Jellyfish Don't Fossilize: The fading impression of art upon the scientific community

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Introduction

Through the Texas A&M University Science Influencers program, I worked with Dr. Victor Visor, Dr. Maria Miglietta, Kade Muffett, Dr. Jamie Steichen, and William Cram to spend a summer and fall semester studying jellyfish biology, science communication, and community building. A striking dichotomy presented itself amid this scientific pursuit: the separation of science understanding from community knowledge.

Over the course of this research, I worked in a jellyfish physiology lab performing water quality and life support on two different species of jellyfish polyps, gave marine science presentations for youth, interviewed different writers, and worked in a surf shop that serves the coastal community of Galveston, Texas. These spaces provide a holistic view of what the Science Influencers program director Dr. Holli Leggette calls "the leaky pipeline of science communication" (Himes, 2021). I was able to see where research was being done and what skills it takes to function as a scientist in higher education. From that perspective, I aided in a presentation on phytoplankton at the Rosenberg Library and a presentation on jellyfish for TAMUG Sea Camp. Presenting on two unusual specimens of marine study – phytoplankton and jellyfish – showed how vast the divide was between scientists and the public. Wanting to see the creative side of science, I interviewed two authors. Both shared a grounded side of passionate study in creative writing. Their perspective on the scientific community and how art and science can interact showed a positive outlook on the growth of progress. The study of these places revealed an unexpected lack of connection between them. Despite being related by discovery and communication, an apparent disparity in education and representation became clear. The hyperfocus of scientific discovery repelled the philosophic personal narrative of literature, and both often excluded the layman.

Through public outreach, I learned that the general populace believes they are disconnected from science unless belonging is expressly communicated. Human expression –the search for satisfying an inherent need to belong or to matter– is communicated through art. I found that the disconnect between the arts and the sciences is what led to the feeling of being out of place, and the progression from there is a natural animosity between the two. A return to progress would include benefiting from each other's discovery, a relationship between scientists and artists, and the community profiting from it all.

Purpose

The purpose of this experiment was to immerse myself in the world of higher education, creative literature, and the Galveston community to provide a holistic experience of each field. This immersion was designed to present an understanding of each field and its intricacies, to discover the connections – or lack thereof – between them. The results of this experience will provide a succinct overview of the world of collegiate academia on the campus of Texas A&M University at Galveston, the realm of creative literature and personal narrative that draws from science, and the way Galveston community understands science. This combined determination will ultimately explain the realistic experience of influencing in these different areas, and the outcomes of such efforts.

Methods

For approximately ten hours a week, I worked in the Evolution, Genetics, and Ecology of Hydrozoa (Cnidaria) laboratory, headed by Dr. Maria Pia Miglietta. I worked under Kaden Muffett, who is currently most of the way through a Ph.D. program in Dr. Miglietta's lab. In the the lab, I provided water quality maintenance and feeds for two species of larval jellyfish: *Chrysaora chesapeakei* and *Chrysaora pacficia.* These tasks involved accurate understanding of lab protocol, microscope operation, daily polyp counts, feedstock preparation, water salinity checks, water changes, stock water preparations, removal and storage of ephyra, algae removal, and lab maintenance and cleaning.

During approximately five hours of the week, I researched the existing database of creative writing on jellyfish and their ecology, history, and mythology. I interviewed my past professors in creative writing, asking about their methods of study and where they are now. I initiated a Zoom call with Juli Berwald, the author of *Spineless* and *Life on the Rocks*. I had an email conversation with Michelle Dominique Burk, the author of *No Crying in the Garden*, a poetry anthology. Conversations about the creative process were developed, leading to an understanding of how creative writers understand the distance between science and art. We discussed where that distance originated and how it might be dissolved.

For 25-30 hours per week, I worked for William Cram at Ohana Surf and Skate on Galveston Island, Texas. This opportunity allowed me to interact with a diverse group of people visiting the island for all different reasons. I met many TAMUG alumni, researchers from the island, parents on vacation, and teenagers just wanting an escape. This exposure to the public, with no set intention on the parameters of conversation, generated a magnitude of useful knowledge on the education, interests, and desires of the Galveston community.

For 5-10 hours of the week, I also prepared materials for a social media page with infographics, video, and pictures of the work I was doing in the jellyfish lab, to interact with a media audience and determine their understanding of jellyfish ecology.

Twice over the summer I aided in scientific presentations to students in Galveston. First, for Dr. Jamie Steichen for a Phytoplankton for the Curious Kids Summer Program through the Rosenberg Library. This activity was free and open to the public of Galveston as an opportunity for them to learn about the dynamics of phytoplankton. Dr. Steichen prepared a slide show, we brought microscopes and phytoplankton samples, and a craft where students could make their own versions of the plankton. Second, for TAMUG Sea Camp, with Kaden Muffett through Dr. Miglietta's lab we presented on jellyfish. Kaden prepared and delivered a slide show presentation, I helped in a demonstration and the practice of a phytoplankton tow, and we both showed the kids through the lab where they got to practice micropipette skills and feed jellyfish polyps.

Conclusions

This multidimensional study in the arts and the sciences in Galveston, Texas led me to believe that the relationship between the two is strained. There is some flow between scientists, the public's understanding of science, artists, and the public's understanding of art, but the communication is difficult. Without the perseverant efforts of professors and educators, science would not be communicated. There is necessary training and knowledge needed to effectively communicate scientific discovery to the public, and such training is complicated and draining. This difficulty in understanding can lead to an apathetic attitude toward the distribution of

science messaging. An interaction with the creative arts can help to translate that message in many ways.

The mingling of science within art can be the "fix" for the "leaky pipeline" of science communication. While not the perfect or sole method by which the public can become enchanted with scientific discovery, art is a successful mediator. Time spent in creative experiences was shown to inspire curiosity about the topic at hand. Intertwining creative arts with science proved to be an effective approach to spread knowledge. This approach, if impressed upon not only the broader community, but scientists themselves, could very much so bring emotional connectivity to the field of scientific pursuit.

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