Thesis Project Portfolio

Hypersonic ReEntry Deployable Glider Experiment (HEDGE)

(Technical Report)

Rallying the Troops: How the United States Government and Big Defense Spread Love for Missiles

(STS Research Paper)

An Undergraduate Thesis

Presented to the Faculty of the School of Engineering and Applied Science

University of Virginia • Charlottesville, Virginia

In Fulfillment of the Requirements for the Degree

Bachelor of Science, School of Engineering

Jennifer Farfel

Spring, 2024

Department of Mechanical and Aerospace Engineering

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Sociotechnical Synthesis

How does the United States promote research and development in the Aerospace industry? Aerospace missions expand mankind's frontiers, but behind every world-changing success is a nation who aims to assert their dominance in the field. By publishing moving media, funding university research, and providing competitive employment compensation, the US commercial aviation, space, and defense industries grow and flourish.

In the Spacecraft Design capstone, UVa students aim to propel hypersonic technology forward by demonstrating that CubeSats are a feasible platform for hypersonic glider flight research. The project, Hypersonic ReEntry Deployable Glider Experiment (HEDGE), aims to validate Cubesats as a low cost, efficient, and accessible alternative to traditional programs. Over several years, students will complete every part of the design process, from background research, to prototyping, to manufacture and launch. HEDGE is both a rewarding experience for students and a step towards surpassing competitors in the hypersonics field.

Defense is the space industry's controversial counterpart. In the US, how have defense contractors and policymakers managed moral concerns regarding substantial defense spending and the development of advanced weapons? The DoD, prime contractors, and political factions such as the Blue Dog Coalition promote the industry as a cohort of top-tier employers carrying out the patriotic mission of protecting America. Advocacies such as Win Without War and ex-engineers distrust industry leaders and criticize wasteful spending. While significant research exists on the morality of war, there is no existing framework to evaluate the morality of weapons development. Unbounded by philosophical theories, the military-industrial complex rakes in government funding and cultivates support from politicians.