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Connecting Art and Science: An Artist's Perspective
on Environmental Sustainability

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Abstract

In the current climate of environmental precarity, the need to prompt ecological change becomes more than just a job for the scientific community. Looking towards culture and the arts has proven an effective way to begin addressing current environmental issues. Artists use their work to shine light on issues of environmental justice, raise awareness to environmental insecurities and risks, and imagine more sustainable futures. By combining the arts with environmental science, we are able to inspire transdisciplinary learning, thus sparking new ways of imagining and envisioning how we might live in the future. The purpose of this study was to understand the relationship between the artist, their art and the environment. Throughout the course of this work, I interviewed a variety of artists around Vermont, gathering their personal experiences creating art, and what messages they are trying to compel in regards to the environment. This project ultimately serves to provide brief artist profiles, along with a look into the way climate action can be addressed in ways other than traditionally thought.

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Introduction

Over the past 150 years, we have changed the balance of our planet by living beyond our means. We have generated huge amounts of methane, burnt numerous amounts of fossil fuels and cut down vast swathes of forests; all of which contribute to the largest environmental challenge our generation has ever seen. Scientists have high confidence that our global temperatures will only continue to rise for decades to come, which brings a dire need to enact change. Addressing the devastating effects humans have had on the planet is beginning to require a multidimensional approach, incorporating not only the help of scientists, but also those of engineers, politicians, and artists (Kang-Song, 2014). Using a multidimensional approach to address the impacts of climate change is crucial not only in regards to the economic and environmental dimensions of sustainable development, but the social ones as well (Caragea & Alexandru, 2015). By approaching environmental challenges through multiple perspectives, we are able to gain both a deeper understanding of our world, as well as provide professionals from various fields the opportunity to share their viewpoints.

In the current state of environmental uncertainty, there is a growing need for effective communication among people of all disciplines. It is believed that the universal language of art can adopt this role and encourage people from all different backgrounds to want to develop actions to help live more sustainably (Meade, 2008; Thornes, 2008). One field in particular that is often overlooked in regards to gathering scientific information (Curtis, Reid, & Ballard, 2012) is that of the arts. While the role of the arts is not often thought of in regards to the scientific community, it has proven very effective in communicating issues, influencing people and challenging dominant paradigms in the humanities (Belfiore & Bennett, 2006). Art establishes settings for action, framing architectural or open air spaces used for gatherings, public events or collective action (DeMarrias & Robb, 2012). Bringing people together through installations, often seen in the case of war memorials, influences people's' perceptions at a more intimate scale and allows for more open communication. By providing artists the opportunity to communicate with a larger audience, they are better able to increase support for collective action and inspire activism through art (Curtis et al., 2012).

Studies conducted on this topic often cover the relationship between environmental art in regards to education, ethics or design. There is agreement among the literature that suggests that environmental art has served as an effective medium for environmental education. Researchers have found that incorporating environmental art into a curriculum, provides a venue for integrating the disciplines and promoting systems thinking (Rosenthal, 2003). The incorporation of environmental art into a school curriculum has been proven effective in inspiring a more transdisciplinary way thinking among students as they age into adulthood (Rodder, 2016). While approaches to art and science have long been separated in history, there is a broad consensus that there is something to be gained from encouraging artists and scientists to collaborate (Rodder, 2016). Using a multidisciplinary approach to combat issues as expansive as climate change has the ability to provide a more diverse range of viewpoints, developing solutions that may incorporate aspects of multiple fields. By combining the arts and humanities with environmental sciences, new ways of thinking are sparked. In this modern age of environmental degradation, it is crucial for society to begin thinking in alternative ways, allowing more room for creative ideas in how best to address the issues that continue to face our planet.

The goal of this thesis was to explore the ability of the arts to engage and activate communities in Vermont, specifically in regards to environmental engagement. This study ultimately seeks to better understand the relationship between the arts and the environment, drawing on individual artists and their experiences with different art mediums. This study serves to answer several questions about art and its relationship to the environment: What is art's role in addressing environmental and sustainability issues? How is one able to effectively communicate environmental concern through the use of art? How might the arts play a role in enacting social change through multiple disciplines? By gaining an understanding of how culture and the arts can impact people's perceptions of the environment, we can begin to end the stigma on the 'art vs science' debate and provide insight on how both disciplines can benefit from one another.

Literature Review

Section One: Art and the Environment: Past to Present

A. Defining Ecological Art

In order to interpret our cultural responses to our environment, we must first understand how artists have portrayed the environment in the past and how they are continuing to portray it in the present. (Thornes, 2008). In the past few decades, there has emerged a new concept used to describe art that concerns issues relational to the environment known as environment art. Within this, encompasses a new genre known as ecological art (eco-art), which serves to address environmental issues ranging from politics to culture to ethics. The concept of ecological art first appeared in the 1990's, on the basis of practices that emerged from the late 1960's onwards (Kagan, 2014). With the arts constantly expanding into new platforms and the environment facing rapid change at the forefront of political, economic and scientific concern (Thornes, 2008), it proves challenging to agree upon one singular definition of term 'ecological art' (Kagan, 2014). What is often deemed a new genre to describe works of art (Thornes, 2008), eco-art encompasses a range of artistic practices, all of which draw on interdisciplinary knowledge. The artistic practices which encompass ecological art are united, as social-ecological modes of engagement (Wallen, 2012), by shared principles such as connectivity, ecological ethical responsibility and stewardship of interrelationships (Kagan, 2014; Wallen, 2012).

Ecological art is grounded in a logical ethic and systems theory, addressing the web of interrelationships within our environment (Wallen, 2012). These web of interconnected relationships primarily consist of the physical, biological, cultural, political and historical aspects of ecosystems (Wallen, 2012). Ecological art serves to create awareness, stimulate dialogue and change human perceptions towards other species (Thornes, 2008). As the global crisis of unsustainable development has become increasingly difficult to ignore, the interest for ecological issues has been rising in the art world (Kagan, 2014). On the basis of this, ecological artists have been actively working to both inspire and advocate, enhancing ecological relationships while modeling ecological values (Wallen, 2012). In the past decade, ecological art practitioners have

begun to range from artists to scientists to activists, all of which work to collaborate on practices surrounding public awareness. Several contemporary artists have also begun to engage the public in community-based restoration, inviting students and adult members of communities to participate in projects (Lambert & Kholsa, 2000). These projects are often created to inform the public about environmental problems and ecological dynamics, proposing new ways for sustainability and co-existence (Lambert & Kholsa, 2000). With global environmental issues such as climate change growing at such an alarming rate, the field of ecological art is beginning to expand, working to re-envision our relationship with nature.

B. Art and Society through the Ages

Throughout history, artists have produced artworks that have attempted to jolt their communities out of complacency, articulate concerns about social justice and provide enduring images that continue to inspire people through the ages (Reichold & Graf, 1998; Curtis et al., 2012). Ellen Dissanayake (1995) notes that the arts and culture have been a necessary part of our evolution as human beings, and that people of all ethnicities have engaged with the arts in some form or another. As human beings, we have always required beauty and meaning, seeking means of transformation that help us make sense of our place in the world (Vasko, 2015; DeMarrias & Robb, 2012). In more tribal cultures, people would do this collectively through the use of rituals (Vasko, 2015). Over time, images were internalized as people absorbed cues that guided behavior and ensured proper conduct in social settings (DeMarrias & Robb, 2012). Humans have evolved to seek forms of meaning through more individual preferences and choices, given the vast array of arts and culture options in urban centres and through the media (Vasko, 2015). Human nature shows that children learn best by doing, rather than through direct instruction. Since art objects are often both lasting and visible, they reinforce a vision of ‘the way things are’ which may prove difficult to contest (DeMarrias & Robb, 2012). In the past, art has been used as a source of privilege, often associated with richly detailed and aesthetically pleasing art objects, only owned by those of an elite (Williams, 2001). This is seen as far back as the early 13th century, with the Incas’ use of natural materials, particularly any that were readily available to them (Williams, 2001). Over time, artists have continued to use their work to communicate

important insights into human relationships with the natural environment (Williams, 2001). Moving into the nineteenth century, poets and writers such as Henry David Thoreau became influential in gaining recognition and shaping attitudes towards landscapes (Gold & Revill, 2004). This was the case not only in the United States, but also with poets such as William Wordsworth, who used poetry to help launch the Romantic Movement and spark change in the United Kingdom (Gold & Revill, 2004). Looking back at history, it is clear that humans have been utilizing the environment to create forms of art for thousands of years, slowly evolving over time.

There is an ever growing recognition among practitioners of the role of the arts in facilitating societal transformation to environmental sustainability (Curtis et al., 2012). In the approximate 30 years that the term ‘sustainability’ has been in the public discourse, there has been an influx of art practices associated with the word (George, 2013). The traditional divisions of visual and performing arts have transitioned into new genres including environmental art, ecological art, public art, site-specific art, and many more (George, 2013). Research by Robidoux and Kovacs (2018) notes how beginning in the 1950’s and spanning to current time, over fifty Canadian municipalities have put in place official public art policies (City of Toronto, 2010), including in most of the largest cities in Ontario, Canada. Toronto has instituted a “percent for public art policy” that is able to secure funds for public art via a one-percent development cost commitment (Biggar, 2016). This policy identifies art as a way to boost economic development and tourism (City of Toronto, 2010) by making destinations more attractive for visitors and residents (Robidoux & Kovacs, 2018). Over the last decade, there has been a growing prominence of sustainability discourse in Canadian cities, which has begun to spread globally (Robidoux & Kovacs, 2018). Through the use of ecological public art, public officials are able to not only bolster economic development, but also to increase awareness of current environmental issues.

C. Modern Age: Bridging the Gap Between Art and Science

Nearly sixty years ago, physicist and author C.P. Snow (Charles Percy Snow) delivered a lecture titled ‘The Two Cultures and the Scientific Revolution’ warning of the dangerous divide

between arts and sciences. While his ideas have been criticized over the years, there is no doubting that he sparked an interest in the thinking styles of those in the arts from those in the sciences (Furnmah, Batey, Booth, Patel, & Lozinskaya, 2011). The “two cultures” debate delves into the central question as to whether arts and science students differ in levels of creativity (Furnmah et al., 2011). C.P. Snow stresses the differences between those in the sciences and those in the humanities (Furnmah et al., 2011); a debate which has continued on for near sixty years now. Snow’s lecture can be seen as a cumulation of decades of assertions about a cultural divide (Cohen, 2001), which has resulted in varying opinions on the credibility of it. Researchers have further tested the idea that personality and thinking styles differ between arts and science students (Furnmah et al., 2011), however efforts of interdisciplinary science studies have begun to reposition this divide (Cohen, 2001). The literature suggests that we can view ‘how much has changed in the interval’ in two ways. The first is to describe science as culturally embedded, without an epistemological foundation (Cohen, 2001). The second is to view it as methodological, by combining different approaches to better understand the divide (Cohen, 2001). The research presumes that in the 1960s, during the time of Snow, the argument was over which side of the divide was better (Furnmah et al., 2011; Cohen, 2001). In the 1990’s, the argument shifted towards determining whether or not there was ever a divide at all (Furnmah et al., 2011; Cohen, 2001).

Both science and art are human attempts at trying to understand and describe the world around us (Furnmah et al., 2011). In recent years, there has been agreement among the literature that suggests that art and science are more closely related than once thought. Researcher Ken Arnold (2017) proposes that humans can deepen their understanding of these two ‘cultures’ by looking at the role of successful art/science collaborations, namely their presence in the public. He suggests that one of the best ways to locate public art/science collaborations is through the use of museums (Arnold, 2017). Museums are a useful way to inspire a more transdisciplinary way of thinking, using the power of artists to pose thought provoking questions, looking towards exhibitions as ‘units of investigation (Arnold, 2017). Today, the Wellcome Collection, a free museum and library located in central London, serves to connect science, medicine, life and art (Arnold, 2017; Ball, 2017). One of their most recent collections, ‘Medicine Now’, touches upon

a wide range of topics of current interest, ranging from an imaginative portrait of how a patient with phantom limb syndrome may portray themselves, to a colony picking machine from the Human Genome Project (Ware, 2007). Author David Ware (2007) notes that the creation of each display was clearly given a tremendous amount of thought, invoking an emotive response. The ability of these artists to juxtapose art and science provides fascinating and informative new ways of educating the general public. There is much to benefit from when using an interdisciplinary approach, so it is crucial to continue moving forwards, working to bridge the gap between these two cultures.

Section Two: Art as Action

A. Art as Activism

There is difficulty in conceptualizing art's relationship to activism, mainly because they tend to do different work in the world. Activism is the activity of challenging or changing power relations (Duncombe, 2016), however this does not necessarily mean protesting to condemn the powers. In essence, the goal of activism is to generate an effect, whether this be to change a policy or to overthrow a dictatorship (Duncombe, 2016). Art, on the other hand, does not always have as clear of a target. It often offers us new ways to see the world, with messages that may be contradictory or difficult to understand (Duncombe, 2016; LaRocca, 2017). Therefore art, in essence, is an expression aimed at generating an effect (Duncombe, 2016). While these ideals may at first seem in contrast to each other, they actually compliment each other quite well. As a result of this, the term 'activist artist' is born. Activist artists work to create art that serve as a form of political or social currency, actively addressing cultural power structures, rather than simply describing them (Bruguera, 2008).

Activism artists often aim to foster dialogue, working to stimulate conversation around topics that are often overlooked or deemed uncomfortable (Duncombe, 2016). They invite participation, turning watchers into doers, which is part of the reason that political figures are beginning to get involved in this movement. American politician Diane Bush recently completed

a project titled 'Dishing it Out' in which she used familiar kitchen items to make political points (LaRocca, 2017). During the 2016 election, she pasted satirical images of the candidates to ceramic plates and mugs, and invited viewer-participants to smash them (LaRocca, 2017). While this may seem as a bit out of the ordinary, the project served to amuse the public, celebrate free speech, register new voters and encourage artists to embrace political satire as a way of getting the public to think critically about who would next lead the country (LaRocca, 2017). She was able to successfully stimulate dialogue and foster community engagement, using art as a medium to do so. Diane Bush is proof that it does not take a range of complex ideas in order to get people involved. It is not to say that the general public does not want to get involved, rather they do not often know how to. It is here where art activism plays a role, working to foster engagement through the use of more modern ideologies.

Artists have also been able to communicate in ways that have sparked protest movements against war, social injustice, poverty and as part of the nonviolent, environmental protest movement (Curtis et al., 2012; Branagan, 2003; Jordaan, 2008). After the US/UK coalition forces started attacking Iraq, about 50,000 people gathered at Hibiya Park in Tokyo to participate in an anti-war rally (Yoshitaka, 2005). Among them, were political activists, ecologists, anti-war activists, as well as a large amount of young people (Yoshitaka, 2005). They carried a variety of contemporary art objects, wore colorful costumes, played musical instruments and performed dances (Yoshitaka, 2005). The ability of these people to bring correlation amongst something as stigmatized as a political demonstration to something as enjoyable as a street art performance is not only progressive but also serves as an example of positive art activism. There is agreement among the literature that art is only going to continue to be used as a form of activism, working to develop even more unique features in the time to come. The literature suggests that art has the ability to change minds, inspiring people to take on different perspectives and reimagine their worlds (Nossel, 2016; Yoshitaka, 2005). While there are a number of different ways in which art is used as activism, it is clear that it can be effective in various mediums, regardless of which form one chooses to pursue.

