

The Living Cosmos

Preface to the Paperback Edition

Since *The Living Cosmos* was first published in 2007, astrobiology has been in a ferment of activity. The search for life in the universe is highly interdisciplinary, and one of the best signs of the subject's rude health is the vigorous debate and questioning (with touches of incomprehension) between astronomers, geologists, chemists, and biologists at any major meeting. A young cohort of researchers who brand themselves as astrobiologists is making its way through the ranks, and is already making its mark. The research community is becoming steadily more international. Whether the topic is the exploration of Mars, extremophiles on Earth, exoplanets, or SETI, astrobiology has shown the power to capture the public's attention and fuel its imagination.

And yet, we still only know of one place in the universe with life. Does this mean astrobiology is a failure? What's the status of this young and exciting field?

The greatest progress has been made on exoplanets. The detection limit has steadily marched downwards in mass to approach the mass of the Earth. Very few of the super-Earths found so far are habitable, in a traditional sense of being able to have liquid water on their surfaces, but the Kepler satellite is poised to deliver the census of Earths. The number of exoplanets has more than doubled since this book first appeared. Exoplanet research has move beyond counting bodies to characterizing planets and comparing observations to sophisticated models of geology and atmospheric chemistry. In little more than fifteen years, the advances have been breathtaking.

By comparison, the Search for Extraterrestrial Intelligence (SETI) has celebrated its 50th anniversary without any signal being detected. It might seem strange to compare the two fields—one announcing a new discovery almost every week, and the other suffering through a continuation of the “Great Silence.” But both searches are addressing central issues of our relationship to the universe, and both are paced by advances in technology. SETI may always be vulnerable to its untested and anthropocentric assumptions, but with the increased power of radio and optical methods, the search may just be getting interesting.

Readers of this book may also be interested in my recently published *Talking About Life*, also published by CUP, which contains interviews with dozens of the scientists featured in *The Living Cosmos*. One day, I expect to give this book the most dramatic update possible.

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