

Thesis Project Portfolio

HEDGE Hypersonic ReEntry Deployable Glider Experiment Critical Design

(Technical Report)

Understanding the Current and Future Impacts of Hypersonic Weapons Development on International Relations and Politics

(STS Research Paper)

An Undergraduate Thesis

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Sociotechnical Synthesis

Hypersonic technology in general has grown significantly in importance in recent years, especially in the world of national defense. This field of technology encompasses any vehicle or entity which is able to travel five times the speed of sound. Because of its potential applications as an almost undetectable method of delivering nuclear payloads, many nations have invested tremendously in developing these technologies. This has started a new arms race which has continued to escalate throughout the 21st century, creating a serious demand for research in this field.

In order to further meet this demand for continued hypersonics research, this technical project focuses on developing a hypersonic glide vehicle which can be deployed as a CubeSat. Because of the modular nature of this system, this hypersonic vehicle will cost significantly less to develop than traditional systems. This research could help evaluate the efficacy of these lower cost methods of hypersonics research, which could allow for a higher volume of research to be conducted in the first place. Ultimately, this project will aid in the development of hypersonic vehicles and weapons, further supporting the west in this race for hypersonic weapons.

However, if research is to be done to further develop hypersonic systems, it is also important to understand how the demand for such weapons came about in the first place as well as the potential consequences of this new arms race. This science, technology, and society (STS) thesis aims to answer these important questions and provide an important social context to hypersonic weapons development. Additionally, potential social solutions will be provided which aim to mitigate the negative consequences of this arms race so that any hypersonic technology developed will ultimately be used for beneficial purposes.