B. Using Art to Spark Environmental Engagement

In modern society, art allows people to remake themselves and their worlds, while commenting on their values and beliefs (DeMarrias & Robb, 2012). Through the use of ecological art, artists all around the world are using their talent to affect people's conscience and raise their environmental awareness. Certain strands of environmental art have begun to employ more natural materials that break down over time, portraying nature's processes and lifecycles (Marks, Chandler, & Baldwin, 2016; Matilisky, 1992). One way that artists are doing this is by placing their artwork in nature, thus drawing the community's focus to the beauty of the everyday environment and the ideas communicated by the works (Marks et al., 2016). Some reasons for using this method is to foster pro-environmental behavior and to encourage environmental awareness and stewardship (Marks et al., 2016). Another form that has been used to help foster environmental engagement is through the use of a more community-oriented approach. This approach works to stimulate both dialogue and social learning, which is beneficial in addressing the challenges that often arise in discussing a topic as expansive as global warming. (Marks et al., 2016). Fostering community engagement around topics such as climate change is advantageous in providing people with the opportunity to share their thoughts with others who live in a similar environment to them and may experience similar responses.

Existing literature acknowledges the ways in which art has been used to inspire and lead movements throughout history, whether this is through the use of war propaganda or simply to express political views. More recently, researchers have found that one of the most pressing concerns of many contemporary artists is the worsening environment (Branagan, 2003; Curtis et al., 2012). With a near universal agreement that greenhouse gases have increased significantly as a result of human activities and are drivers climate change (Guy, Henshaw, & Heidrich, 2015), artists have begun to use their art as a way to help combat this issue (Branagan, 2003). In order to combat an issue as extensive as climate change, it is important to gain as much recognition as possible to be able to reach a large enough audience that will listen. Human beings are typically more inclined to take interest in issues that will have a direct effect on them. Using the arts to

express these concerns is beneficial because it gets the message across in an effective manner, while still providing the participant with a form of entertainment.

Fields that would once not cross paths are slowly beginning to, such as contemporary scientists, incorporating the use of the arts in a practical way in order to better assist and communicate their research (Wallen, 2012). While there remains gaps in the literature in regards to how exactly these career crossovers are functioning, interdisciplinary approaches have proven effective in the past, and only future studies will be able to report on these outcomes. Using an interdisciplinary approach to create art allows for a more broad range of ideas, as well as inspires creativity. Understanding the complexity of environmental issues such as climate change often requires expertise ranging from ecology to sociology (Marks et al., 2016). Through the use of interdisciplinary research, people from various fields are able to come together and work towards a solution to a problem that requires a broader expertise than that of researchers from a single field (Wallen, 2012). The literature suggests that by prompting discussion and reflection, ecological art offers an imaginative format to promote environmental engagement (Marks et al., 2016). Organizations such as the 'Red Earth Environmental Arts Group' are actively working to create site-specific work that interacts with the landscape through the use of performances, installations and participatory events (Pereira, 2016). They have produced works in Europe, Japan, Indonesia and Mongolia, exploring the effects of climate change through series of events and performances (Pereira, 2016). They stress the importance of collective action when creating art, collaborating not only with other art creatives, but also with geologists, activists and archeologists (Pereira, 2016). Similar groups to the Red Earth Environmental Arts Group are beginning to appear globally, all with a shared goal of inspiring others through the use of the arts.

C. Eco-Art Education

Contemporary art has traditionally addressed mostly human concerns, yet more recently environmental issues have become a relevant concern addressed by artists who seek to re-examine our relationship to the natural world (Vasko, 2015). As a result of this, ecological art

education was born and has managed to establish itself as field of its own (Inwood, 2008). The field of eco-art education was formed as the visual arts and arts education began to engage more with the world that surrounds it (Inwood, 2005; Vasko, 2015). This field integrates environmental education and art education as a means of encouraging awareness and engagement with environmental issues, many of which are considered essential to continued existence of life on this planet (Inwood, 2005). Eco-art education promises an innovative approach to fostering ecological literacy and the principles of environmental education, one in which complements the traditional roots of environmental education with more creative approaches of art education (H. Inwood, 2008; H. Inwood, 2005; Vasko, 2015). Existing research in this field is sparse, however there have been a number of texts written in the last decade that have begun to explore this emerging discipline (Lankford, 1997; Inwood, 2005; Vasko, 2015). The majority of these have been written from a theoretical perspective, providing a rationale for the existence of eco-art education. More recently, research has been done delineating how to teach it in the classroom, however most of these still remain informal studies (Inwood, 2005).

Since the field of ecological art education is rather new itself, there remain gaps in the literature on how to best establish ecological art into a school curriculum (Kang-Song, 2009). There has been little research conducted in regards to the attitudes and beliefs of elementary secondary educators who present eco-art education in their classroom (Inwood, 2005). There is agreement, however, that once established, it has the ability to inspire environmental education with new ways of approaching environmental issues (Kang-Song, 2009; Inwood, 2008). By encouraging students to interact with ecological artworks, they are more likely to develop their own creative processes in a meaningful way that involves art, aesthetics and nature (Kang-Song, 2009; Inwood, 2008). According to Kang-Song (2008), this encouragement raises students' consciousness about the environment in respect to both themselves and others. Sparking this awareness at a young age may serve as a future vehicle for raising awareness about broader environmental issues and concerns (Kang-Song, 2009).

There is mutual consensus among the majority of climate scientists that if we continue depleting resources and polluting our water and airways (Bonnett, 2012), then we will not be

able to live as comfortably as we do modern day. From a Western perspective, the best way to address environmental problems is to develop technical solutions and attempt to modify behavior in ways that have minimal impact on our underlying perceptions of the ‘good life’ (Bonnett, 2012). This perspective is often utilized in modern day school curriculums, however it offers a very ‘one-sided’ view in regards to solving these problems. In reality, working to live more sustainably often will require a change in lifestyle, especially if this change regards a shift in diet or transportation methods (Bonnett, 2012). The issue is, that people do not typically react well to being told that they need to alter their lifestyles. By beginning to implement approaches such as ecological art education into school curriculums, students will have the opportunity to learn about issues such as climate change at their own pace (Bonnett, 2012), allowing them the freedom to form their own thoughts and opinions. It is when those who are uneducated about the current climate issues hear that they may have to undergo a lifestyle change, that problems arise.

Gaining additional knowledge on current ecological issues that face the global community is valuable at any age, and this realization is beginning to take action in school districts in many areas. Prior research notes the importance of art during childhood development. With this field constantly expanding to cover more areas, such as ecological art education, increased discussions on the implementation of eco-art into curriculums (Inwood, 2008) have begun to arise. Through the use of eco-art education, children are able to learn from a young age the importance of environmental engagement and can begin to understand environmental concepts and issues (Inwood, 2008). Eco-art education promises an innovative approach to developing ecological literacy and environmental awareness (Inwood, 2005). One study conducted in the Biosphere Reserves was aimed at fostering environmental education for sustainable development (Marks, Chandler, & Baldwin, 2017). Two cases were analyzed in which environmental art was used as a mechanism to engage communities in ‘building environmental understanding’ (Marks et al., 2017). The results showed that environmental art can successfully build an understanding through exchanging ideas and dialogue, building a sense of place and generating concern (Marks et al., 2017). The authors concluded through this study that environmental art should be considered an innovative addition to the suite of environmental education tools used in the Biosphere Reserve education system (Marks et al., 2017). Case

studies such as this mark the beginning of environmental/ ecological art education (Inwood, 2005), and should serve as examples for other school districts around the nation. It is important for children to begin learning about the environment from a young age, as well as for them to express their creativity through art. If they are given the opportunity to combine the two, then school districts could see a lot of positive outcomes from their students.

Section 3: Environmental & Sustainability Issues

A. Environmental Concern

There is a near universal agreement among the scientific community that humans are the leading drivers of climate change. Issues of environmental degradation, along with global warming, have moved into the international political arena (Dienes, 2014), with landmark treaties such as the Paris Agreement aiming to help countries better mitigate their effects of climate change. While the United Nations is working more large scale to combat these issues, it is also crucial for individuals to help reduce their ecological footprint on a more personal level. Scientists are beginning to examine what influences an individual's actions reducing the effects of climate change or the intention to pay for mitigating these effects (Dienes, 2014). Existing literature puts emphasis on the relationship between individual concerns about the environment and pro-environmental behavior (Dienes, 2014; Liebe et al., 2011). Previous research has demonstrated that children tend to take a strong moral stance toward protecting the natural environment (Tobias, 2017; Linzmayer & Halpenny, 2014; Korukcu & Hulya, 2015).

The literature suggests that one way to evaluate a child's stance towards the environment is to examine the relationship between the social position of children and their attitude towards the environment (Linzmayer & Halpenny, 2014; Korukcu & Hulya, 2015). Researchers Korukcu & Hulya (2015) conducted one study which compromised 106 children from ages five to six. They used a relationshipal survey method to examine attitudes of preschool children towards the environment, specifically in regards to their social position. The results suggested a positive, significant relationship between the attitudes towards the environment and the social position

(Korukcu & Hulya, 2015). They found that the attitude of children towards the environment was the precursor of their social position, and that there was a positive relationship overall (Korukcu & Hulya, 2015). Research suggests that whatever the relationship between a child and nature may be, it is shaped by the socio-cultural forces relevant for that particular child (Korukcu & Hulya, 2015; Linzmayer & Halpenny, 2014). Through shared nature experiences, children learn to define their interactions, make meaning of their relationships and create a sense of self-identity (Linzmayer & Halpenny, 2014). Natural environments have the ability to effectively mediate childhood development (Linzmayer & Halpenny, 2014), which is why it is so crucial for children to have proper access to natural environments.

Previous research suggests that children are naturally inclined to care about the environment, however researchers are now looking into how this moralization of pro-environmental behavior develops into adolescence (Tobias, 2017, Robinson, Downey, Ford, Lomas, & Stough, 2018). Research shows that emotional intelligence has been shown to influence pro-environmental behavior and environmental attitudes in adults, while such influences in adolescents are yet to be examined (Robinson et al., 2018). There are clear gaps in the research in regards to adolescent development and factors that affect their environmentalism, and researchers are working to change this. To conduct these studies, researchers typically use a large sample of adolescents in one area and compare factors such as their emotional intelligence, pro-environmental attitude and pro-environmental behavior. One example of this was a study conducted using 325 Canadian adolescents to investigate age-related differences in adolescents' pro-environmental behavior as it related to moral judgements about environmental issues and emotions (Tobias, 2017). It was found that older adolescents engaged less in pro-environmental behaviors such as energy conservation and recycling, taking into account emotional affinity for nature and their levels of moral judgement (Tobias, 2017). Among the studies that have been conducted in regards to adolescents and their perceptions on the environment, these findings are fairly typically. Research also suggests that adolescents' ability to manage, control and understand their emotions affects the extent to which their pro-environmental attitudes predicts their pro-environmental behavior (Robinson et al., 2018). This has significant implications for the development of future environmental education initiatives to encourage

pro-environmentalism (Robinson et al, 2018; Tobias, 2017). As a result of such studies, a systematic investigation of factors that suppress pro-environmentalism in adolescents is suggested as the next step in this field of research (Robinson et al., 2018; Tobias, 2017).

Another demographic that is important to look towards in regards to levels of concern for the environment is that of the adult population. The literature suggests the children who foster an affinity for the environment at a young age are more likely to exhibit pro-environmental behavior as adolescents (Robinson et al., 2018; Tobias, 2017), and this pattern typically continues into adulthood (Place, 2004). Several authors have identified early-life outdoor experiences, whether alone or with others, as the most important factor found in their research in developing environmental concern (Place, 2004; Bixler Floyd, & Hammitt, 2002; Palmer, 1993). A set of studies conducted in the 1990's found that the most important influence was early experiences in the outdoors, and the greatest human influence was the family, followed by the media (Place 2004; Bixler et al., 2002). Bixler, Floyd and Hammitt (2002) looked at the association between child play experiences in wild environments and later environmental preferences in the domains of work, leisure and school. They found a positive relationship between having played in natural outdoor environments and more positive perceptions of the natural environment (Bixler et al., 2002). It was also found that early-life outdoor experiences with family resulted in values about the environment that are learned by family members, either through examples of pro-environmental behavior or from explicit teaching (Bixler et al., 2002).

The idea that pro-environmental behavior is a value that stems from childhood development presents itself as a theme throughout the literature (Linzmayr and Halpenny 2014; Bixler et al., 2002; Tobias, 2017). The one generation who has fallen behind on this trend, however, is that of the older adult population. One study conducted using a sample of 394 adults in a retirement "hotspot" in southwestern Utah, was set out to test environmental concerns and attitudes among the older adult population (Wright, Casserta, & Lund, 2003). Their data was obtained from questionnaires mailed to those randomly selected from a larger dataset (Wright et al., 2003). While they found a fairly high degree of variability among respondents in regard to environmental attitudes and concerns, the questionnaires resulted that despite a personal desire in protecting the environment, most older adults did not want to become involved in protective

actions for the environment (Wright et al., 2003). They found that the most influential factor associated with willingness to take action in support of the environment were having higher levels of active/social concerns, and higher levels of awareness of environmental consequences (Wright et al., 2003). There is agreement among the literature that the best way to assess environmental attitudes or concerns among varying age levels is to study both demographic trends and socio-demographic issues (Wright et al., 2003; Linzmayer & Halpenny, 2014). In order to address the rapid changes occurring on our planet and work to combat climate change, people of all ages must find some value in stewardship and sustainability of natural resources.

B. Creating a Sustainable Community

The Brundtland Report, created in 1987, as a way to address environmental concerns to the political development sphere, defines sustainability as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission and Environmental Development, WCED 1987, p. 43). Since this time, the definition of sustainable development has slowly evolved into a strategy for managing the pressures of environmental change and social justice (Winther, 2017). The idea of sustainability as seen commonly in literature often takes a more anthropocentric approach, involving only small-scale reform of existing western paradigms. More recently, alternative definitions of sustainability and sustainable development have been formed, involving more radical restructuring of our economic, political and social structures (Winther, 2017; Chan, 2018; Bradbury & Middlemess, 2013). To address this, Baker proposed the ‘Ladder of Sustainable Development’ to distinguish between an anthropocentric and ecocentric version of sustainability (Baker, 2006; Winther, 2017). Baker provides a conceptual framework for a sustainable society and for interpreting different levels of development (Winther, 2017). At the top of Baker’s ‘Ladder’, is the ‘ideal model’ involving more normative, anthropocentric principles such as participation, gender equity, and social justice (Baker, 2006; Kirkpatrick, 2013). This is more focused on society meeting ‘needs instead of wants’. The ecocentric version, also known as ‘strong sustainability’, is more focused on resource use and policy, assigning intrinsic values to

nature (Baker, 2006; Kirkpatrick, 2013). Strong sustainability is a much more radical concept, serving to promote the idea of a ‘deep green economy’ in which the environment is viewed as an interconnected whole (Baker, 2006; Kirkpatrick, 2013). What defines sustainability is ever evolving, but what remains in common is that the consumption of natural resources is viewed as a cost, rather than an income (Kirkpatrick, 2013).

