

Preface

This volume was produced for use in a series of undergraduate seminars that I have taught at the University of Minnesota for more than 10 years on the title subject. I began teaching the seminars, which continue and have variously been part of the undergraduate honors and freshman seminar programs at the university, for two reasons. I thought that the subject lent itself to a review of materials from a variety of disciplines, making it a good pedagogical vehicle for introducing undergraduates to a broad view of the fields in which they might later specialize, while learning some useful intellectual skills. Secondly, I was personally interested in deepening my own understanding of the title question.

Both motives seem to me to have been amply justified. Students in the seminars, who write a paper and give a talk on a topic related to the subject, show frequent indications of enthusiasm and maturation during the course, while my views of the subject question have significantly evolved. In this context, the mathematical level here has been kept to elementary algebra and trigonometry, except in the appendices, where a little calculus is occasionally used.

I started with the conference proceedings [1] edited by Zuckerman and Hart, which is still frequently cited here, and which, as I discovered over time, takes, on the whole, a quite ‘negative’ view of the entire question relative to other available writings. That is to say, many contributors to that volume believed that extraterrestrial life was unlikely to be found. Through the years, as I have read a great deal more, I have understood that other views are, in the present state of knowledge, at least as likely to be correct and I have tried to reflect that understanding in the presentation here. The result, I think, is a quite ‘agnostic’ account, which is not committed to one answer to the title question. As I discuss particularly in the last chapter, that uncommitted perspective is somewhat unusual in published work on the subject, some of which is strongly devoted to one hypothesis or another.

I think that this ‘agnosticism’ is pedagogically important for at least two reasons: First it is, I think, an honest statement of our present understanding of this question. Secondly, the exercise of resisting the temptation to leap to a conclusion or strong hypothesis, which is particularly strong with regard to this intriguing question both for students and professionals, is a very useful one in the training of

young minds. Occasionally, I have students practically begging me to tell them what I ‘really think’ is the answer to the title question. What I ‘really think’ is that the answer is not known, though one can constrain the list of possible answers by a careful survey of what is known, as I have tried to do here. The intellectual tension resulting from an attempt to assimilate this point of view, is, I think, very instructive. Individuals who might wish to use this monograph in a teaching context are invited to contact the author about teaching materials including power point lecture slides and homework exercises.

Among the colleagues with whom I have interacted on subjects related to this work, I particularly thank John Broadhurst, Robert Gehrz, Alexander Grossberg and Robert Pepin. Robert Pepin not only discussed many aspects with me, but spoke often to the seminar and read and commented on a significant portion of the manuscript. Graduate student Ivan Fedorov, who has been working with me on models of prebiotic evolution and the more than 100 students who have taken the seminar have also had a big influence on my thinking. However I am solely responsible for all the conclusions and views expressed here.

Reference

1. B. Zuckerman, M.H. Hart, *Extraterrestrials, Where Are They?*, 2nd edn. (Cambridge Press, Cambridge, 1995)

Minneapolis, 21 June 2011

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How Likely is Extraterrestrial Life?

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2012, IX, 151 p. 49 illus., 27 illus. in color., Softcover

ISBN: 978-3-642-22753-0