Matthew Wojcik

Many of the videos I watched interested me, but a topic that really caught my attention was parachuting and drag. Upon further research, I learned that parachutes have a great number of uses, such as landing people and supplies, and slowing down fixed-wing aircraft, drag racers, and even space shuttles using "drogue" parachutes. Parachuting and drag inspire me, because I have always wondered how parachutes work and what drag really is. Also, I think it's really cool how engineers were able to solve such a pressing issue of not being able to safely land people, objects, or vehicles, and how they keep improving the design and making new models for different purposes to this day. Parachutes and drag further inspire me because I believe there is room for improvement, and I have some ideas of how to make parachutes better and more efficient. Parachuting and drag are very important to the Navy and Marine Corps of today, because the Navy and Marine Corps need to use parachutes to safely land people and important supplies, such as food, water, first aid, vehicles, and ammunition. In my history class, I learned that parachutes were key to winning WW2, because they were used to land soldiers in aerial assaults, important vehicles, and ammunition, which is similar to the ways in which they use parachutes now in 2021. In addition, when I recently visited the Air and Space Museum in Washington D.C., I learned that in the past, Air Force planes snagged parachutes of returning satellite cameras, which I thought was really interesting. In the Fluid Mechanics video, I learned that drag acts on anything that moves through air or liquid, and that even paint can affect the drag on a ship. Studying drag is very important to the Navy and Marine Corps today, because drag acts on everything from parachutes to ships (which I'd say is kind of important to the Navy). Another thing I discovered is that studying drag on these massive ships and other military vehicles can help engineers in these fields improve fuel efficiency, and continue to improve and overcome obstacles.

While watching the Fluid Mechanics video, Dr. Karen Flack inspired me, because she is very enthusiastic and knowledgeable about her STEM career. Also, I relate to how she says she "likes to figure out how things work" and how she used to take things apart and build things starting at a young age. In addition, she worked at NASA, which I think is really cool, and now teaches at the United States Naval Academy, so she gets to teach and do research at a prestigious school. This inspires me because she gets to do something she loves at a place she worked really hard to get to, and I want to meet this goal in my career after college. Part of her job is to do research about drag on ships for the military--an important concept for scientists to understand when studying parachutes, as well. Along with other smart people, she conducts physical and computer experiments to test the amount of drag on ships, and she is able to influence the fluid dynamics of the ships to make them perform better and more efficiently. I admire how she is able to make such a positive impact for the Navy by using her skills and knowledge in STEM.

One thing about parachutes is that they have constantly changed and evolved, and they will continue to as our technology improves. As seen in the video, Mitch Jorgensen uses a ram-air type of parachute that can be controlled similarly to an airplane, which was developed over time so skydivers could control where they land. In the next 15 to 20 years, I think parachute technology will improve in the areas of making safe landings and the deployment of parachutes. When testing the model parachute I made with a coffee filter, string, and a paperclip, as the parachute video suggested, I noticed that the paperclip (which represents the skydiver) always hit the ground with a lot of impact, even though the parachute slowed it down a lot. Upon further research, I found that hard/improper landings cause the most skydiving fatalities. To improve this, I think a good solution could be a suit of airbags that deploys when a skydiver is going too fast on landing, which could be detected by speed and altitude sensors, or on the

push of a button. I think we could see something like this in the year 2040, and this would change skydivers' lives by making them feel and be much safer, and would especially change and save the lives of beginner skydivers, who are learning how to land. This could also impact the Navy and Marine Corps in the future, by making skydiving safer for troops and having fewer injuries and fatalities. Another challenge with parachute technology is malfunctions deploying parachutes. Although it is rare to have the canopy fail to deploy, it is still very concerning and could be fatal. In the next 15 to 20 years, I think technology will advance to make this safer. One way could be a remote deployment button that could activate the parachute to deploy when the parachute initially fails to deploy. This could be done with a CO2 cartridge, an electric motor, or a spring-loaded mechanism. In the year 2040, this will make skydiving safer and a lot less scary for everyone. Also, this will help the Navy and Marine Corps, by saving troops' lives. I believe there are many advances to come on the horizon in parachute technology, which will make skydiving safer and save lives.

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