Sustainability includes a broad realm of concerns around economic development, social inequity and cultural histories and practices (Chan, 2018). In recent years, there has been a growing movement of people connecting with others in their community to collectively address sustainable development problems (Bradbury & Middlemess, 2013). This is not only happening in neighborhoods, but also beginning to spread to ‘communities of practice’ which encompasses the workplace, universities, and other organizations (Bradbury & Middlemess, 2013). After studying resource management in Cuba, author Pamela Stricker suggests that sustainable development must include the idea of and structure for social justice, linking community and environmental health and protection (Stricker, 2010; Thornburg, 2017). She adds that “sustainable development fundamentally tackles how we live our lives and how goods and resources are distributed within a society and globally” (Stricker, 2010). In essence, sustainable development serves to promote the protection and enhancement of opportunities for the future (Thornburg, 2017).

Incorporating the community component into the equation allows us to include not only environmental concerns but also those in regards to the social and cultural health that enhances the well-being of the entire community (Thornburg, 2017; Chan, 2018; Stricker, 2010). Existing studies have noted the importance of gaining cultural and social acceptance. Policies intended to achieve environmentally sustainable outcomes in the sense of actions such as removing carbon emissions have backfired when they failed to acknowledge these aspects (Thornburg, 2017). This was seen in Mexico City, where a government-led strategy aimed at reducing the number of cars on the road ended up with increased traffic as impacted communities used tactics to bypass this policy and buy more vehicles (Thornburg, 2017). This goes to show the importance taking into account existing relationships, values and practices that foster social acceptance. Pushing

sustainability too hard on a community without taking into consideration their social and cultural norms could undermine its overall effectiveness (Thornburg, 2017; Chan, 2018).

More recently, definitions of sustainability through the lense of environmental justice have called for “just sustainabilities”, (Chan, 2018) which shifts away from more traditional paradigms. Recent years have led to forms of grassroots resistance against top down approaches to sustainability. Many grassroot associations that have sustainability objectives create projects that allow users to consume resources more sustainably (Bradbury & Middlemess, 2013). Some examples of this are through garden-share schemes, energy libraries, food-cooperatives, farmers markets and awareness raising events (Bradbury & Middlemess, 2013). In addition to this, they may also arrange campaigns, protests and lobbying in order to try and change government policy. Community-led initiatives such as the San Francisco Sustainable Chinatown Plan, which is committed to the long-term vitality of San Francisco's built and natural environment (City of San Francisco), challenge the dominant practices of sustainability as a ‘one size fits all’ paradigm (Chan, 2018) They instead, argue for a more holistic approach to sustainability in which social equity and cultural heritage are considered to be equally important elements of sustainable cities (Chan, 2018; Bradbury & Middlemess, 2013). This new idea of sustainability as a holistic vision implies fundamental changes at all levels of social, economic, political and cultural structures (Nieto & Neotropica, 1997).

The concept behind creating a more holistic approach to the ideal of sustainability involves a fundamental restructuring of present society. This idea does not suggest a need to return to a pre-industrialized society, but rather a way to challenge some of our current societal ideals regarding sustainable development. In order to achieve such a transformation, “a high level of conscience will be needed, alongwith a definite and determined ecological and humanistic commitment” (Nieto & Neotropica, 1997). In order to move towards a more sustainable vision, we must restructure sets of basic principles that serve as its foundation. Nieto and Neotropica (1997) suggest that in order for sustainable development to take place, there must be an interaction and coordination among all the factors that exist in a community. They suggest a redefinition of power relations in decision making, as well as a redistribution of wealth (Nieto & Neotropica, 1997). They seek the elimination of all unjust, illegal, and abusive forms of

production and distribution of wealth, (Nieto & Neotropica, 1997) which results in inequality and poverty among people all around the world.

C. Sustainable Behavior & the Arts

What defines 'sustainability' is often contested, as it has a multitude of meanings and can be used to justify almost anything. For farmers, sustainability is economic; for indigenous people, sustainability is soil sustainability; and for ecologists, sustainability is maintaining biodiversity (Winther, 2017; Robinson, 2008). How this concept is interpreted correlates with the behavior that people exhibit, in regards to living a more sustainable lifestyle. The literature suggests that sustainable behavior is often driven by consumption, which has drawn considerable attention recently. Existing studies focus on individual consumption behaviors in a traditional economy context (Yonggui, Diandian, Zhiyong, Shuang 2018), such as energy saving, recycling, and green product consumption. They explore what it is that compels people to wish to engage in such sustainable behaviors. However, there remain gaps in the literature in regards to the role of individual consumption behavior and its role in the sharing economy. The sharing economy, also known as collaborative consumption, is a concept that explores whether individuals are more likely to rent or borrow goods rather than buy and own them (Yonggui et al, 2018; Dirgova, Janickova, & Klencova, 2018).

One study conducted by a group of researchers at the University of Business and Economics in Beijing aimed to address this idea by developing a conceptual model to explore how customer sustainable consumption behaviors are mobilised in the sharing economy context (Yonggui et al., 2018). Specifically, they were looking to see what social factors have an impact on whether or not people consume in a sustainable way or not (Yonggui et al., 2018). They tested their model on a large sample based out of a Chinese platform website and found that people are more likely to exhibit sustainable consumption behavior if they are in a social situation (Yonggui et al., 2018). They found that both social and economic factors matter in boosting customer sustainable consumption behaviors (Yonggui et al., 2018). While this study was more business based, it still provided insight into certain factors that lead people to engage in a sustainable way,

and it is important to address each aspect in order to learn more about human behavior and what makes them more or less inclined to be more environmentally friendly.

The use of art to convey ideas, messages, and express feelings has been seen since the Stone Age. From ancient Egyptian hieroglyphics to modern day installations, art has the ability to communicate to a wide audience. The message the work emits is multilayered and includes some form of emotional content, which can be used to provoke or solicit a response from the viewer. Existing literature notes that the arts have great potential to facilitate sustainability, and researchers are looking into how and what factors of the arts can be applied to promote sustainable behavior (Chen, 2018). One study conducted at the Yuan Ze University examines five key factors of artistic thinking: novelty, perfectionism, unique and passion (Chen, 2018), all of which serve to reveal clues to addressing sustainability issues. Chong-Wen Chan suggests that artistic thinking helps encourage hands-on programs and problem-based learning that benefit education for sustainability (Chen, 2018). More art-making and art-learning programs should be developed in communities in order to better link artistic thinking to behavior change (Chen, 2018). There is a general consensus among the literature that offering places where members of the community can go and create art is beneficial. Art allows a freedom of expression, and through the use of artistic thinking, there is great potential to promote sustainable behavior change (Chen, 2018).

Methodology

The following section describes the methods used to achieve the research goal. The goal is to understand how artists use their work to engage and activate communities on matters related to climate change, In particular, I explored the following questions:

1. How can art be used to address climate change?
2. What artistic methodologies and perspectives inform their work to explore the intersection of art and environment. How is knowledge constructed through art making to address the challenges of climate change? How are the facts of climate change conveyed through art?

3. How do artists combine their work with those of other disciplines to inspire new ways of learning? What element of art can inspire the audience to engage, think, and gain a better understanding of climate change?

I conducted a qualitative study to gather the data for my research. I interviewed 10 artists from across the country from Burlington, Vermont to Los Angeles, California to understand the effectiveness of constructing knowledge on climate change through art. I conducted semi-structured interviews with a small sample of ten artists. Studying a small sample allows for a more in depth exploration of people's feelings, thoughts or experiences (Davies & Hughes, 2014), so by doing so, I knew that I would be able to gain more detailed artists profiles than I would have, had I chosen a larger group to survey. Going into this, I wanted my core sample to be based solely off of artists who have an inclination to help the environment, whether this be shown through messages in their work or portrayed in the materials that they use. By solely interviewing artists, I was looking to get a better sense of their interpretation towards environmental art, allowing this project to relate to the wider world discussed. In order to find these artists, I first started in Burlington, Vermont, contacting local artists either at the University of Vermont or in, and around the city. After speaking with several community members in Vermont, I broadened my locational boundaries to see how artists all around the United States are interacting with art, inspiring new ways of learning in their own communities.

I used a snowball sampling to conduct interviews throughout the country. As I began interviewing artists in the Chittenden County community, I found that each artist I spoke with had recommendations of other artists that would be beneficial in contacting for my research. Using these connections allowed me to gather about half of my respondents, all of whom incorporate environmental theme in their art. I was able to find the remaining respondents through the Sci-Art Center, which is an organization dedicated to bringing the arts and science together through exhibits and collaborations. The goal of the SciArt Center is to “encourage the connectivity and transdisciplinary approaches needed for the 21st century, through the pursuit of scientific and artistic understanding” (SciArt Center). Under the section, ‘SciArt Network-Environment’, lists nearly forty artists, each of which note key themes in which they

specialize in. I began to contact artists whose themes correlated the most with my interests in this project, such as ‘environment, futurism, ecology, digital art, conceptual art’, and more. Relying on the generosity and willingness of each individual to speak with me, I was able to gather a convenience sample and began interviewing as soon as possible.

Convenience sampling is nonrandom sampling in which people are sampled simply because they are "convenient" sources of data for researchers (Lavrakas 2008). This typically includes members of the target population that meet certain practical criteria, such as easy accessibility, geographical proximity, availability at a given time, or the willingness to participate are included for the purpose of the study (Etikan, Musa & Alkassim 2016). Being located in Vermont, I was able to find the majority of my respondents in the same area. Not only was it easier to access these artists geographically, but I also found that they were more inclined to speak with me. As for the artists that I reached out to through the SciArt Center, I relied strictly on their willingness and availability to speak with me at the time. This organization is based out of New York City, which proved additionally challenging because I was not able to physically meet with any of the artists that work there. I also had to rely on hope that they had access to proper technology, allowing me to conduct phone or Skype interviews, as well as be in contact with them on a frequent basis.

Despite the difficulties that may arise from the convenience sampling approach, I was very lucky to have such great response rates from these artists, all of whom seemed genuinely interested in the work that I was doing, as well as very willing to share their own stories and ideas on the topic of environmental art. Of the artists that I connected with who were within one hour of driving, I was able to meet with in person. The face-to-face interviews allowed for a more in depth experience, providing a connection between me and the artist that I was interviewing. The artists that were farther away, often spanning states over, agreed to interviews either through Skype, over the phone, or through email exchanges. Each interview lasted approximately 45 minutes and the entirety of the interview process spanned from October to March. This allowed me the time to record each interview, transcribe them, and send them back to the artists for a final permission. Since I recorded the interviews with a device on my computer, and then transcribed them by hand, I found that a lot of the artists wanted to view their

finished interview, before I began the coding process. By allowing the artists time to reflect on their words, I had to allot myself a larger amount of time for the entirety of the interview process.

Following the completion of the transcriptions, I utilized the computer software program, NVivo, to analyze my interviews using a coding method. NVivo is designed for qualitative data analysis, which is beneficial when working with very rich text-based information, where deep levels of analysis are required. I first uploaded all of the transcriptions onto the software, running a word frequency query to view the most frequently occurring words or concepts from my sources. Using the word frequency query allowed me to identify possible themes in the early stages of the project. This allowed me to capture significant information from the data and put them into containers called 'nodes'. I then had to label each node based on the relevant information that was put into it. As a result, I was able to create and drop significant information into five different categories of nodes: Artists Background, Themes/ Messages, Environmental Impact, Art as Activism, and Interdisciplinary Methods.

After the creation of each node category, I then organized the transcriptions based on which data correlated best with which node. After completing this, each node was filled with its own set of information (or references) based on the data. I was able to take sections of each interview and put them into their respective nodes, which proved quite beneficial in organizing the transcriptions when it came time to code. I then took this information which was organized by theme and gathered common ideas and responses that the respondents shared. I noted what the shared response was, how many participants felt this way, and how they interacted with it. By organizing my data beforehand, I was better able to see how the respondents answers compared to one another. In all, there were some key ideas that many of the participants agreed on, and others that showed dissent. It is also important to note that the information that I gathered from my research is not designed to provide an entirely new perspective on environmental art. Rather, I was able to synthesize the findings that I got from ten artists around the country, and report on common themes and ideas that they shared.

NVivo Coding Topics: Nodes

Using NVivo, I was able to organize my transcriptions and put them into their respective nodes. The nodes and background information on why they were chosen are as shown below:

1. Artist Background
2. Themes/ Messages
3. Environmental Impact
4. Art as Activism
5. Art as Embodied Learning

Below, I have listed the rationale behind each topic choice.

Artist Background

I chose to ask each artist about their background to make the interview feel more personal. My goal in using a qualitative approach was to work directly with the respondent, gaining a richer understanding from personal interaction. By doing so, I was able to gain their trust, which helped me to learn more about their feelings, thoughts and attributes. I also thought that by asking each artist to preface their history with art, I might be able to gain more of an understanding on why they chose to answer more of the in depth questions the way that they did. After gathering this information, I was able to take the sections of each interview in which the artists were discussing their background with art and create a node solely dedicated to this.

Themes/ Messages

By allowing each artist to first reflect on the journey that got them to where they are today, I then asked them about any themes or messages that often arise in their work. By creating a node solely devoted to the themes and key ideas that they wished to share with me, I got to see whether their work relies more on consistency, or rather if they like to experiment with many different ideas. This section of the interview was also designed to allow the artist to share with me anything that they felt important that emerges in their work.

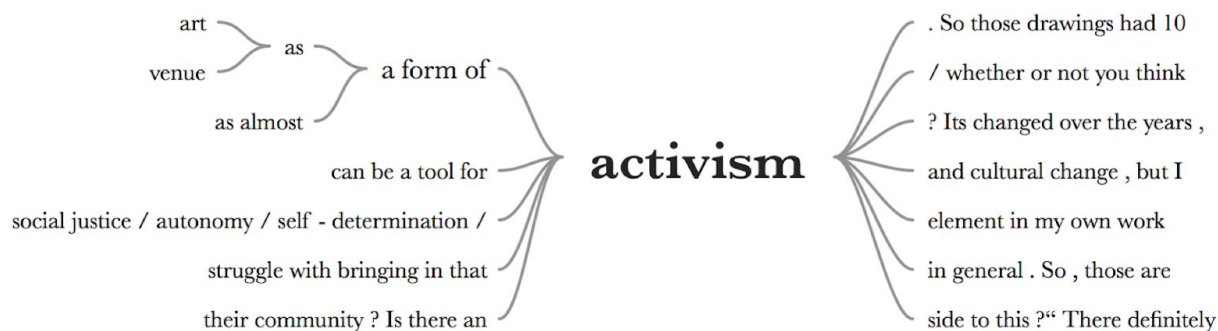
Environmental Impact

Moving into the more topical questions, I asked them if any of their work serves to address issues that surround the environment. Seeing as each artist that I contacted, had noted some prior experience working with issues surrounding the environment. I was then curious to see how this influenced their work. Whether this be through the use of sustainable materials or through messages that are supposed to enact social change, I was looking to see they use their work as a medium to get these issues across. I was able to gather a lot of information from this section and organize it to find themes and patterns.

