

A Final Story

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In the middle of the 1990s, many scientists were willing to declare with increasing confidence that science was at last in a position to answer age-old questions. What were the origins of human life? What were the major events that created the earth, the galaxies, the fundamental features of the universe as it exists today? Among these scientists numbered several prominent popularizers whose confidence, along with the possibility of discovering traces of life elsewhere in the universe, helped inspire origin-based research programs like those at NASA, which took as their task composing the full cosmic and human evolutionary story. At the same time, influential physicists believed that fundamental physics was perhaps itself approaching finality: a final theory could very well be in our grasp.


A hundred years earlier, in the middle of the 1890s, similar hopes for science were expressed but later reconsidered. And as historians of science have shown, statements based on the successes of more modern physics were made at several points across the century, all without a final theory ever materializing. It would seem to serve us well, then, to take the reservations as seriously as the hopes in approaching similar sentiments today.

But if we allow ourselves to have a little confidence, and explore what it might mean to live in a time when answers to fundamental questions are at hand, we must first confront what that finality might mean. For scientists, that often means the refinement and unification of fields. In the early 1990s, physicist Steven Weinberg approached the question more thoroughly in his book *Dreams of A Final Theory*. Picturing the progression to ever more fundamental explanations as “arrows of explanation,” the final theory meant for him the convergence of all such arrows at the set of deepest truths about nature. Weinberg emphasized the beauty, the feeling of inevitability, and the rigidity such a final theory would likely have. Weinberg had set his hopes on string theory and though since the time of his writing, confidence in that theory has faded, he explained what it would and would not mean to have such a final theory in our grasp. It would not mean just endless refinement, since many scientific questions would in practice be too difficult ever to compute from fundamental princi-

ples, and their actual solutions would themselves be beautiful. There would always be new science, if no new fundamentals.

In his book, Weinberg likened the entire enterprise to the exploration of the earth. So even if the world were fully charted, there would still be more to explore within it. Still, he did think that something might be lost, a sense of wonder perhaps. He argued moreover that the more we learned of the fundamental principles of the universe, the more we found that the world was indifferent to us — that the universe suggested no purpose for us at all. In this sense, finality argues against many traditional religious beliefs. But Weinberg also found redemptive value in the scientific exploration itself. He argued that it added to the dignity of human life in forcing us to confront unflinchingly the truths of our existence.

While the waning confidence in string theory has made talk of a final theory more distant, a greater confidence has emerged in our ability to relate a comprehensive story about the universe and its history. This attitude points to a significant change from a century earlier. Then, the finality was only in the principles, and the questions of our ultimate physical origins were often judged to be non-scientific, not respectable science.

Scientists have different views concerning the consequences of such a comprehensive history, the co-evolutionary story of the emergence of the material universe and the emergence of life and its diversity: that the work has no implications for the value of human life; that it undercuts or adds to its value by making questions of meaning immanent rather than transcendent; that it has no implications for religion; that it's completely at odds with any literalist or conservative conception of scripture and perhaps even with spirituality. And the question of what it means for an account to be comprehensive is itself open to endless discussion. But these origin sciences, at least in their popular face, emphasize a particular role for humanity as the only known consciousness able to relate the history of the world that formed it. The stories emphasize beauty as well, and suggest that the world is as meaningful as its history is aesthetic — so that meaning is also in the eye of the beholder. 

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