

BOOK REVIEW

Daniel Duedney, *Dark Skies: Space Expansionism, Planetary Geopolitics, and the Ends of Humanity*

(New York, Oxford Scholarship Online, 2020)

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Dark Skies: Space Expansionism, Planetary Geopolitics, and the Ends of Humanity

Daniel DEUDNEY

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Scholarly papers regarding space expansionism tend to lack an overarching perspective. To fill this gap, Daniel Deudney has penned a timely book called *Dark Skies: Space Expansionism, Planetary Geopolitics, and the Ends of Humanity*, which makes him a pioneering scholar in laying out a holistic approach to studying space expansionism. The book provides a comprehensive analysis of both the claims of space advocates and the consequences of space activities. Additionally, it illuminates the preeminent geographic misunderstandings about space. It examines how the completed and expected space activities of space advocates and details the orbital space and technological improvements for nuclear weapons since orbital space activities could cause a devastating nuclear war.

Focusing on space expansionism, Deudney argues that contrary to the one-sided and highly optimistic perspectives of many space advocates, thus far, space activities have produced more negative consequences. Additionally, he argues the same for future space ventures, which are expected to be much more negative than the space advocates claim. Deudney's aim is to illustrate that since space expansionists misunderstand the concepts of geography, geohistory, and geopolitics, their assessment of space expansionism has been disproportionately optimistic. Yet, upon more accurate analysis accounting for these factors, he believes that space expansionism would be less appealing. In other words, he tries to counter the overly optimistic discourse, for human involvement in space did create negative outputs like hazardous space waste. Consequently, he pleads for serious restraints and the eventual cessation of space activities.

Deudney's book is structured across four parts and ten chapters. In Part I, he lays out the considerable improvements that have transpired during the Space Age from the early 1940s to date. Then, unlike traditional space activities pursued by nation-states, the author describes the space futurism generated by distinct actors such as scientists, analysts, and advocates, including celebrity figures like Jeff Bezos and Elon Musk. According to the author, these space futurists feed the ideology of space expansionism and garner political support for it. After surveying the notion of space expansionism, he

depicts the waxing and waning periods of space development. He then goes on to shed light on why research and arguments related to space have remained relevant over time. Deudney underlines space-political questions and their propositions for related debates about violence capabilities and security, the wisdom of all-inclusive human expansion into space, and the limits and frontiers of the planet. Since many space advocates articulate their arguments by courtesy of geographical, geohistorical, and geopolitical identification, Deudney tries to elucidate how these concepts are much broader than their customary interpretation.

Part II first outlines the basic qualifications of the new frontiers beyond the Earth in the wake of space expansionism. It surveys how life beyond Earth may look like by making references to the features of the Earth's moon, orbits, and magnetic fields. By doing so, the author aims to illustrate that the Earth System today could best be understood via nonlinear processes. Then, the author goes on to explore how science fiction and space expansionism are closely related, while focusing on a broader interpretation of solar orbital space and the outer solar system. He also interrogates whether existing technology for space expansionism is capable. Deudney concludes Part II by depicting disasters and existential threats including geophysical, biological, and ecological ones along with technogenic threats caused by nuclear, genetic, nano, and computer technologies. He also mentions technologies that might render human expansion into space safe, in order to highlight the progressive characteristics of current technology.

Part III consists of three chapters. In Chapter 5, the main military projects to extend activities into space are broadly explained in order to grasp the roles of these projects once interstate rivalry is taken into consideration. The main argument of the chapter is that there are two geographical errors regarding the feature of space weapons and their defensive role in shooting down ballistic missiles. In Chapter 6, the author delineates the main projects of habitat expansionists who propose to reshape the geophysical properties of the planet, decorate orbital space with infrastructure, and colonize other planets. The last chapter of Part III analyzes the claims of the arms control advocates and environmentalists who oppose military space expansionism. The chapter points to considerable disagreement among space advocates regarding the requirements for near-space activities.

Part IV underlines the geographical misunderstandings, providing a comprehensive analysis of geopolitics by depicting its pros and cons and redefining geopolitical concepts to be holistically applied to space expansion. Later, the proposed illustrative perspective of geopolitics, known as 'full geopolitics', is applied to planned space activities. Finally, it investigates potential consequences that would emerge in case of human expansion into solar orbital space and explains why solar space expansion is not likely to be feasible.

The concluding chapter discusses elements of an earth-oriented space program, after criticizing the military and habitat expansionist programs. Then, four final points are underlined as a summary of the author's main argument regarding space expansionism. Here, the author urges a restrained militarization of space and relinquishment of large infrastructures from earth's orbital space, since they might have unintended consequences. Subsequently, he claims that the orbits of asteroidal bodies should not be changed since they might create destructive capabilities that could be more lethal than nuclear weapons. The author's final assumption is that the colonization of Mars and other celestial bodies should be abandoned, as these activities might provoke existential threats.

Two significant shortcomings of the book should be underlined. First, the author only highlights competitive and confrontational relations among states without giving credit to cooperative structures that take place in many spheres, including space exploration. He unilaterally insists on confrontation rather than cooperation. It is a fact that geopolitical competition has been predominant in world politics; however, substantial cooperative structures could still be referenced, especially in science and hi-tech research. For instance, just after the dissolution of the Soviet Union, numerous agreements between the United States, the Russian government, and the Russian private sector entered into force to enhance cooperation in outer space activities. Humanity does have the choice to opt for cooperation rather than confrontation in the Space Age. Consequently, states may learn to cooperate and overcome the zero-sum geopolitical rivalry once they settle into other celestial bodies.

Secondly, Deudney's assumption that the world will be more war-prone is linked to the initial zero-sum assumption mentioned above. The author claims that the militarization of space contains risks of nuclear war. He uses the intercontinental ballistic-missiles (ICBM) analogy to make the case for the possibility of a nuclear war and proposes to restrain militarization in space. Moreover, he points to the transition from the Space Age to Nuclear Age. Nevertheless, it seems that the author disregards the realistic constraints of nuclear deterrence. ICBMs with nuclear warheads pose serious risks, but on the other hand, that high risk facilitates possible cooperative mechanisms as a result of deterrence. Thus, the argument of a war-prone world automatically caused by nuclear weapons may also need some scrutiny.

Deudney's book is timely and avant-garde. It is unique for assessing space expansionism from past to present as well as exploring its future prospects. Thus, it provides rich data for scholars interested in the advancement of space activities. It is a must read since it contributes to international relations literature by giving an unconventional assessment of space activities.