Art as Activism

For this section of the interview, I asked the artists if they thought that art was an effective method to get people engaged in the community. I was interested in learning their motives behind creating art, whether this is to engage with the audience or to strike conversation. I got a range of answers with this questions, which proved a bit more challenging when interpreting. This is something that I have always been very interested in, so I was looking to see how those with more knowledge and time spent creating, go about something like this.

Pictured below is an example of a ‘Word Tree’, which is designed to show words or phrases used before and after the searched word. This proved helpful in finding recurring themes or phrases that surrounded the word.



Art as Embodied Learning

The last part of the interview regarded the use of art combined with other disciplines. I prefaced this question noting that in the current state of environmental uncertainty, there is a growing need for engagement of people of all disciplines. I am interested in examining how culture and the arts can work together to address current environmental issues, and what each respondents take on this was. Many of the artists that I interviewed identified themselves as interdisciplinary artists, and after seeing how prominent this title was in the field, I chose to go more in depth on their opinions of this.

Sub- Questions:

- Why do you believe there is often this divide between science and the humanities?
- What do you believe are the benefits or drawbacks of being an interdisciplinary artist?
- Do you believe that there should be a larger focus on teaching with an interdisciplinary approach?

Limitations

The original intent of this thesis was to explore the relatively new genre of ‘ecological art’, which concerns itself with ecological activism and the highlighting of issues surrounding contemporary activist art rather than simply as art that involves the land (Merton, 2016). After conducting several interviews, however it was found that the term ‘ecological art’ was relatively vague and that many artists did not necessarily identify with the term, which proved problematic. The solution was to keep the interview questions rather broad and asking the artists what genre their work falls under.

Another limitation was accessibility. Many of the artists were too far to reach or were busy travelling and working on current installations, and did not have the time or resources to meet up in person. As a result, we were forced to have interviews over the phone, with additional notes forwarded over email. While this was sufficient for the time being, there definitely would have been more opportunities to reach artists if the time frame for reaching out to them was longer. When conducting a project like this in the future, it may also be helpful to have

researchers located in different regions, in order to get a larger range of interviewees in different places. While the small population of participants included in the study proved for in depth interviews, it does not allow for generalizations to be made of all artists in the United States.

Results

Figure 1: Background on Artists

Artist	Gender	Location Based	Occupation/ Title	Specialization
Anne Cummings	Female	Colchester, VT	Art Educator/ Studio Artist	Eco-Art, Studio Art
Charlet Davenport	Female	Woodstock, VT	Artist/ Director	Ceramic sculptures, outdoor installations
Zehra Khan	Female	Chicago, IL	Multi-disciplinary Artist	Drawing, sculpture, installations, performance
Benjamin Andrew	Male	State College, PA	Inter-disciplinary Artist	Storytelling & Technology, Public Art
Dan Cottle	Male	Burlington, VT	Graduate Student	Musician
Rebecca Schwarz	Female	Burlington, VT	Artist & Educator	Bringing creativity & art to health
Cameron Davis	Female	Burlington, VT	Senior Lecturer, Artist	Paintings, installations, community art
Sally Bozzuto	Female	Brooklyn, NY	Inter-Disciplinary artist & educator	Intersection of art & science, photography
Rikke Darling	Female	Galleries in	Visual Abstract	Science-Art

		NY, FL, CA	Artist	
Courtney Mattison	Female	Los Angeles, CA	Sculptural Artist	Ceramic Sculptural Works

Work of the Artist

In the world of art, “medium” refers to the substance the artist uses to create a piece of artwork (Esaak, 2018). Some of the more traditional mediums are often thought of as drawing and painting. While these examples are more common forms of media, many artists also choose to work with or incorporate less traditional materials into their work (Esaak, 2018). I have categorized the work of each artist by medium below. While not all of the artists focus solely on one medium, I have chosen the one that they spoke with me about the most during our conversation.

Ceramic Sculpture

Of the artists interviewed, two focus their work around the art of ceramic sculpture. Artist Charlet Davenport has served as the Director of Sculpture Fest for many years, which features a series of outdoor installations located in Woodstock, Vermont. She first began by creating outdoor installations on fiberglass mesh and installing them in public places such as St. Gaudens Historic National Park, The Rotunda at Dartmouth College Hopkins Center, the Vermont Carving Studio and Sculpture Center, and a variety of other public and semi-public spaces. She is a strong believer that land belongs to all of us, and in the past few years has focused her sculpture park installations on getting people to ‘wander the land’. Most recently, her work has been on water, creating what she calls ‘Poetic Water Lines’ to honor the weather consistent with the 10 major rivers of the world. She also enjoys working with the land around her and has created what she calls ‘Building the Lily’, where she anchored pieces of colored glass and stones in a brook across from her house, creating a trail which can be seen as the water flows. Her goal in doing so was to bring attention to the stream, with hopes of inspiring others to take a deeper look at the bodies of water around them in their own lives.

Artist Courtney Mattison also creates ceramic sculptural works, which are “inspired by the fragile beauty of coral reefs and the human-caused threats they face.” She creates large-scale ceramic sculptural installations with a goal of “making people appreciate the fragile beauty of coral reefs and empathize with the threats they face in ways that inspire us all to change our behavior.” Her work serves to explore the impacts of climate change on the ocean, sparking viewers’ interest in the beauty of the natural world, while inspiring a sense of hope that through urgent action, humanity can still bring climate change under control. As a ceramic sculptor with a background in environmental science, she believes that “art can be a powerful communication tool to help us better understand the natural world and to remind us what we stand to lose to climate change if we do not urgently enact solutions.”

Music

Graduate student Dan Cottle focuses his work around music and ecology. He is currently pursuing a Master’s Degree in Environmental Thought and Culture and is in the process of articulating the topic of his thesis, which is directly related to arts and ecology. He is approaching his work from both a philosophical direction, as well as from the perspective of someone who wants to be a practicing artist, mainly music and composing. As a musician himself, he is interested in the aspects of music that are inherently ecological, and the ways in which you can practice or write music which will relate to and serve as a response to ecological problems. In his interview, he describes a moment in which he felt especially moved by music, and shares how it gave him this sense of ‘fragile hope for the future’. This intense emotional response that he experienced made him ponder the way in which artists and musicians are able to create such effects through their work. As a result, he became particularly curious about the way in which composers are able to do this.

Painting

Senior Lecturer and artist, Cameron Davis focuses her work on the perception of presence in nature. She uses paintings to portray the perceptual moment of “feeling the aliveness in nature.” She notes that specific issues which prompt an emotional response, often then

stimulate a painting. Some examples of this in the past have been the monarch butterflies dying off or the collapse of the honeybees, all of which were able to prompt a body of work. She is especially motivated by what we think of conventionally as nature and knowing herself in nature, and notes that this is a very important aspect to her work.

Artist Rikke Darling categorizes her art as Science-Art, in which the artist explores and expresses something about the world. Many of her more recent works focus on abstract paintings, which she creates in hopes of moving the observer with her outlook on the nature in human- and the human in nature. She is fascinated by nature's patterns and repetitions, and this is often reflected throughout her work. Her work also serves as a reminder that humans should not be dominating the world or overusing the earth's resources. She notes that if we continue at the current rate, then we will bring nature out of balance, thus backfiring upon ourselves.

Non-Traditional/ Sustainable Material

Artist Anne Cummings identifies as a Studio Artist and shared her progression into creating art with more sustainable materials. She began by going to antique stores and collecting old fabrics, which then transitioned into gathering garbage from roadsides to use as her source of art materials. She aims to look at how art impacts the world, which led to a personal shift from the use of more traditional materials, into the use of more reusable ones. She shares that as an art teacher, it can often prove difficult to bypass some of these more traditional materials, however she tries to make a point in telling students that many of the materials are really not safe for the environment. She also told me how she did one series using food packaging, to try and make people look more closely at what they are consuming. By taking various pieces of packaging, she was able to create a portrait of the person who consumed them, which was a representation of the impact that person had on the environment through what they consume.

Lens-Based Art

Artist Sally Bozzuto is an interdisciplinary artist who specializes in a range of different mediums varying from installation, ephemeral sculpture, social practice, and lens-based art. While she began her art career by studying music and working with more traditional fine arts,

such as painting and drawing, she finds that she primarily considers herself to be a lens-based artist in her current practice. Sally also serves as the founder of Biome Arts, where she works with an international collective of artists, designers, engineers, biologists and activists to produce work that anticipates the next global paradigm: ecologically sustainable, open source, commons-based culture. Biome arts was founded on an interest in the intersection of ecology, technology and social justice. Combining all three interests, Sally is able to use her work in photography as a form of both technology and fine art. This combination is shown through sets of eco-digital installations, which are designed to enable other artists and the public to reimagine their relationship with nature and technology (Sally Bozzuto.com).

Performance

Artist Zehra Khan notes her inclination to problem solve, and her aversion for waste. She began her art career by “accumulating scraps of paper and cloth to repurpose in a way to honor their inherent preciousness.” One of the ways in which she presents her work is by using her body to become part of the environment. She paints on herself and her friends to bring ‘fine-art’ into nature. She notes that “the subject matter is often a reflection of the natural world and what we as humans consider natural behavior.” She creates multi-media installations populated by herself and friends, as animal characters activating their environment, which are designed to reflect on the kinship between human and animal behavior. She aims to create artwork that is engaging and thought provoking, with the belief that awareness and consideration are the first steps towards truly understanding.

Interactivity

Benjamin Andrew is an interdisciplinary artist who explores the frontiers of storytelling and technology. He notes that his wandering curiosity often leads to an exploration of a range of mediums, however he is especially fascinated with the ability of imaginary stories to impact the real world. He is also interested in imagining the future, and how that can be a tool for activism and cultural change. As a result, he often creates site-specific installations or participatory events, and notes that a very important aspect of his work is working with the specifics of

location. Through the use of interactive art, Benjamin aims to affect local communities, often getting them involved and interacting with his work, which he mentions is an essential part of the process.

Artist Rebecca Schwarz uses her work to connect people of all ages through creativity and imagination. She uses “inspiration from science, technology and our ecologies to facilitate thinking and creating on environmental issues, community and health”(Creative Ground). She currently facilitates a program called Art for the Heart, which connects volunteers, patients, families and caregivers with art supplies at the University of Vermont Medical Center. She has also worked with a range of students in schools around Vermont to create mosaics. Rebecca believes that art helps connect us to what is to be human, and part of the human experience is in our social natures. She notes that the “arts can bridge people who think that they do not have much in common.”

Analysis

Due to the semi-structured nature of the interviews, the results showed variability. I have taken the five categories of nodes that the transcriptions were divided into, and listed the question that correlates best to each node.

The main themes I explore below are why artists combine art and environmental issues, meaning and knowledge making processes in environmental art, how the artist uses art as activism and how they use it to inspire learning and education.

1. What inspired you to combine arts with environmental theme?
2. How do different artists convey environmental messages? How do they construct meaning and knowledge making through their art medium?
3. When creating your art, do you think about how it will affect/change people’s opinion towards the environment?
4. Art as activism: Do you feel that art is an effective method to get people engaged in their community?

5. Art as embodied learning: Do you believe that there are benefits in combining the arts with other disciplines, such as science? How might this impact the education system?
-

Interview Results

After analyzing and coding the results, I looked for common factors among the respondents. I have organized the data based on artistic medium and main themes that resulted from the interview process. The results are as shown below:

Why Art and Environment

Ceramic Sculpture: The data shows that those who specialize in ceramic sculpture have a strong desire to explore the impacts of climate change. Both respondents noted a strong interest in art from a young age, however it was not until a specific event occurred, that they decided to pursue sculpting. Both artists felt impacted by the environment around them, and as a result decided to combine their passion for art with their interest in current environmental issues. Of the data collected from those involved in ceramic sculpture, it can be inferred that they were so impacted by the world around them, that they decided they needed to make a change, and the best way they knew how, was by creating work that would spark interest and could be used as a powerful communication tool.

Music: The musician in which I spoke with finds inspiration through his interest in the fields of art and ecology. While he was always drawn to both fields of study, it was not until he experienced this intense emotional reaction to music that he was listening to, that he realized how much of an art form it really is. This realization has led to research in the field of art and aesthetics, as well as the art of composing music, looking into how those who make music are able to induce such intense emotion. The respondent also notes how he was able to connect with other musicians, enrolling in classes with a classical bass teacher, which ended up being a very positive experience. It was at this point as well, that music started to become a more personal form of art for the interviewee.

Non-Traditional/ Sustainable Material: The artist worked with more non-traditional materials notes how her transition into ecological art slowly evolved and part of which, was due to her own personal convictions about the environment. After realizing that many of the common materials used in creating art are harmful to the environment, she began questioning the work that she was doing and started finding ways around using such harmful products. She found that for herself as an artist and a teacher, that the easiest way to do so was to make an effort to work with recycled or reused materials. She then began creating art out of old fabrics found at antique stores and eventually transitioned into gathering garbage from roadsides to use as a source of art materials.

Performance: The artist that I spoke with who specializes in performance art uses her body as a way to become part of the environment. Her love for problem solving and loathe for waste is what initially drew her to the art of performance and which led to the creation of many of her later works. She notes that she initially began by accumulating scraps of paper and cloth, which became inspirational in a way in which she wished to ‘honor their inherent preciousness.’ She goes on to relate her art to those of a quilter’s--both of which serve to turn scraps into a new whole. While her work is always expanding, it was her initial draw towards repurposing materials that led to the work that she produces today.

Painting: Both artists who primarily focus their work around painting were able to note a progression that led them to this particular medium. One artist notes an impulse that she felt from a young age to create and come up with form around her experiences, which led to this desire to paint. There was one particular moment where she was immersed in nature as a child, in which she felt a need to capture this experience, and from then on realized that she had this special connection with nature. This desire to create form along with a love for nature at such a young age is what led her to pursue a career in art education and to continue producing works of art that reflect upon her past experiences.

Another artist shared that she did not always know that she wanted to become an artist. While she had a recognizable talent for art at a young age, she did not actively pursue art until many years later. After experimenting with different careers and interests, she decided that she needed to express herself and not others, and it was then that she began to really experiment with art and find herself through it. She also has a unique way of seeing the world-- one where everything is inextricably linked. She notes that the world is a very complex pattern, and therefore that it is important that nature is in balance. Her fascination by nature's patterns and repetitions is reflected in her work, and it is through this that she is able to portray many of the issues that she is interested in.

Lens-Based Art: She lense-based artist that I spoke with shared with me the progression of when she first decided to become an artist, to now. While she originally thought that she might major in Biochemistry, she decided that she wanted to go on and pursue a degree in Composition and Music Education. It was through this experience, that she learned how to 'think like an artist', which then led her to take photo classes at a small media art center, later enrolling in a graduate program at the School of Visual Arts in New York City. It was here, where she went on to complete her artists residency and met one of her colleagues, that would later become one of the co-founders of Biome Arts with her. So, it was this initial love for art of all different mediums that led her to pursue different programs in art, but it was not until collaborating with other artists within her program, that she began to create work that was based around ecology and sustainability.

