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The Scottish Reasoning of James Hutton: Poet in Spite of Himself

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"We have, first, Burnet's Theory of the Earth. This surely cannot be considered in any other light than as a dream, formed upon the poetic fiction of a golden age . . . Theory of the Earth" (1975).

The rest of this passage from the first volume of James Hutton's seminal contribution to Enlightenment geology will have to wait until the conclusion of my paper when it will be clearer that Hutton's text, like so many literary texts that we have now come to anatomize, may conceal as much as it reveals. In fact, ever since Stanley Edgar Hyman's essays on Darwin, Marx, Frazer and Freud as imaginative writers in The Tangled Bank some of us have been led to read scientists as poets. Hyman evokes Yeats's statement that the voices in his vision came to give him "metaphors for poetry." I suggest that for speculative scientists, especially during the formative years for modern science in the 18th-century Enlightenment, the voices of observational experience provided images that were so powerful, so sublime, that in spite of themselves those scientists toyed with speculative theories and implications that went far beyond what they would acknowledge, even to themselves, as plausible. In other words, images led them beyond belief—beyond what they
were willing to state as true. In this way, those scientists were indeed much like poets as, perhaps, all scientists are. The example I know best is Erasmus Darwin, who actually wrote poems along with his speculative science. Hutton also, who never published any belles lettres, may be read as a writer whose images, as well as imaginative methodology, may have led him beyond the limits of his own belief—and certainly beyond the limits that subsequent scholarship has placed on his thought. In the pages of his most important work, Hutton was not the complacent Deist who is represented in most accounts of him.

Paradoxically, Hutton's first readers and his associates who knew him best were probably his most perceptive readers. He had some exchange of correspondence with Erasmus Darwin and many associations with the slightly wildly imaginative Lunar Society of Birmingham. Further, the academic who popularized Hutton's rather ponderous treatise, John Playfair, clearly played down the Deistic argument from design in his 1802 Illustrations of the Huttonian Theory of the Earth. Thus it seems somewhat inappropriate that the subsequent consensus has been so strong about Hutton's belief in design in nature though such piety is, clearly, the overall surface belief that he states and restates throughout his text. Though Charles Coulston Gillispie's important work on Genesis and Geology recognizes Hutton's conservative intentions, Stephen Toulmin and June Goodfield in their book on time seem to read this Huttonian Deism most emphatically:

James Hutton's handling of the geological evidence might seem revolutionary, but his fundamental aims were conservative and devout... [He] might with equal consistency have extrapolated his argument, dispensed with the hypothetical Creation entirely, and used his discoveries to argue that past time was not merely indefinite but infinite.

Hutton's daring extrapolation, exactly what is denied by Toulmin and Goodfield, is the topic of this paper. But in order to understand his extrapolation I need, first, to borrow a wonderfully suggestive phrase about Hutton from a quaint little book that is the most complete account of his work in our time that I have found. Edward Battersby Bailey was himself an
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eminent geologist at the University of Glasgow, so his book on Hutton is understandably more concerned with the geology than with the literary implications in the writing. We learn from Bailey that Hutton also did state of the art thinking for his time, publishing on phlogiston chemistry, physics, agriculture; we also glean from Bailey enough biographical detail about the life of this Edinburgh intellectual, his travels, his farming enterprise, to wish for a more complete biography. Hutton shared the same strange, pre-revolutionary milieu that mingled the Calvinist discipline, which drove David Hume to a spiritual exile still troubled by its memory, with the open-minded Enlightenment speculation that Hume cultivated in France. Though I have not discovered a direct connection, the presence of Scottish Hume in this discussion of Hutton is important; and it is the picture of the freely extrapolating mind divided against itself that, I suggest, links the two countrymen. A phrase from Bailey's book on Hutton's thought, however, is the catalyst. The phrase actually appears in the Foreword to the book and is written by another Scottish academic scientist, J.E. Richey:

Bailey has supplied throughout, a commentary on Hutton's deductions which perhaps only Bailey with his personal knowledge of Scotland and parts of Europe to which Hutton has referred could have made with such confidence and consideration. He, too, has brought insight into the difficulties of many fundamental geological problems recognized by Hutton [problems with belief?], and appreciation of the intelligence and Scottish power of argument which Hutton applied in his deductions.

Rather than mapping as Bailey does the geologic features, I will outline briefly in what follows Hutton's notion of an open-ended methodology—a kind of Humean calculus of analysis—and his notion of infinite, rather than indefinite, time. This will be, then, a less than Deist map of images, perhaps a Scottish map, certainly an Enlightenment map.

The distinctions I want to draw are delicate and, themselves, speculative because there is no question that the traditional recent readings of Hutton can be supported with many passages in which he clearly speaks of his belief in design, in "the presence
and efficacy of design and intelligence in the power that conducts the work." Thus for me to look for "absence" in this work (I mean, of course, Hutton's work as well as nature) may seem truly deconstructive in the worst sense. But I find Hutton's writing most powerful and evocative at exactly those points where the notion of design fades to the background and where those two other notions, admittedly so popular in our time (we read what we want to read), of an open-ended methodology and sublime infinities of time surface. Like many of the late 18th-century philosophes, I think, Hutton was toying with speculative notions that were fundamentally inconsistent with his stated beliefs. Further, such doubleness of mind enlivens his work and drives what is, also, a long and digressive work toward a kind of poetry of speculation that not only may be the reason for his influence but also may recommend his thought to us as a more complex Deist than we had thought.

