Research Question

My project started with the idea that nature was the first artist and the first engineer. For this reason, I premised, art and engineering are eternally connected. From here I considered the ways in which nature and society are continually separated and how this separation is ultimately undesirable for humanity. As society sees itself as a separate entity from nature, society harms and destroys nature in pursuit of its own progress and prosperity. However, because human are ultimately connected to and dependent upon the natural environment as a life sources harming nature is a self-destructive process. So, the research question I developed is as follows: How can we establish a stronger connection between art and engineering in order to respect nature and create a more humane structure for society and culture?

Background Context

The first important component of the background context concerns the history of the engineer. In order to determine how the engineer can grow and evolve, one must first looks at the influences that created the engineer of today.

Methods

In order complete my project I interacted frequently with professors from the art department. These conferences allowed me to better understand the artists’ mindset and also the mindset of an art student. I learned from the perspective of an art student instead of from the perspective of an engineering student. Meeting and talking with various professors I was able to better develop my ideas for the project. Also, I learned about “artists” whose work transcends the normal boundaries between art, engineering, and nature. The projects I learned about, such as Theo Jansen’s “creatures” helped me establish a background context for connectedness of art, engineering, and nature in practice.

Conclusions and Outcomes

The final project I produced is a video, modeled after the TedTalk motif, that explains the research I have done and the conclusions I have drawn. The purpose of this video is to create a discussion and discourse about the connection between art, engineering, and nature at Lafayette College. Website: http://sites.lafayette.edu/egrs451-sp12-art-engineering-nature/

Recommended Next Steps

My recommended next steps for someone wishing to continue working on this topic would be to further the level of discourse and discussion, which could be done in a variety of ways. For example, involving more students, faculty, and staff would increase the meaningfulness of the
discussion. Also, I would encourage a future student to look into creating a physical green structure at 3rd Streets Arts campus to display the connectivity between art, engineering, and nature.

**Annotated Bibliography**


The acronym STEM stands for “Science, Technology, Engineering, Mathematics,” and this article looks at how the study of these topics may be enhanced by art-based learning. This source points out that there is growing momentum around the idea of supplementing a STEM curriculum with arts-based learning. The article cites examples of institutions and organizations that have embraced the use of art curricula in STEM fields, including the NSF, the Rhode Island School of Design, and the Philadelphia Arts in Education Partnership. This helps to establish a precedent for the connection between Art and Engineering I am looking to foster at Lafayette College. Also helpful to my project, this source discusses the benefits that art and art-based learning can have in STEM fields, including increased engagement, understanding, and innovation. Although this source supports the intersection of arts and STEM, it points out that there are some essential differences between art and science that should not be overlooked. One limitation of this source is that although it looks deeply at the connection between arts and STEM education, it does not include a focus on collegiate education.


This source clearly delineates the historical context under which the American engineer’s role in development evolved during the last 200 years. It showcases the ways in which engineers are culturally, historically, and politically guided in their approach to development. Essentially, this source establishes the engineer’s definition of “development” through time and explains how the engineer has measured “developmental progress” from the 1800s to the present. The authors also outline the “Engineer’s primary emphasis” as it has changed through history. The author’s purpose is to illuminate the historical, political, and cultural contexts that shape the modern engineer with the result that the engineer can then access and address their limitations and blind spots. Within my project, this sources serves to establish a history of the American Engineer, and a history of engineers’ value system as it pertains to development. This source helps me to establish who the engineer has been, and how the engineer has functioned in society so that I can better determine the type of engineer society needs for the future, and how that engineer should function within society. One important limitation of this source is that the historical discussion provided focuses exclusively on the engineer and development and does not include much discussion about the other roles engineers have played in society.

In 1988, the Pennsylvania State University College of Engineering created the Artists-in-Residence program, “AIR.” This program sought to “bridge the cultural gap between engineering and the arts.” This article provides an overview of AIR’s origins and its first active year. The authors also include a discussion of AIR’s historical context. They discuss the polarization of the art and engineering disciplines into two distinct cultures. The result being that engineers are ill equipped to understand the overall impact their technologies have on society, and thus cannot anticipate those impacts in their designs. This analysis is useful as I establish my own historical context about the connectedness of Art and Engineering. This source provides a brief but detailed account of the history of engineering education in the United States, which is also relevant to the historical context I want to establish with my project. Lastly, in their review of AIR’s first year, the authors establish the benefits of interdisciplinary learning between art and engineering students. One limitation of this source is that, although its historical data is still useful, it is outdated. This source cannot provide any information about AIR’s success beyond the first year of operation in 1988 and it can say nothing about the status of Art and Engineering education during the last 20 years.


Elting Morison suggests that advances in engineering have created a fractured and dissolved society whose organizing principles are overly rational and technical. As a remedy to the over-mechanizing of culture and society, Morison suggests an artistic perspective. Acting in complete contrast to engineers, the artist examines the particular and establishes the individuality of any given experience. Elting’s article provides historical support for my project goal of expressing the benefits of an artistic perspective for the engineering world. Although Elting provides a detailed analysis of how art could enhance engineering, the article was written in 1980 and is thus moderately outdated.


Solnit discusses how modern technology first began to, and continues to, detach humanity from nature and the natural dimensions of life. With the photograph and the railroad, societies began to change the terms of time and space. With these technologies the engineer disrupted a more natural and humane organizational standard for society. This source helps establish the purposefulness of my project. It establishes the need for a new, or at least altered, engineering principle for the design and organization of society. This article allows me to establish the shortcomings of the modern engineering order and then to suggest a remedy.

In his article, Tarmeau aims to educate his reader about the inadequacies of the engineering profession, as he saw them in 1982. He also explains how the engineering education could be modified to give engineers a better contextual understanding of how their designs function within society. In addition to the useful historical background Tarmeau provides, he establishes the need for a new kind engineer who can tackle the broader problems facing society. This source is useful to my project because it adds historical context and it establishes, that in more recent history, there has been the call for a new type of engineer, and this new engineer has yet to materialize. The publishing date of the article creates a limitation on how much of Tarmeau’s article is relevant to my project. Because there were different societal needs in the 1980s than there are now, some of his analysis and suggests are moot.