Interactivity: Both artists who focus on more interactive work, note that they were drawn to art from a young age. They both enjoy the satisfaction of having made something, and enjoy the freedom that comes with a field with so much room for expression. They also both take interest in climate change and our natural environments, and use their creativity to express this through art that is often interactive. Some themes that came up in the work of one of the artists were "patterns in nature, multiverse and environmental inspirations, community, connections, and concern for ecological degradation." She notes that all of these themes also tie into many

other areas and patterns in our world: teaching, systems of power, manufacturing and so on. These themes are then reflected in her work as she creates art that is aimed at getting people to “look, and look again, and reconsider our worlds.”

Meaning and Knowledge Making Through Art

Ceramic Sculpture: Of the data that I collected, those who pursue a career in ceramic sculpture identify as more visual learners, who use the art of sculpting to better understand certain areas of expertise. Of the ceramicists I spoke with, I found a common interest in wanting to create sculptures that have some representation of the land. Both artists went about conveying environmental messages through hand-built ceramic sculptural installations in which they portrayed to the public. Each sculpture is intricately designed and has its own meaning and messages behind it. Each installation is created with an intended goal, and it is the intentions behind this that drive the meaning of the piece. Of the ceramicists that I interviewed, both work to create large installations, which are designed to stand out to the public. It is through these installations that they hope to inspire and to get the viewer to think about the underlying messages being portrayed. While the message that the artist intended may not be explicable from immediate sight, it is the process of viewing and working to interpret the piece that is supposed to encourage knowledge. Sculptures often allow for exposure to a wider audience, and combined with the educative function of a sculpture park or a public gallery, it encourages thought on the condition of the environment and can spark conversation among those around.

Musician: It is not in a sense that musicians are conveying environmental messages through their work explicitly, but rather that they combine fields such as art and ecology and look for common themes and similarities that both fields may share. Music can, however contrast meaning and knowledge in many ways. Music is a great way to build community and to give the listener a sense of who you are. It is also a great form of expression, whether this is to discuss something meaningful that you experienced or whether this is to provide knowledge through the lyrics of your work. Comprehending texts and expressing ideas using various media is essential to learn from a young age. The use of music through different volumes and combinations of

instruments can be used to express a sense of power. For example, composers often create out of past experiences, which allow for endless opportunities for constructing meaning and knowledge, once putting together a coherent path to understanding composition.

Non-Traditional/ Sustainable Material: This artist is unique in her art in that she conveys environmental messages through the use of recycled products. Items that people often deemed ‘useless’, Anne uses as materials for her art, sending a message about consumer culture and how wasteful it often is. In one particular project, she created a series of portraits using pieces of packaging from those who consumed the food items and then discarded of them. She created these portraits of people out of the packaging that they consumed, calling them ‘carbon footprint portraits’ because they serve as a representation of the impact that person has had on the environment through what they consume.

Performance: The performance art who I spoke with is able to convey various environmental messages through her work in a very unique way--by painting on herself and her friends. She does this as a way to bring ‘fine-art’ into nature, often reflecting the subject matter on what we consider to be the natural world. She also works to create multi-media installations, populated by herself and her friends as animal characters activating their environment. Through these installations, she is able to construct both meaning and knowledge, reflecting on the kinship between human and animal behavior.

Painting: Those who focus on painting as their primary medium convey meaning through their work in several different ways. Since there are so many different aspects and medias to painting, the work that can be done and the messages portrayed can be very complex. One artist works to move the observer with her outlook on the nature in human--and the human in nature. She uses her paintings as a reminder to respect nature and its needs, and as a reminder that humans should not be dominating the world and overusing Earth’s resources. Similarly, another artist that I spoke with focuses her work on the perception of presence in nature. Different series concentrate on different themes, but her work always returns to that perceptual moment of

feeling the aliveness in nature. By portraying these intense feeling in her work, there is hope that other will feel inspired as well.

Lens-Based Art: The artist that I interviewed who specializes in lens-based art combines her work in photography with those of her colleagues, to create collaborative installations that often act as platforms for other artists to engage with. These installations often form as a result of the many different skills that each artist involved with the co-operative has to offer. It is through these installations that they are able to really convey their messages, which are often about the environment. Another significant aspect of the co-operative is the technological component of it, which helps the artists construct meaning and knowledge through their work. One example of this, is when they hosted a symposium of around 12 artists, thinkers and makers, and built a small semi-autonomous structure in the woods that was wired for projection, creating this ‘mind map’ of their three core values –technology, social justice and autonomy. They used their skills in both art and technology to both stimulate conversation, but also to remind the viewer about their own values.

Interactivity: Those who engage in art that is more interactive, note that their work is often shifting, whether this is between types of media, based upon the subject matter, or due to a particular exhibition. One artist shared that his main through-line is the notion of storytelling, both as a tool for conveying information through the narrative form, and as a subject itself. He works to construct meaning in through his art, using imaginary stories and their ability to impact the real world, often pushing the traditions and limits of narrative fiction. He also adds that he is very interested in imagining the future, and how that can be used as a tool for activism and cultural change. He often creates site-specific installations or participatory events, working with local communities who he is trying to affect in some way. By getting those who live in these communities involved in his art, he feels that he will better be able to resonate meaning within them, because it will feel more personal to them.

Art as Activism

Ceramic Sculpture: From the data that I collected, I found that those engaged in the art of ceramic sculpture do tend to use their work as a form of activism. They tend to view their work as a mode of communication to the public, ‘helping us to better understand the natural world.’ One artist noted that “we protect what we care about, and we care about what we know and understand.” Many people are often not informed on what the current state of the environment is, and it is through art that we can show them, and in hope, inspire a sense of care. I also found that while the general consensus of their art is to spark viewer interest, one artist notes that she wishes to do this in a “quiet way using beauty.” The term ‘raging art’ was discussed in the sense of creating a more harsh piece of work, that has a message designed to directly impact the viewer. This genre of more intense or dark art was something that my interviewees tended to steer away from. Rather, they aim to create pieces that inspire a sense of beauty, which are intended to draw the viewer in, only to then make them realize that there is a deeper message at stake.

Musician: The musician that I spoke with touches on the power of persuasion in regards to music. He notes that he is rather skeptical on the ways in which music can serve as a form of activism, especially in regards to fostering pro-environmental behavior. His skeptics lie in the fact that you can not direct art in the way that you would a logical argument, however he does not underestimate the influence and the power that art can have. He adds that if you could ‘cut down’ or make music and art forms fit into such a narrow political vision, then it wouldn’t be the universal thing that it is and the thing that touches everybody. So in essence, the respondent is aware of the power of music as a form of art, but is still grasping with the concept of the ways in which it affects people, particularly because there are such vast arrays of options.

Non-Traditional/ Sustainable Material: A lot of this artist’s work is done in a way to draw the viewer in, and then to allow for them this realization that the art is actually made entirely out of recycled materials. In response to this, she feels very strongly about using art as a way to spread awareness and to get people more involved in their community. She notes that she uses

her art as a mode of communication, reflecting back on the history of art, and how at the base of it, it is really someone just trying to express the way they feel or trying to express a moment in history. She adds that art almost always carries a sort of spirit of the place or the time that it was created, and as a result of this, she believes that it's a really powerful mode of communication, and has a strong potential to get people more engaged in their community.

Performance: The artist who engaged in performance work is often designed to inspire and provoke thought, stimulating conversation among those viewing. She believes that art is a very effective method to get people engaged in their communities. She notes the use of murals, which have the ability to promote social change and neighborhood pride. Along with local museums, which often engage residents with art through free admission nights and public events. While she is very drawn to body and performance art, she also wanted to make it clear that there are many ways in which art can serve as a form of activism, all of which have the ability to engage community members.

Painting: Those who are engaged primarily in painting as a medium had mixed ideas on whether or not art was the best way to get people engaged in their community. Artist Cameron Davis is rather optimistic on the ability of art to do so, noting particular projects that she has worked on that were designed to serve as a form of activism. She used art as an activist tool with the use of her project, *Waxwing Medicine*, which was 20 drawings on sheer fabric. The drawings were composed into ten different installations meant to inspire walkers participating in the first climate activist event in history. Her work has always had a philosophical, perceptual blend, and she notes that specific issues personal to her might prompt an emotional response, which then stimulates a painting. There is hope that these issues that prompted an emotional response in her, might also evoke meaning for someone else viewing the work.

Another artist that I spoke with looks at the use of art as activism from a more scientific perspective. She notes that everything in the universe consists of immaterial energy: any sensation, emotion, thought or expression of life is a mark of energy. With her art, she wishes to contribute with a sensual stimulus, an inspiring energy and perhaps even new realizations. By

beautiful visualisations, she hopes to bring out a feeling of the importance of balance and respect for nature. While she does not create her work necessarily as a ‘form of activism’, she hopes to bring an everyday reminder of the importance of being a part of a beautiful nature pattern-- and not setting our own greed above that.

Interactivity: The respondents felt positive about using art as a way of getting people engaged in their community. One artist shared that she thinks the arts help connect us to what it is to be human; and part of the human experience is our social natures. She also adds that the arts can help bridge people who think that they do not have much in common, therefore creating more engagement within the community. She states “the arts can hold more than one perspective in conflict with another, which can help build new understandings and connections.” The arts are an effective method at promoting community engagement because they can be used to invite people, perspectives and possibilities. Another artist notes a definition that he believes defines activist art to him. He views it “as a way of bringing about change through depicting things that don’t yet exist.” The whole basis of interactive art is founded in getting people engaged and stimulating discussion, so the general consensus on this topic was very optimistic.

Art as Embodied Learning

Ceramic Sculpture: The ceramicists that I spoke with were all fairly optimistic about the combination of art and science. One of the artists that I spoke with has a background in environmental science, and uses this within her work. She is able to compare the chemical structure of her work to that of a natural coral reef, reflecting the properties of an actual reef within her work. She does note, however that art and science are often viewed as two ways in which humanity explores and explains the world. She discusses the similarities between artists and scientists and believes that that they both have a lot in common, in the sense that “they thrive on a shared sense of curiosity about the world and work to form a better understanding of it.” While the benefits of combining disciplines is discussed, there is still a clear understanding that not all artists and scientists feel the same way. What is agreed on, however, is their shared sense

of curiosity and their ability to use creativity to come up with solutions to questions about the world.

Musician: The musician that I spoke with felt very positively about the idea of combining the arts with other disciplines, such as science. He notes that there are “so many ways that I think people could do that and should do that.” He addresses this idea of ‘art as embodied learning’, from the perspective that he has always been taught, being that science is known to establish facts and that art takes those facts and communicates them. He also notes that he is interested in understanding how art “actually explores the universe and establishes new ways of knowledge in their own ways.” He looks at this from a social historical movement that’s around a particular art, such as the development of jazz in the African American culture in America. He believes that this is a great example of something within that scheme that can be discussed among musicians and critics. He also shared his belief that there’s this common understanding that artists over time were somehow, using their music to explore their world and to understand it and to create a new world view.

Painting: There is a general consensus that there are benefits among a multidisciplinary approach. Of the artist who classified her work as Science-Art, she defines this as one where the artist explores and expresses something about the world. She believes in a broader understanding of other ways of seeing things, and that it is important to specialize in your own field, but by working together and communicating with people from other disciplines. By doing this, we are able to deepen our understanding. She also found it important to note that “we can only see what we know”, and believes that it is very important for us to always seek out new approaches and new solutions.

The other painter that I spoke with has a very positive outlook on the combination of the arts with other disciplines. She has been passionate about this particular topic for many years now, and adds that she has been using arts and ecology themes at the University of Vermont since 1998. She also makes a point to discuss how we are living in a critical time, and notes the

importance of enlisting all our capacities, rational and intuitive. If we are only looking to rational our capacities, we negate this whole other realm humans possess of reflection, intuition, meaning-making, and future visioning. So, it's a real misunderstanding to not include intuition, imagination and creativity as important players in our survival. She also feels that there should be a larger focus on teaching with an interdisciplinary approach. She believes that it is so important to understand relational thinking, and that science and intuition are seen throughout its offerings.

Lens-Based Art: There was a very positive response in regards to combining arts with other disciplines, from the artist who engages in lens-based art. From an educational standpoint, she poses the question "we live in an interdisciplinary world, so why are there these siloes among disciplines in school?" While she can understand where these boundaries are formed to an extent, she notes that it is not practical to have such a one-sided view in everyday life. She poses the example of being out in the real world and encountering a problem, and how one does not think about the solution in solely a one-sided approach. She also adds that as an educator, she's always thinking about how we can bring real life experiences, such as field work into the classroom. She is a strong believer in a hands-on approach and finds it beneficial to practice skills that you might be doing in the real world, outside of the classroom.

Interactivity: One perspective taken was taken from an educational point of view, that the the arts can strongly benefit science education. One artist shared "the arts help bring things into the tangible to be played out, rehearsed, and made visible in exploratory ways." She also adds that she thinks the arts can benefit from any discipline where people work across differences and need to think deeply on subjects, forcing them to grow a way forward in new directions. Another artist who specifically mentions his work in interdisciplinary art, states that it makes for better art. He states that "whether we're considering the Modern lineage of progress and innovation, or the democratic approach of Postmodernism, artwork is usually more interesting if it's mixed up with science or history or design."

Discussion

In completing this research, I was looking to gain a deeper understanding on the ability of the arts to help foster ecological awareness. I aimed to understand more about how artists are using their work to create public awareness, specifically in regards to the environment. Through sets of semi-structured interviews, I examined experiences of artistic engagement, and the commonalities that they share with the natural world. I also set out looking to better understand the relationship between the arts and science, and how they are able to work collaboratively to help solve real world issues. I believe that by fusing these two disciplines, a range of opportunities opens up, allowing for perspectives from two entirely different fields of study.

The open framework of the semi-structured interviews allowed me to identify new ways of seeing and understanding the topic at hand. Each discussion provided further insight into the movement of environmental art, with real world examples of how artists are using their work to inspire change on an everyday basis. By incorporating the use of art as activism, and gaining a first hand look at how artists are doing so, I was able to gain a deeper understanding on how the field of environmental art (and emerging sub-fields such as eco-art and eco-art education) are functioning. In regards to the wider world discussed, the scale of my project is relatively small. In conducting this research, I was not looking to solve all of the answers on how to best combat climate change, but, rather to gain a perspective on how artists are using their work to inspire change and portray many of the current issues at stake.

By talking to local artists and forming artists profiles, I was able to track the journey of each artist, and understand why they serve to create the work that they do. In the larger context, I wish that this work can be used as an additional resource, to show the public that incorporating environmental themes into artwork can be a beneficial way to get people to care and to spread awareness about the environment. Not only this, but to start with the younger generations and to begin fostering environmental awareness and compassion from a young age. These will be the generations that will be facing the current climate issues, which is part of the reason that I believe letting people know what environmental and ecological art is, is so important. Many people may not know what this field entails, let alone what it can accomplish, and I believe that

by telling the stories of artists who work directly with this, we can begin to show people how influential these effects can actually be.

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Respondent 1 : Anne Cummings, 10/29

Hayley: What does the term ecological art mean to you?