First on the topic of methodology, then, Hutton prefers to describe a sort of triangulating around all possibilities, a narrowing of one's "limits" towards the best answer. He does acknowledge that facts cannot be dealt with outside of some general theory or initial framework:

"Appearances cannot well be described except in relation to some theory or general arrangement of the subject; because the particular detail, of every part in a complicated appearance, would be endless and insignificant." Not only does the end of this statement hint at the methodological nightmare of endlessly proliferating detail but also it implies that the formative and overall "general arrangement" must be anthropomorphic or, at least, some fleshed out godly design. But when Hutton, on occasion in the work, speaks more specifically about method, the formative general theory always seems to be more abstract and literally disembodied. Here he is speaking earlier in the first volume about a process of systematic doubting, or the elimination of possibilities:

... so far as we know our error, or the deficiency in our operation, we proceed in science, and shall conclude
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I suggest that this approach of systematic doubt and narrowing of one's limits is the most open methodology one can adopt. Eventually, all things can be compared and eliminated by such a process so that the methodology actually circles back on itself, and one is left not with a general theory but with the endless proliferating of possibilities. On methodology, then, Hutton seems to be good at the double talk of insisting on starting with a general or core set of assumptions and yet, at the same time, making those assumptions so open and flexible in themselves that any conclusion can be reached at the end of an investigation. In our time, we never question such openness; but systematic doubting of this sort is a major step for a Deist.

Further, I find it is the reasoning about "limits"—or the language of limits at least—that Hutton turns to most when he wants to describe the longer geologic time frames that his observations about igneous rock formation as well as about sedimentary rock formation have led him to hypothesize. Also, he is apt to use the word "infinite" in this context as often as the word "indefinite." I suppose the argument is that as long as he specifies "indefinite" time frames he is leaving room for divine action at the beginning or the end whereas "infinite" time leaves less room, paradoxically, for Deistic intervention. But I think the more important thing to notice is the way Hutton applies his methodology of limits to his thought on time so that, I think, the result is an opening out toward possibility and sublimity of image. In other words, Hutton's imagination seems to be carried away not so much by the observational facts he has gathered, although the empirical evidence comes to him in an undeniable way like the voices to Yeats, as by speculation itself. Early in the work he speaks about infinite time frames, then later he speaks of triangulating the limits at either end of an epoch—what Charles Lyell, his important uniformitarian disciple (and another Scotsman), would suggest initial numbers for in his *Principles of Geology* (1830-33). I suggest that the energy of the writing
and the scope of the images indicate how Hutton's Deistic frame is giving way to a more open and sublime notion:

-Time, which measures every thing in our idea [I assume his overall theorizing], and is often deficient to our schemes, is to nature endless and as nothing; it cannot limit that by which alone it had existence; and, as the natural course of time, which to us seems infinite, cannot be bounded by any operation that may have an end, the progress of things upon this globe, that is, the course of nature, cannot be limited by time, which must proceed in a continual succession. We are, therefore, to consider as inevitable the destruction of our land.  

He is needing to argue, of course, that enough time is available for his notion of slow, uniform change to produce what we know are major structural changes in the surface of the Earth. But later, when he is discussing the notion of definite "epochs," he has to use the measure of "limits" again. His very use of limits, his flexible and skeptical tool, however, reminds him of infinity once more:

-This [an early point in geologic history], however, is not the beginning of those operations which proceed in time . . . nor is it the establishing of that, which, in the course of time, had no beginning; it is only the limit of our retrospective view of those operations which have come to pass in time.  

To conclude my reading of Hutton's imagery, I want to look at the rest of the passage about "poetic fiction" that I placed at the head of this essay. As an investigator with a lot more evidence, Hutton knows that Thomas Burnet's attempt to link natural history and sacred history is wrong; but Hutton goes on following the passage I quoted at the first to acknowledge that "at the same time, there are certain appearances in the earth which would, in a partial view of things, seem to justify that imagination." In other words, appearances and empirical evidence do not preclude imagination. Any dogmatic view, in fact, seems less to fit with the ever-changing "limits" of observation. I would suggest, finally, that Hutton's own
imagination, set to work by "appearances of things" but also by speculation—and in spite of himself—envisioned the very thing his own contemporaries feared and wrote vehemently about in criticism of his work. As one of his major critics, Richard Kirwan, wrote, "[Hutton envisioned] an abyss, from which human reason recoils."\(^{15}\) Further, this daring vision, though not uniquely Scottish, may remind us of the vision of Hutton’s fellow Scot, David Hume, whose imaginative thinking arrived at the equally abysmal conclusion, paraphrased from Aristophanes, that "Whirl is king, having deposed Zeus."\(^{16}\)

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NOTES

This essay was read at the meeting of the American Society for Eighteenth-Century Studies in Toronto on April 19, 1985.


J.E. Richey, in Bailey, p. v.

James Hutton, *Theory of the Earth with Proofs and Illustrations*. In Four Parts. Volume I (William Creech, Edinburgh, 1795), p. 5. This is the important book publication of his theory. Bailey outlines the earlier publication history of the theory going back to 1785 in paper and abstract form.

Ibid., p. 305.

Hutton, volume I, p. 187.

Hutton's notion of uniformitarianism, or continuous forces working over long stretches of time as opposed to separate and dramatic catastrophes, is probably his most well-known idea. It was developed by Charles Lyell who supplied some of the early suggestions about the actual duration (or "limits") of the geologic subdivisions, eras, periods, epochs. The most recent study I have seen treats Lyell well and carries the same Deistic emphasis on Hutton. See Derek Gjertsen, *The Classics of Science* (New York, 1984).

Hutton, volume I, p. 15.

Ibid., p. 223.

Hutton, volume I, p. 271.

Ibid., p. 221.

For this reading of Hume, which is originally from Carl Becker, see my *Erasmus Darwin* (New York, 1974), p. 20.