyes of later Judaism.

Although he was an avowedly Christian writer, he believed that both Hebraic and Hellenic elements were necessary for culture; indeed some critics of his work reacted rather negatively to the prominence he gave this Hebraic component. The *Universal Jewish Encyclopedia* (1939, 484) records that he "maintained that the English nation is so constituted that it can be brought to a more philosophical conception of religion through Judaism and its phenomena rather than through Hellenism, and that Puritanism is Hebraism in action, which came about as a protest against the 'unrighteous conduct' of the pre-Cromwellian era." For a discussion of Arnold's views of religion, see apRoberts 1983.

It is perhaps relevant to recall that Arnold was also one of the few who recommended the serious study of Celtic literature. Although one might quarrel with the accuracy of Arnold's sometimes sweeping characterizations of whole cultures, it seems that he usually valued their diversity rather than used them as a basis for some theory of racial or cultural supremacy.

11. In chess, as in other forms of digital exercise, this concentration can push itself toward the extremes of what George Steiner has called "trivial depth":

> Chess may well be the deepest, least exhaustible of pastimes, but it is nothing more. Bobby Fischer's assertion that it is "everything" is merely necessary monomania. The proposition is itself grotesque. *Pace* Goethe, chess is not "the touchstone of the intellect" but only a radically sterile form of play. The problems it poses are at the same time very deep and utterly trivial. We have no logical-philosophical rubric for this strange amalgam. It may be that pure mathematics shares this mysterious quality of "trivial depth," of a form of mental life utterly insignificant—though enormously meaningful—and trapped in a world of mirrors. Though most of us would abhor the suggestion, this "nonsignificance" may extend even to music, and the common bond between chess, music and mathematics may, finally, be the absence of language. But these are murky epistemological waters. What needs emphasis is the plain fact that a chess genius is a human being who focuses vast, little-understood mental gifts and labors on an ultimately trivial human enterprise. Almost inevitably, this focus produces pathological symptoms of nervous stress an unreality. (1974, 67–68)

The absence of language to which Steiner refers here is not the absence of syntax but of significance—the absence of reference for the elaborate digital symbol systems that constitute much of chess, music, mathematics, and language in its syntactical aspects. Steiner also recognizes these "capacities for highly abstract imagining" and for "rapid mental calculation and projective analysis" in Jewish culture: "The large Jewish presence in topflight chess, as in modern mathematics or mathematical physics and in the performance (though not in the composition) of music, does not look accidental" (pp. 62–63).

12. The dangers of extreme Hellenism, Arnold observes, include moral relaxation—a consequence of an overly liberal, insufficiently strict discipline that subordinates doing to thinking; the dangers of extreme Hebraism derive from the subordination of expansive thinking to narrow doing and from the distortions that conservative obsession can give to the injunction "Whatsoever thy hand findeth to do, do with all thy might" (Ecclesiastes 9:10). "To any of these impulses," Arnold observes, "we soon come to give that same character of a mechanical, absolute law, which we give to our religion; we regard it, as we do our religion, as an object for strictness of conscience, not for spontaneity of consciousness; for unremitting adherence on its own account, not for going back upon, viewing in its connections with other things, and adjusting to a number of changing circumstances. We treat it, in short, just as we treat our religion—as machinery" (1965, 185–86).

13. Newton shared some of this view, common in the Hermetic tradition with which he was well acquainted. Here is John Maynard Keynes's appraisal: "[Newton] regarded the universe as a cryptogram set by the Almighty—just as he himself wrapt the discovery of the calculus in a cryptogram when he communicated with Leibnitz. By pure thought, by concentration of mind, the riddle, he believed, would be revealed to the initiate" (1963, 314). Richard Westfall gives part of the text of this letter to Leibniz, in which Newton explains: "the foundation of these operations is evident enough, in fact; but because I cannot proceed with the explanation of it now, I have preferred to conceal it thus: 6accdae13eff7i3l9n4o4qrr4s8t12ux" (Westfall 1983, 265). Newton's neurotic secretiveness and reluctance to publish many of his discoveries may at least partially be explained by supposing that he viewed these discoveries, including the calculus, as his "breaking of the code" of nature, the knowledge of which the Hermetic tradition may have treated as arcane.

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