Respondent 1: I think today, ecological art has a slightly different meaning than it had back in, perhaps the 70's, when there was a movement called land art or environmental art. Often, those artists did things that altered the landscape, and to me, the more current movement of environmental art, or eco-art is much more involved with artists who want their practice to get a more environmentally conscious message across to protect the environment, or to use materials that don't have an impact on the environment, or a combination of those things. I think there's been a big shift in that and to even look at their own materials, and to think about whether they're toxic or plastic or whatever that might in some way damage the environment and therefore change their practice. A lot of it is the reuse of materials as well as sending some kind of environmental message to the public."

Hayley: What first inspired you to want to get into ecological art?

Respondent 1: Well I started out as mostly a fiber artist and partly because I really enjoyed using various tactile materials. It began to notice that I was doing a lot of reusing of things at that point too such as fabrics. I would go collect old fabrics, go to antique stores and use materials such as that in alternative ways. Then, I moved into gathering garbage from roadsides and [started] using that as my source of art materials. Mostly, it was starting to take a look at how art impacts the world and I learned some things about acrylic paints that made me think... you know this might not be a good material to be using. As an art teacher, I find that it is difficult to bypass teaching those traditional materials, but I try to make a point in telling students that these things are not really safe for the environment. So I think it slowly evolved and because of my own personal convictions about the environment, I started questioning what I was doing a lot more and trying to find ways around it and the easiest way to do that was to always work with recycled or reused materials.

Hayley: Are there any major themes that present themselves through your work?

Respondent 1: One of the largest ones is climate change. I did a series called climate change and I have done some series that are about food and food packaging to kind of make people look more closely at what are consuming, so the whole consumer culture is something that I try to address in my work. I have also done a series of portraits that use the materials from the person who used these objects or consumed this food. I take all of those pieces of packaging and I create a portrait of that person and I call them carbon footprint portraits because they're a representation of the impact that person has had on the environment through what they consume.

Hayley: When creating your art, do you think about how it will change people's opinion of the environment and if it will make someone who does not know as much want to get more involved?

Respondent 1: My hope is that for someone looking at one of my pieces, their first thought might be this is a portrait or a landscape or an animal and then they'll be drawn into it because they're very colorful, and then kind of go oh look there's a cookie package wrapper or a McDonald's wrapper; something like that which usually results in that 'aha' moment when it dawns on someone that oh these are all pieces of packaging or that's all roadside garbage or whatever and it takes a little bit for someone to perceive that message. But once they do it's really pretty clear. So I like the idea that it has to draw someone in first before they notice that right away, and that it kind of becomes this secondary thing to the actual image. But then once they realize it they get the idea that oh yeah there's an environmental message here.

Hayley: Do you feel that art is an effective method to get people engaged in their community? Is there an activism side to this?

Respondent 1: There definitely is in my case. I do feel like I am trying to use my art as a mode of communication. You know if you look at the history of art, that's really what it is at heart,

whether someone is just trying to express the way they feel today or trying to express a moment in history. Especially looking back, art almost always carries a sort of spirit of the place or the time that it was created, so I do think that it's a really powerful mode of communication and that artists sometimes don't even realize that themselves until they find the thing that they were, the theme or message that they are trying to get across.

Respondent 2 : Charlet Davenport, 11/5

Hayley: What does the term ecological art mean to you?

Respondent 2: I don't usually say eco-art, I say environmental art. I consider it art on the land because we also show other people here. We have a very large sculpture park and most things in the past couple of years have something to do with getting people to wander around on the land, so I work with other artists and I often call it art of the land, and lately I've been working on water so it changes. I do smaller installations and some bigger shows but my shows here speak my work more and more. I used to work with other artists as well.

Hayley: Was there anything that first sparked your interest or made you want to create environmentally based art?

Respondent 2: I'll tell you what started it really all along. I've been thinking about it. About 26 years ago, I had planned a show called land works. Out of the earth and the land field I wanted to make something that would reflect upon the particular land where we have these shows and I started by commissioning some work that were growing pieces. Particularly a group of elms made into an arch like a maze almost. And you can see it online and that still continues to grow it was each one was really one tree and they were brought together and you could walk through it like a maze in a cathedral. Over years it has become a very special piece. And my most recent one I've had installed here, I commissioned people to do it. What I chose is living art, one of my most recent ones, I have a daughter who died and left four children eight years ago and an English woman created a willow maze which is absolutely beautiful of what's called basket tree willows. There are 2000 different kinds of basket tree willows and I have a beautiful one and my work for that is to keep trimming it. The most significant thing to me is larger things right now.

Hayley: Are there any major themes that present themselves throughout your work?

Respondent 2: My own work recently has been on water. I had one here on the 10 major rivers of the world and its outside. It's called poetic water lines and it honors the weather consistent with the 10 major rivers of the world show in north Bennington. There are artists that do environmental work there too. There are a series of boxes and you walk around and you're reflected in it. There's mirrors to show that we're a part of this problem and a part of the water and a part of the world. In my most recent one I worked in special part of a brook that's across from me. I created what I call 'building the lily' where I anchored bits and pieces of colored glass or stones in the water so it would really sparkle and you can see the trail as it heads down the river just bringing attention to the streams that are so important around us. We don't want to pollute and I guess water is important to me. So those are my most recent and they're both on water.

Hayley: When creating your art, do you think about how it will change people's opinion on the environment?

Respondent 2: I choose things that will catch their attention whether its right off the bat. Most people can wander around sculpture shows and after are already thinking about it. But one of the things I was intending with this particular piece is that my husband has made a small culvert, an ecological good one to keep the brook from flooding so the old passageways between farm property.. you could still walk through the woods through these trails so it was very specific. How do we walk on the land? How do we keep things now that we're getting much heavier rain, we do need some ecologically sensible little culverts to let these streams follow their paths. It's only about a mile from where this is, where it goes into the Ottauquechee. I actually went on a quest with some other people and we followed, we stopped 16 times around the path to see where the Ottauquechee river goes into the Connecticut and that had a huge impact on me.

Hayley: My last question was revolved around art as a form of activism and whether or not you think that art is an effective way of getting people involved in a community?

Respondent 2: Yes in a kind of quiet way using beauty. I'm not a huge fan of what I call 'raging art' but I understand it and I've seen it because I'm old (78) and I was involved in the civil rights movement and in the anti-war movement. There was a lot of peaceful work but a lot of the images rather dark and frightening, and at this point I'm using more beauty-something that attracts you because it's so beautiful and the you think oh yeah and the subject isn't the only thing. It has to work as art as well as never a literal message, like a poem maybe.

Hayley: Do you have anything else that you would like to add?

Respondent 2: I did another piece 3 years ago. I do use poetry. I like to put language into my work but it's never a message it's a thing to touch you to make you go to the next level of thinking in words, and so I did 28 of these porcelain balls, some of them as big as 10 inch diameters and they had were called Bennington balls and birds. And I messied out on moss under a willow tree and nothing ever got broken and I left a message saying you could pick them up and read them. I think it's interesting when you're doing that kind of gentle work that's out in public. I've never had a problem with anyone disturbing it, right out in public land and I think that's a good lesson.

Respondent 3 : Zehra Khan, 11/26

Hayley: What does the term 'ecological art' mean to you?

Respondent 3: To me, ecological art means making artwork that is environmentally conscious. It addresses the subtleties of our physical world-animal, plant, mineral, and their connections. In my own practice, it means I try to use non-toxic and recycled materials.

Hayley: What first inspired you to want to create environmentally based artwork?

Respondent 3: I like to problem solve, and I hate waste. Accumulating scraps of paper and cloth became inspiration to repurpose them in a way to honor their inherent preciousness. Much like quilters turn scraps into a new whole.

Hayley: Are there any major themes that present themselves throughout your work?

Respondent 3: One of my focuses is using the body to become part of the environment. I paint on myself and friends to bring 'fine art' into nature. The subject matter is often a reflection of the natural world, and what we as humans consider 'natural behavior'.

I create multi-media installations populated by myself and friends as animal characters activating their environment. These fictions reflect on the kinship between human and animal behavior.

Hayley: When creating your art, do you think about how it will affect/change people's opinion on the environment?

Respondent 3: I hope to bring relatability to the subject matter. Awareness and consideration is the first step towards understanding. If I can create artwork that is engaging and thought provoking, I am happy.

Hayley: Do you feel that art is an effective method to get people engaged in their

community?

Respondent 3: Art is definitely an effective method to get people engaged in their communities. Murals can promote social change and neighborhood pride. Local museums engage residents with art through free admission nights and public events. Art can inspire and provoke.

Respondent 4 : Benjamin Andrew, 1/31

Hayley: What first inspired you to want to become an artist?

Respondent 4: I guess I started drawing as a child and just never stopped making things. My idea of what an artist does has certainly changed though; up through college I loved making images through drawing and painting, but after being exposed to more conceptual and interdisciplinary artists, I learned that there's a much broader landscape of creativity out there. These days I rarely draw for pleasure the same way I used to and instead sketch diagrams and ideas in service of a larger projects, or make more polished illustrations on a computer.

Hayley: Are there any major themes that present themselves throughout your work?

Respondent 4: If you browse my website, you'll see that I jump between media a lot and even my subject matter changes, sometimes due to a particular exhibition, or my wandering curiosity and need to constantly learn new things and play in new sandboxes. The main through-line I've recognized is the notion of storytelling, both as a tool for conveying information through narrative form, and as a subject itself. I'm fascinated with the ability of imaginary stories to impact the real world, which is primarily how I view activist art: as a way of bringing about change through depicting things that don't yet exist.

Besides interrogating the traditions and limits of narrative fiction with projects like my *Random Access Memories* short story/website, I am also very concerned with climate change and our natural environments. My work often incorporates elements of science fiction (like the time traveling Chrono ecologists in my performance series or the holograms I created for *Birdland in the Anthropocene*). Part of that is due to my love of Sci-Fi and the power of its loud, silly tropes to engage people, but the idea of what-if futurism seems hopelessly entangled in climate change. An ecologically-wrecked Earth is an increasingly dominant vision of our future, which is why my stories and artwork often explore those ideas, hoping that audiences walk away with some of those concerns themselves.

Hayley: Do you find that any of your work serves to address issues surrounding the environment or do you typically focus on one specific aspect?

Respondent 4: In general, I'm interested in imagining the future, and how that can be a tool for activism and cultural change, but I have focused on specific issues and sites for certain projects. I often create site-specific installations or participatory events, so I think working with the specifics of those locations is very important for the work—as well as working with local communities, to get them involved, since they're the ones who I'm trying to affect in some way.

My *Foggy Bottom Microobservatory* took that idea of site-specificity to an extreme by capturing and cultivating wild yeast and bacteria from the exhibition location, and incorporating them into digital illustrations, videos, and science experiments. Ironically though, that project turned out to be very transferable, and I've repeated the fermentation workshops at several venues: art classrooms, galleries, and events focused on sustainability where they weren't advertised as "art" at all. Some of my other environmental projects have revolved around drinking water and turtle migrations—strange, I know—both of which were subjects determined by the specific people I was working with, so I guess I'm eager to work with whatever experts or passionate collaborators I find, and happy to shift gears to new subject matter.

Hayley: Do you feel that art is an effective method to get people engaged in their community?

Respondent 4: I mentioned that I see art as a way to engage audiences and start conversations, much like knocking on doors for political causes, but less direct and weirder. I like artwork that isn't obviously recognized as such, where people can encounter it on the street or in a web browser and experience the work without expectations of it being fine art. I think those kinds of projects are more inclusive, and inviting for communities that aren't steeped in art history or contemporary references. But there's definitely a line to walk between practical change-making and artistic experiences. I do freelance design work, and have worked with environmental groups and political campaigns, where my role has shifted into one that's perhaps less creative but more

directly impactful. I think both kinds of work are needed to achieve environmental and other activist goals; most people probably don't wear quite as many hats as I do, but my commercial design work and engagement with politics has definitely influenced my art practice.

Hayley: In the current state of environmental uncertainty, there is a growing need for effective communication among people of all disciplines. In my work, I am looking towards how culture and the arts have worked together to address current environmental issues. In your experience, what do you believe are the benefits or drawbacks of being an interdisciplinary artist?

Respondent 4: One of the most important benefits of making interdisciplinary art is that it results in better art—and I'm considering "interdisciplinary" as referring to multiple disciplines as opposed to multiple media. Whether we're considering the Modern lineage of progress and innovation, or the democratic approach of Postmodernism, artwork is usually more interesting if it's mixed up with science or history or design or etc. etc.

Besides being novel, interdisciplinary art offers more points of access to the work; I've done several projects in collaboration with scientists and it's always fun to see those folks getting excited about conceptual art or experimental video or whatever form the work takes.

"Communication" is a real concern among scientists and political workers, and I've taught workshops about the basics of graphic design to scientists at several universities, but those are slightly different concerns than interdisciplinary art. Finding opportunities to collaborate between artists and professionals from other fields is great, but it's hard to ensure that both sides feel equally valued and productive. The ability to work in a variety of media and contexts is valuable for anyone, which is why studying art and design is actually a pretty reliable path for students these days. But having done that for a long time, I do sometimes feel like I'm spread too thinly and I recall the value of focused work and mastery of specific media.

Hayley: Do you believe that there should be a larger focus on teaching with an interdisciplinary approach?

Respondent 4: Short answer: yes. I teach at the Pennsylvania State University and taught in Baltimore before that, and I've always tried to broaden the horizons of what's covered in my classes—bringing in pop culture, film, history, and science fiction, of course. I currently co-teach a course about anatomical art with my wife, who teaches in Penn State's biology department. Students learn about the history of anatomical art, the basics of human anatomy, and make original art and design projects. Studying material from several fields like that helps students switch their mindsets, from visual analysis to medical function to cultural criticism, which I hope is not only helpful vocationally but in developing a more flexible and critical public in the long term. I also organized a collaboration at Johns Hopkins called *Research Remix* several years ago where science faculty and students shared their research with artists, resulting in a series of events and exhibitions. One of the under-appreciated aspects of universities is the proximity of all these different fields, so I always love to make connections or encourage people to look beyond the traditional expectations of what higher education looks like.

Respondent 5 : Rikke Darling, 2/4

Hayley: What first inspired you to want to become an artist?

Respondent 5: I never thought I would become an artist. When I was a child I was told that I had a talent for art, but I was also told that an artist is something you are in your heart. It is not a possible career. I was fascinated by biology and medicine, and thought that would be my way in life, but it was the structures in money and business that became my way. I got a master in economic and communication, and started to write for newspapers, but soon I found out that I needed to find my own way in life. That I needed to express my self and not others... and that was the time (2006) that art found me, and I began to walk on my own path in life.

Hayley: Are there any major themes that present themselves throughout your work?

Respondent 5: My art can be categorized as Science Art (SciArt), where the artist explores and expresses something about the world. I wish to move the observer with my outlook on the nature in human – and the human in nature. It is a narrative of how human is nature and part of a complex universal pattern, where surroundings, on an energy level, merge with sensation, emotions and thoughts. I am fascinated by nature's patterns and repetitions - and by micro and macrocosm relations. With this holistic view, everything in the world is inextricably linked.

Hayley: Do you find that any of your work serves to address issues surrounding the environment or do you typically focus on one specific aspect?

