James Kasting, a distinguished professor of geosciences at Penn State University, appropriately introduces his book with a detailed history of space science exploration by covering a variety of important astronomical knowledge. In the beginning chapters an array of astrobiology, chemistry, space physics, as well as number of theories pertaining to the formation of Earth’s habitable climate are introduced. Particularly, the Young Sun and Rare Earth theories are discussed in order to give the reader a basic understanding of ideas theorized in the past and implications they have on man’s search for the elusive earth-like planet. Without even saying so, it is obvious to me that Kasting is optimistic about human’s ability to explore deeper into space implying that we will ultimately discover extraterrestrial life in the near future. Using cutting-edge technology, he explains that man is more than likely to be on the verge of making such discoveries which will lead to the rapid development of practically all fields of scientific study and their practical applications in contemporary science.

The necessities for the formation of basic types of life are discussed and starting with the formation of our very own solar system. Regarding our own planet Earth, Kasting explains the effect of innumerable amount of factors, which resulted in complex and intelligent life here. The Rare Earth theory suggest that it is simply against all odds that our own solar system developed in such a way that Earth ended up the right place at the right time, with the right size, chemistry, momentum, orbiting bodies, and layers of protection against the harsh universe to sustain life for period of time great enough to allow the evolution of more complex entities. In addition, it is believed that if the space environment ‘acted up’ in even a minute way, our beloved Earth would be sterilized in the blink of an eye. However, these are not Kasting’s own beliefs. Instead, he feels that it is more than likely that many other habitable worlds exist that sustain life. In fact, there are so many of these worlds that it seems increasingly rare for there not to be intelligent life elsewhere. The Drake equation is an equation used to estimate the number of detectable extraterrestrial civilizations in just the Milky Way galaxy. However, this equation cannot be proven or even corrected without millions of other observations current technology cannot make. Nonetheless, it will be a closely examined function as more extrasolar planets are found and measured.

The technology presented gives astronomers and scientists around the world exciting, new inspiration for further space study. Many are ecstatic about the promotion of new space capabilities such as gravitational microlensing. Already proving itself, gravitational microlensing will enable us to define ever more accurate observations of the heavens. This advanced, interesting technology works by looking at a distant star though a lens and observing it passing in front of a source star, thus magnifying the source star’s light though which its luminosity briefly brightens and dims. By observing the change in luminosity, it is possible to distinguish properties such as size, chemistry, distance, and infrared intensity.

Kastings biggest contribution as a writer is his ability to coherently break down complex topics into concise, easy-to-understand pieces. He accurately portrays the gravity of such discoveries. To me, his explanations are motivational for people to take interest in and push for space exploration in order to preserve humanity among the universe. I thoroughly enjoyed reading this book for two particular reasons. One, it utilizes many extensively verified scientific hypotheses and observations which give the reader confidence and optimism towards the future of space exploration. Secondly, it inspires me to eventually work in an astronomical career field after graduating. After reading this book, it has
persuaded me to desire to discover a slice of the vastly unknown. Now, I don’t feel as apprehensive about choosing astronomy as a career. In addition, he has helped revitalize the importance of graduating with a degree in physics, which will only improve my chances of enabling me to help make advancements in astronomy.