

Mutual Benefit Application

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1 Collaboration Model

The interplay between arts and scientific research has been a central aspect of my professional journey in arts and education. It serves as a fundamental motivation and subject of my ongoing PhD research, in which I aim to balance human subject research with the creation of arts experiences, and the development of arts- and research-informed educational tools and platforms. My ideal collaboration model draws partly from my experiences as a working researcher and a former artist in residence (Fabrica, NY Museum of Art and Design) and professional artist, but also perhaps more significantly from my experiences as an educator observing the opportunities for student growth from a blend of arts, research, and technology practices.

While my personal practice includes acting as both researcher and artist, I often find myself drawing from multiple separate communities, each identifying more singularly as "science" or "art" centric, with sometimes conflicting values, resources, and metrics for success. One value and goal of a defined mutual-benefit collaboration model is to allow for acceptance of shared merit between different values; e.g. understanding the value of paper publication versus gallery shows, or citations versus artistic references and influences. In this model, researchers might be inherently incentivized (via a shared value structure) to contribute to artistic work, much as artists would be incentivized to contribute to academic publishing. As a single example, arts-directed work is sometimes seen as less rigorous by the scientific community; however, arts experiences expand access to communities outside of typical academic communities, a significant problem in areas such as recruitment for human-subject studies, which typically trend toward biased or homogeneous subject groups due to the realities of on-campus recruitment. Though an arts venue may not contribute direct data collection for publication, arts experiences as opportunities for semi-in-the-wild subjective experience reporting can help shape and improve tools and scientific designs, and should thus be attributed value by a scientific lens.

The two-stage diagram in Fig. 1 shows the ideal scenario of development of an art-science relationship over time. The inclusion of arts provides expanded access to a more diverse population, increased scientific understanding among a broader audience, and novel perspectives. As the field of access expands,

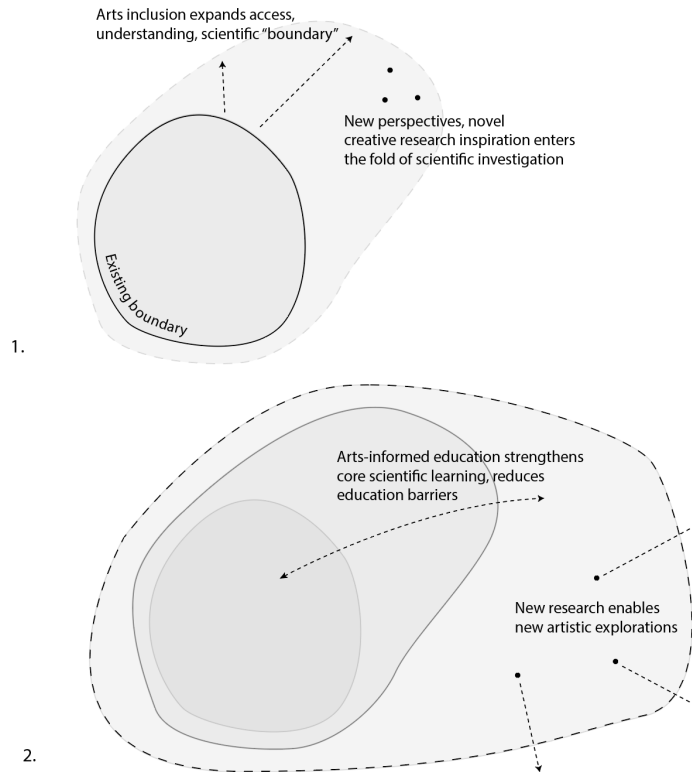


Figure 1:
Model of mutual benefit relationship.

scientific research and collaboration also enables new artistic explorations. Arts-informed education also works as a bidirectional force, improving learning access and reducing barriers in both the scientific and artistic domains.

2 Personal Statement

My work as an artist not only informs my curiosity as a researcher, but artist residencies have also given me opportunities to build creative and technical tools which open opportunities for future research; in exchange, my work as a researcher (in the domain of sensory influences on cognition, or “embodied cognition”) builds understanding about sensory and experiential phenomena, which provides inspiration for art and opens opportunities for interdisciplinary education.

I identify as both an artist and researcher; however, most existing academic and professional structures have labelled me as either an artist or a scientist,

rather than both. As a researcher, I conduct user-study experiments around sensory perception and behavior in the lens of a cognitive science research lab, often using custom hardware such as wearable devices that I build. As an artist, I build installation art pieces designed to create unusual sensory experiences to inspire wonder or self-reflection. I'm especially passionate about implementing this research-art pairing in education, drawing on my research about sensory influences on cognition and learning. As an educator, I often implement my research and arts experience in the classroom, such as using collaborative full-body movement to represent and build a deeper understanding of abstract concepts. Similarly, I use arts education and the creation of arts experiences as a lens for teaching fundamentals of science, engineering, and research practice; for example, I taught a high school course in which students created a collaborative art installation, and along the way learned about physics, electrical system design, observation and data collection, and other skills, through an applied and engaging hands-on practice.

As a student, arts was for me a gateway to making progress in research: as an undergraduate working in a graduate-level cognitive science research lab, I struggled with learning to write code for data analysis and “pure” research. Despite having a strong background in math, learning computer science from a purely research perspective wasn't intuitive to my brain: the logic concepts were abstract, the results intangible. I was fortunate to discover the early generations of Processing and openFrameworks, which in turn led me to the discovery of making logic-based audio and visual experiences with basic electronic components and software. Logic and math expressed in art flowed more easily, and it was a small step to connect the concepts back to my research needs. I was honored to later act as the community outreach manager for the open-source openFrameworks platform for several years, working to enable others to have similar experiences, and to use their artistic and creative skills as a means of access to an otherwise inapproachable domain.

My experiences as an artist in residence have allowed me to create work and tools which I have later used in scientific experiments, but which might have been considered too experimental for pure science at the time. For example, while an Artist in Residence at the NY Museum of Art and Design, I built software for tracking the movement of people in architectural spaces, to create an uncanny acoustic effect localized to each person. A similar process included the implementation of breathing rate algorithms using a low-profile microphone, first for an interactive art installation, and later used for assessing emotional and mental state in a psychophysics sensory experiment. The fundamental overlap between artistic and research practice has been the foundation of my personal and academic journey, and I hope to contribute to the creation of more equal collaboration structures for the benefit of researchers, artists, and students.