Respondent 5: With my way of seeing the world where everything is inextricably linked, it means that when you change one part of the whole, the other parts are affected as well. The world is a very complex pattern, and therefore it is important that nature is in balance. By that I want to give the viewer a reminder that people are nature – we are not above nature, but a just a small part of this complex pattern. It is a reminder to respect the nature and its needs, a reminder that humans should not be dominating the world and overuse the earth's resources. If we

continue doing that we will bring the nature out of balance and by that it will backfire on our self.

Hayley: Do you feel that art is an effective method to get people engaged in their community?

Respondent 5: I am not sure art is an effective method, but in quantum physics we have learned that everything we used to think was physical is indeed energy. Everything in the universe consists of immaterial energy and everything radiates energy. Any sensation, emotion, thought or expression of life is also a mark of energy. Our mind lives and gathers daily energy from the world around us. With my art, I wish to contribute with a sensual stimulus, an inspiring energy and perhaps even new realizations. By beautiful visualisations I hope to bring out a feeling of the importance of balance and respect for the nature. I hope to bring a everyday reminder of the importance of being a part of a beautiful nature pattern - and not setting our own greed above that.

Hayley: In the current state of environmental uncertainty, there is a growing need for effective communication among people of all disciplines. In my work, I am looking towards how culture and the arts have worked together to address current environmental issues. In your experience, what do you believe are the benefits or drawbacks of being an interdisciplinary artist?

Respondent 5: By using science I can express something about the world. My art can make science comprehensible, as well as using scientific approaches to making art can make the art easier to relate to. Science and art alike have useful spin-offs. Applied science (science) is technology, and applied art (art) is decoration. Both enrich our lives but neither technology nor decoration changes our fundamental perception of the world around us – science and art do.

Hayley: Do you believe that there should be a larger focus on teaching with an interdisciplinary approach?

Respondent : I believe in a broader understanding of other ways of seeing things. It is important to specialize in your own field but by working together and communicating with people from other disciplines we can easier broader our understandings. We can only see what we know, and it is important always to seek for new approaches and new solutions.

Respondent 6 : Rebecca Schwarz, 2/5

Hayley: What first inspired you to want to become an artist?

Respondent 6: First I just enjoyed the process and the satisfaction of having made something. Then it became more about making the things that bridge the dream and the real.

Hayley: Are there any major themes that present themselves throughout your work?

Patterns in nature, multiverse and environmental inspirations, elegance, beauty, community, connections, and concern for ecological degradation are major themes which then tie into many other areas and patterns in our world: teaching, systems of power, manufacturing and so on.

Hayley: When creating your art, do you think about how it will affect/change people's opinion towards the environment?

Respondent 6: Yes. I want people to look, and look again, to reconsider our worlds.

Hayley: Do you feel that art is an effective method to get people engaged in their community? (Feel free to share any personal experiences)

Respondent 6: Yes. I think the arts help connect us to what it is to be human. And part of human experience is our social natures. The arts can bridge people who think that they do not have much in common. Also, the arts can hold more than one perspective in conflict with another which can help build new understandings and connections.

The arts can be used to invite people, perspectives and possibilities and knit social fabric.

Hayley: Do you believe that there are benefits in combining the arts with other disciplines, such as science? How might this impact the education system?

Respondent 6: I think the arts can absolutely benefit science education. The arts help bring things into the tangible and be played out, rehearsed, and made visible in exploratory ways. Play has the power to loosen us from rules, build new rules, and question the way a system is set up. Through questioning and playing we find paths forward and organically grow knowledge.

The arts and sciences are both forms of creative thinking that utilize critique to advance work. I do think the arts can benefit any discipline where people work across differences and need to think deeply on subjects, forcing them to grow a way forward in new directions.

Respondent 7 : Dan Cottle, 2/6

Hayley: I know that you have worked with the EcoCulture Lab and I was wondering if you could expand more upon your work here and within the Burlington community?

Respondent 7: In terms of getting involved with Feverish World and the EcoCulture Lab, I feel like I actually haven't done a whole lot yet. It was something that I knew that I was going to be kind of thrown into, it was my first semester in my Master's Program here at UVM. It did really help me just being exposed to some of these different creative people and artists doing things and trying to grapple with these ideas was really useful. I took a lot of notes and tried to go to as many things as I could and pay attention. And now that I'm actually putting that stuff together later on, I'm realizing how helpful that was in the moment. I would hear something and think that's interesting, but it wasn't making sense to me completely at the time, there was a lot going on. So, I'm starting to make more sense of it and see where the threads meet.

Hayley: What is your graduate program?

Respondent 7: I'm doing a Master's degree in the Rubenstein School. There's a concentration called Environmental Thought & Culture. Coming to grad school, I didn't have a very specific idea of where I wanted to go or what I wanted to do afterwards. It was something that I came to after many years of being out of school and realizing that I just wanted to shake things up and take some time to think about different things, so that's really what it was. Where I'm at right now is I'm starting to articulate more about what I want my thesis to be about which is directly related to arts and ecology. I'm approaching it from a philosophical direction, which is something that I know about myself and that I enjoy thinking philosophically, so I'm reading into the history of philosophy and aesthetics. And then another side I'm looking at it more from the point of someone who wants to be a practicing artist, mainly music and composing. Thinking about what are aspects of music that are inherently ecological and are related and how you can practice or write music in a way that relates to these ecological problems and is a response.

Hayley: Was that part of your inspiration?

Respondent 7: When I arrived here, I knew I wanted to focus on music and ecology, but it wasn't my main focus. I thought that I would go to grad school and do all this book learning and then figure out how to develop this philosophy that will articulate all these problems and save the world and I quickly realized that this felt too big and impersonal. I brought my bass around with me when I arrived and there were a lot of things that I couldn't really do but I wanted to do. I just decided to start taking classes with a classical bass teacher and that ended up being a very wonderful experience. That started to become a more personal form of art.

The real moment it switched, was when I was listening to Aaron Copland's third symphony, and something about it just felt- I realized while I was listening that I was having this intense emotional reaction. What I was hearing almost felt like the future. It felt like someone looking ahead and having a fragile hope for what was going to come and all of that happened in an instant, so I started thinking why does that happen? Something about needing that music at that moment made me curious about how artists do that. I would love to learn how to do that. I wanted to look at how composers do this and what they think about it.

Hayley: Do you think that you would use your own music/ that it's possible to use music to help foster pro-environmental behavior?

Respondent 7: Certainly, I do hope so. Intellectually, I'm sort of skeptical of how direct that can be. It's something that I've struggled with in the past thinking about the power of persuasion. There's something about art that's so fascinating because on one hand it's so powerful and then on another, you can't really direct it the way that you would direct a logical argument. I think that might be part of the reason that art is so powerful. If it could be cut down or made to fit with such a narrow political vision, it wouldn't be the universal thing that it is and the thing that touches everybody. So, you would actually get rid of its power, and we've seen that with propaganda, there's a way that when you look at it, it feels artificial. That's a sort of paradox, but my hunch is that that's actually the power of art.

Hayley: Do you believe that there are benefits in combining the arts with other disciplines, such as science?

Respondent 7: Absolutely. There are so many ways that I think that people could do that and should do that. There's sort of a standard view that I don't think is entirely incorrect but I think it could be limiting, is that science establishes facts and art takes those facts and communicates them. Using textbooks that act as comic books, such as the graphic novel guides to physics and this could be a fun example of this and that's fine but I think that ignores a big aspect of the real power of art. I'm interested in understanding how art actually explores the universe and establishes new ways of knowledge in their own ways. I really believe that they do. Its easiest to see when you look at a social historical movement that's around a particular art, such as the development of jazz in the African American culture in America. This is a great example of something within that scheme when you talk to musicians and critics, there's this common understanding that artists over time were somehow, exploring and using their music to explore their world and to understand it and to create a new world view. There's something going on there, we're not trained to think that way and that's a challenge.

Hayley: Do you believe that there should be a larger focus on teaching with an interdisciplinary approach?

Respondent 7: Yeah I do. So much of it is about how you do it. I see it as a better world if children are doing more art making at a younger age. It's something that might help us get there but it also might just be something that's in this better world that is a reflection on the fact that we have a more integrated approach already with things like art and science. It's sort of part of a larger vision of reforming education, if we just instituted more other classes but kept this hierarchy on the ways we think about things and what we value. We want to teach kids that math and science are real and then the other stuff is kind of fluffy and we do it because we think it's

going to make them more cultured, so that kind of hierarchy might still lead to better outcomes but preserves this distinction that is still not necessarily healthy.

Hayley: Is there anything else that you would like to add?

Respondent 7: When I think about how I want my work to affect people, what I would really like to do is try to find a way to make work that gets people to essentially to a place of wonder, this is related to a larger philosophy that is influenced Zen Buddhism and by other philosophers. I'm working on this idea that one of the root causes of our problems in life is that we have an inappropriate relationship to ourselves in the world —comes from not being able to see how things really are.

To practice being in the world in a way that you are waking up to the world every day. My hope is that making art can contribute to that goal. There are a lot of opportunities for us to make music that allows us to open up to things more. A lot of our arts are developed to feel like they elevate the human coming from Renaissance and Enlightenment. I'm looking for a way to understand or redefine music making. Can we redefine our relationship to it so when we are making music that we are aware of that connection that we are making our music together with everything else. We think of it as solitary activity—but so many different things influenced my ability to do this—my professor who taught me, the material that my instrument is made out of that had to come from materials in nature. So many beings had to exist for me to be able to do this and that creates this feeling of connectedness & hopefully responsibility.

One of the things that I think is helping me is looking at these things in new ways. There is this Renaissance enlightenment movement. There is this sort idea that certain disciplines are privileged above others. Society is ordered in a certain way like that math and physics are real and then there are these other softer sciences that are maybe not as real and then you get into this idea of aesthetics which is way on the other side of the spectrum and is fluff. Its feelings, so its helped me to think about other philosophers and thinkers who essentially reverse that. Alfred

North Whitehead and Charles Pierce, they came to a position where they wanted to reverse that sense of reality and to understand primacy of aesthetics.

Respondent 8 : Sally Bozzuto, 2/7

Hayley: I know that you're the founder of Biome Arts and I was wondering if you could tell me a little bit more about this and about what first inspired you to want to get involved in the arts?

Respondent 8: That is a surprisingly deep and hard to answer question, because on the one hand I'm just like oh I think I just always knew that I was going to be an artist and that maybe it was just a foregone conclusion, but I also remember being in high school and trying to decide whether or not I would be a music major, or major in biochemistry. And I literally sat down and made a list of pros and cons of which one would be better for me and that's kind of how I arbitrarily decided. Then, I studied music and honestly I wish that I would have studied photography or visual arts sooner in my life because when I was younger I did some traditional fine arts like painting or drawing, but photography was never really a big option for me. I never was introduced to that as a younger person and I think when I came to high school that thing happens where you already have to be siloed like oh you're in music, you're in band, you don't have time for art class anymore. And I was busting my ass to take two math classes so that I could catch up to the smart kids and take calculus - looking back I'm like what a waste of my time. It was always like math and science are the things that are emphasized. My dad is a chemical engineer so science is very strongly emphasized and math, but I'm not particularly good at math, but I like, can do it if pressed, but I don't use any of those things on the regular, but science is still a thing that I'm still really interested in and I know that you're interested in this intersection of art and science, which is a thing that I think is a thread throughout all of my work and something that I am very passionate about. I think that a lot of artists are starting to do this kind of work. Back to my path, after I studied music for 4/5 years, I studied composition and I studied music education and I had a bit of an identity crisis mid-way through and I that's when I decided to study education because I wasn't sure if music composition was for me. I really valued that experience through, because it really taught me to think like an artist, and it definitely informed my practice today.

After I graduated, that's when I started taking photo classes at a small media art center in Pittsburg and that was where I learned things about photography. And then some years after that after I was teaching at that place, I decided to go to grad school, so that's when I came to New York in 2011 and I went to grad school at SVA and I studied photo video and between my first and second years at grad school I went to an artist's residency and that is where I met one of my colleagues who would later be one of the co-founders of Biome Arts with me, so that's kind of how that ended up happening and it's just one of those weird things that feels like it was weirdly destined to happen. I think about how different would my life be if I hadn't met that person.

Biome Arts is really founded on an interest in the intersection of ecology, technology and the third value is always taking a different name- like social justice is probably the biggest umbrella but its social justice / autonomy/ self-determination / activism in general. So, those are the things that were really interested in. It is funny sometimes being in a co-operative that is all about tech in some ways because I am in some ways very tech engaged. You know photography is a technology and like I'm primarily a lense based artist and my colleagues are sometimes a little more techy then me, but we work together to create collaborative installations that often act as platforms for other artists to engage with and make work. And we host events, we hosted a symposia. Our first project was in 2014, where we went up to the woods of the Catskill mountains and brought together like 12 artists, thinkers, makers and we had a small symposium where we discussed all of these topics and we built a small semi-autonomous structure in the woods that we wired for projection and that was our first project and we built an installation and that was in the structure that we built called the core, which is like a conversation machine where basically we built this little structure in the woods and then we had this column of fabric where –my colleague David Kim raised some live butterflies and we put them inside of this enclosure and then we had these projections on the wall that were like a mind map of our three values –technology, social justice, autonomy, and it was online, editable to anyone, anywhere in the world and what you do is you sit around the column in the space and the words are projected on the wall and on this translucent fabric and the butterflies are phototaxis, so they're drawn to the light and they become like living cursors where they float around and hover over different words

and change the flow of conversation and so that was our first project and we were just trying it out.

Hayley: Is there way to get involved with this organization?

Respondent 8: Well the structure of our collective right now has four core members and we have meetings where we discuss skills shared and what's going on. Right now, were trying to focus on who we are, what we are doing and what this means for the future. I'm very interested in creating an ecosystem of interested people to work on future projects. Our 2016 project was on Swale, which is a floating food forest which is made by Ray Madingley, who is an environmental artist as well. It's a forest of edible and medicinal plants and its asking the question 'what if everybody could have access to fresh food'. So the idea is that it's on barge, its mobile, it could go around to a lot of different places where people need access to fresh fruit and vegetables and everything is free. So, you can walk on Swale, you can pick any food you want for free. Its small scale to feed a whole community, but it's about the idea of what if there were 100 swales all docked along the banks of New York city and everybody could have access to these kind of things. So she's very interested in that kind of idea and she asked us at Biome arts to create something on Swale so we built another small structure called greenhouse theatre, which was the location for another data visualization installation we did called archive of the ecological future. And we also built a network of digital sensors to go into all the plants of swale, or into the bed to measure environmental data to measure moisture, temperate, wind speed, wind direction, etc. and then that information drove the visualization. So, we have a projection based light installation and there was some poetry based on some of the plants that were on swale and each plant was aligned with a certain community organization that has relevance to swale and to that plants specific. It would list the medicinal uses and then the organization or person and then there was some bit of poetic text that would follow along with it and then there was visualization which had to do with the wind speed or wind direction. That space we created was also a host to performances. We did a whole performance series, we did video screenings, we did workshops, we also had another artist create another sound piece based on the data that we gathered. It's

called Databell that artist is named Brian House and he took the environmental data and turned it into a chime that would chime every hour on the hour and the rhythm was based on the data.

Moving forward, were all in different locations so we don't physically meet in real life, we meet online. One of my collaborators is in Taipei, Taiwan, one is in San Francisco, I'm the only one in New York and my collaborator David Kim is in Providence. We're all very decentralized so making these big localized projects can be kinda hard when you're all in these different parts of the world, so our new project that were hoping to work on in the future will be about creating online toolkits for distributed collaboration which is basically the model we use and we notice that in all of our different local communities even though there might be different issues that different communities are facing, there's also a lot of similarities. So we're trying to get these online toolkits together to have different local communities to share with each other like online or skill sharing. For example, my colleague in San Francisco works with the anti-eviction mapping project and he noticed that a lot of the struggles that people are facing with housing in San Francisco is also happening in New York. So, sharing strategies for whatever issues that local communities are facing. So, that's what we're hoping to move towards.

Hayley: Do you find that any of your work serves to address issues surrounding the environment?

Respondent 8: It's interesting for me because I have this collaborative practice with Biome Arts and I also have an individual practice. To me, they're very integrated, but it can often seem a tough sell to the outside world. For me, even in my individual work, the intersection of art and science is always a through-line and I've done a lot of work in my personal practice around regenerative cycles of death and rebirth as told through substances like dirt, dust, living media and right now I'm working on this set of experimental phenotypes, which is like a 19th century printing process and also what I'm calling time maps which are essentially mark making. I'm using a pencil or a pen to make marks to map time and I'm basically tracing shadows as they move throughout the day as like a sundial type of thing and relating it to the passage of time. I'm

thinking of working plants into it because they're aggregates of light and time, but even if that's not a biological project, it's a physics project, and I always have some sort of scientific aspects to my work. Biological things have always been really interesting to me concerning the human body and the fragmentation of the human body.

I did this huge project on dust for many years and part of the thing that interests me about dust is its relationship to the human body and how it has this relationship to time and accumulation but ultimately I ended up taking it in a direction of these biological cycles. But I struggle with bringing in that activism element in my own work and I don't know that it's always present in all of my work and this is something that I'm thinking about moving forward. I think that it's also going to go in a more feminist direction, if you're working the body and you have a female body, everybody is like oh this is about feminism-its problematic having a female body because it is not the default. So that's an interesting nexus for me to explore in the future that I think would be relevant.

There are a lot of artists that are engaged in things like climate change and they go about it in a very different way where they're like oh look at these beautiful paintings of icebergs and it's about climate change and I struggle with that kind of work myself because it is engaging but I don't know if it's the most direct way. With biome arts, we're always trying to struggle with the way to bring in community members to engage with people and make something invisible visible or to draw attention to something. Like were pointing at a particular issue that we want people to think more about and I do think that aestheticizing can be a tool because if it's beautiful then people are gonna want to look at it and if it's interesting then people are gonna wanna engage with it so those are all kind of things were thinking about.

Hayley: Do you believe that there are benefits in combining the arts with other disciplines, such as science? How might this impact the education system?

Respondent 8: Yes, yes 100% yes! I could not believe in anything more. We live in an interdisciplinary world so why are there these siloes among disciplines in school. I understand where they come from to an extent and why they can be useful but I think if you're out in the world and you're encountering something you're not like 'oh I am only thinking about science'. That's not the way it is. For me as a person who is an educator I'm always thinking about how we can bring real life experiences like field work into the classroom and I think that's always the best teaching tool that are hands on where you can be doing something as close as you can to doing something that you would be doing in the real world outside of the classroom.

I also think it makes sense to have experts in things and one of the things that I struggle with as an interdisciplinary artist and as an educator who believes strongly in interdisciplinary practice in the classroom is that oh do I spread myself too thin, do I not have enough expertise in one thing? But I love nothing more than collaborating with another expert on something. I think that's super valuable, especially in the classroom. Like I have this idea about a lens based class that is about lens and the history of lenses and how important lenses are to the world because I'm trained in photography and video and I call myself an interdisciplinary artist with a specialization in lens based art. Lenses are how we know about everything in the world, everything really tiny to really huge is all based on lenses like microscopes, telescopes, everything. I would so love to teach that class with an optics professor because I'm on the outside looking in so if I had an expert who could collaborate with me and we could co-teach a class that would be so stunning.

I think that one of the most valuable things in any of this work is collaboration. Collaboration always brings like vibrance and something I call difference magic. I think it's a very useful term, it's like bringing people with different ideas and different backgrounds to the table and they're always gonna think about things and approach things differently and you always get a more vibrant and brilliant discussion because somebody else has a different experience to share or a different way of thinking about it and to me that's kind of everything.

Hands on experience, field trips, doing things out in the field, inviting in experts, having experts in dialogue with each other. All of those things are really good tools and are super important in academia. When you get so siloed you're cutting yourself off from a lot of other great things.

Respondent 9 : Cameron Davis, 2/12

Hayley: What first inspired you to want to get involved in the arts?

Respondent 9: When I was a child, maybe 5 or 6 years old, I was spinning and singing like little children do. There were these huge white pines wildly swaying in the wind... ones that I usually enjoyed climbing in wind storms. But on this particular day I was beneath their sway and their sound. As I spun around and around, I had one of those moments where you just dissolve – wind tree and I were one. When the feeling went away, I ran inside to pick out the notes of the song with the trees on the piano I wrote down the notation.

So, when I think about that moment and I feel like there was this very early impulse to come up with some sort of form around my experiences in nature. Later on I left music for painting, but it felt the same, that I wanted to. My mother was a musician and my grandparents and great grandparents were painters, so I'm not sure how much is nature and how much is nurture.

Hayley: Are there any major themes that present themselves throughout your work?

Respondent 9: Absolutely, my work has always been about perception of presence in nature. Different series concentrate on different themes within that framework, but the work always returns to that perceptual moment of feeling the aliveness in nature.

Hayley: I saw on your website that you are interested in the intersection of ecology, social and environmental justice and art. When creating your art, do you think about how it will affect/change people's opinion towards the environment? Can it be used as almost a form of activism?

Respondent 9: Its changed over the years, sometimes I very specifically have worked on community art events like the celebration of the Earth Charter project, which was looking at the interdependence of ecological integrity, social justice, economics and peace and how art might

motivate change. I co-created the project with artist Sally Linder where we consciously used art to create awareness of this international document through the the Temenos Book Project.

Another example of using art as an activist tool was the use of *Waxwing Medicine*, 20 drawings on sheer fabric. The drawings were composed into ten different installations meant to inspire walkers participating in the first climate activist event in history, “The Road Less Traveled: Vermonters Walk for a Clean Energy Future – with Bill McKibben – a 60 mile walk from Ripton to Burlington, Vt. Waxwings are the symbolism is that transitions can come gently. They also live in social communities that support and feed each other even communicating sources of food to other birds. This seemed like an appropriate message for the walkers

The work has always had a philosophical, perceptual blend. Specific issues might prompt an emotional response that then stimulates a painting, whether that’s the monarchs dying off again, or the honey bee collapse. Issues can prompt a body of work.

I used to feel like there was more and more of a category of environmental art or ecoart, but the deeper you go into ecological thought, which is relational thought, everything is in relation, and I find even those definitions boundaries start to dissolve. I actually feel like the act of painting with its responsive, improvisational nature itself akin to evolutionary process of emergence. That, plus I feel like fundamentally, what I’m doing is trying to find the same sort of stream of connection with presence in nature, just trying to find that presence. And so, I’m letting go maybe-it’s not about illustrating an environmental issue; it’s not about that one to one because what’s interesting is even what you don’t know when you’re painting. But the only thing I am personally motivated by is what we think of conventionally as nature and knowing myself as being in nature also. That’s the only thing that I’m interested in painting. But I don’t know if someone feels that love of presence or vitality or aliveness.

I had one person last summer at Princeton tell me ‘I would rather just go outside’ and I’m not trying to substitute. It’s just an act of sustained conversation of what my experience is when I’m in nature is what happens in the form of a painting. It’s the form of feeling and its spurred by ideas and spurred by perception, but it’s not a one to one like just illustration.

Hayley: Do you believe that there are benefits in combining the arts with other disciplines, such as science? Would you ever consider co-teaching an art class with someone who has a background in a different discipline such as science?

Respondent 9: Of course, I've been arts and ecology themes here at UVM since 1998 – sometimes cross-listed courses through the Environmental program and through the Rubenstein school and currently has 1/3 of my ARTS 012 Perspectives on Making with the Department of Art & Art History.

Hayley: In the current state of environmental uncertainty, there is a growing need for effective communication among people of all disciplines. In my work, I am looking towards how culture and the arts have worked together to address current environmental issues. In your experience, what do you believe are the benefits or drawbacks of being an interdisciplinary artist?

Respondent 9: The invitation of this critical time is enlist all of capacities, rational and intuitive. If we are only looking to rational our capacities, we negate this whole other realm humans possess for of reflection, intuition, meaning-making, and future visioning. So, it's a real misunderstanding to not include intuition, imagination and creativity as important players in our survival.

And I love Nora Bateson, one of Gregory Bateson's daughters. (I am paraphrasing, maybe not exactly accurately). She talks about relational thinking and she is saying how the place where we even learn relational thinking is in the arts, because it's the place where ideas and intuition, content and interpretation co-arise into form. It's a way to begin to understand this interdependency of factors.

Hayley: Do you believe that there should be a larger focus on teaching with an interdisciplinary approach?

Respondent 9: Absolutely. Heartbreakingly yes. And the university is trying; it just keeps hitting obstacles. Some of it is just the mechanism of how you would go about funding these collaborations across the disciplines. I think everyone, especially the outgoing President Sullivan, the Dean of CAS William Falls and the Associate Dean Kelly DiDio have been very supportive of the idea.

It is so necessary to understand relational thinking and I have studied in this place called Schumacher College. All the courses are based in whole and relational thinking, Art, science and intuition are seen throughout its offerings. So, the outer being science and the inner response, be that psychological, spiritual, intuitive- all those things that the realm of meaning. What do we bring to our science, to our engineering, to our technologies, and it's a pretty special place because of that, so there are arts and science there.

Hayley: Do you find that any of your work serves to address issues surrounding the environment or do you typically focus on one specific aspect?

Respondent 9: So, some specific issues surrounding the environment that I have looked at include the monarch butterfly near extinction, Prayer for the Monarchs, the honey bee collapse Devi Prayer, the strange blackbird die off in Arkansas, Blackbirds Singing in the Dead of Night, the ravage Boreal forests of the Alberta Tar Sands, in Tar Sands Tonglen, issues of clean water in Vermont and globally through the series of paintings and objects, Airs, Waters, Soils (Places), issues of perception and place through the Orchard Project. ... so yes, all of my work is framed within the entanglements of earth, place, culture, climate, perception and meaning.

Often, a specific issue in the environment will stimulate a painted response. For 25 years, I painted non-objectively, so it didn't look like anything, it was completely about the feelings of being in mountains and loving that and caring about what is that sublime feeling. But then when I went to Schumacher for college in 1998, I worked with Jungian psychologist James Hillman and it was like I opened my eyes and I started using imagery that I was observing as well as what I was feeling in particular places --- outer references with inner experience.

I wrote a catalogue essay for painter Sally Linder I made the statement that I think even when we paint the landscape at this stage in the game, whether we are conscious or not, there is a kind of anxiety in the forefront or unconscious periphery that affects the images we're making. And even if it's painting is an act of noticing, love or savoring – that we can think of it as ecological practice a practice of the senses which brings us out of our rational and virtual vistas as philosopher David Abram says, and into the world.

I'm trying to use visual language that is honest to my experience, which is huge and is connected to my embodied earthly experience --- it could be someone's definition of the sacred.

I am constantly thinking about how do we live and talk about these times without going into personal collapse. How can we look at our grief and fear for the unraveling, while also recognizing all the parts of life that are still delightful and not taint those moments with judgement or guilt? I have recently been looking at various thinkers who look at the merits of how uncertainty brings us to the present, (Buddhist Ecologist Joanna Macy) or the gift of precarity that might open us to curiosity and possibility (Anna Tsing, *The Mushroom at the End of the World, on the Possibility of Life in Capitalist Ruins*), the sense of renewal and a way of thinking revealed in the Regenerative Cultures work of Daniel Christian Wahl, and lessons from complexity theory, evolution and emergence for possible reworkings of the status quo and predictive modeling into yet to be known manifestations. I find these ideas fuel my process of painting. The paintings don't have overt references in terms of imagery. Rather the process of improvisation feels akin to the phenomena of emergence. "In philosophy, systems theory, science and art, emergence is a process whereby larger entities, patterns, and regularities arise through interactions among smaller or simpler entities that themselves do not exhibit such properties. (Wikipedia). When things are going right in the painting process there is a feeling of catching a glimpse of how everything works with everything else with new configurations surprising. In this way painting can be thought of as an ecological practice, an echo of our mutual entanglement with all of life's evolution.

Respondent 10 : Courtney Mattison, 3/4

Hayley: What first inspired you to want to become an artist?

Respondent 10: I was an artistic kid, but I didn't grow up knowing that I wanted to grow up and be a professional artist. I was always fascinated with the combination of both art and science, and it took me a little while to figure out how to make a career out of it. When I first started taking classes in both ceramics and marine biology as a student at San Francisco University High School, sculpture provided a way for me to visualize the creatures that I was studying in three-dimensional space. I am a visual learner and could better understand the anatomy and behavior of coral reef organisms by sculpting them. My work began to evolve from anatomical studies into more large-scale, representative installations when, as a student at Skidmore College, I visited the Great Barrier Reef for nine months during my semester abroad at James Cook University in Townsville, Australia. I fell in love with coral reefs while scuba diving among some of the most beautiful and healthy examples in the world at that time, and simultaneously took a series of marine biology classes that emphasized the threats to coral reefs—namely from climate change, ocean acidification, overfishing and pollution.

During my time in Australia in 2007—well before the catastrophic coral bleaching events that have made recent headlines—it broke my heart to learn about the current and predicted effects of climate change on the marine environment. Understanding that something as exquisite and otherworldly as the Great Barrier Reef could be deteriorating so rapidly because of human activities motivated me to use my sculptural work for more than my personal interests in reef ecology. From those formative months I emerged motivated to dedicate my life's work to bringing the impacts of human activities on the marine environment above the surface and into view through my art. My goal now is to make people appreciate the fragile beauty of coral reefs and empathize with the threats they face in ways that inspire us all to change our behavior.

Hayley: Are there any major themes that present themselves throughout your work?

Respondent 10: Nearly all of my work to date explores the impacts of climate change on the ocean—the cradle of life on Earth. Works of art can simultaneously spark viewers’ interest in the beauty of the natural world, highlight the threats we impose on it through our greenhouse gas emissions, and inspire a sense of hope that through urgent action humanity can still bring climate change under control. As a ceramic sculptor with a background in environmental science, I believe art can be a powerful communication tool to help us better understand the natural world and remind us what we stand to lose to climate change if we do not urgently enact solutions.

It can be a challenge for people to visualize climate change, but coral reefs offer an amazingly clear solution: they bleach. Reef-building corals are so sensitive that the slightest alteration to the temperature of the seawater that surrounds them can cause total devastation. Under the stress of warmer seawater, corals expel the colorful symbiotic dinoflagellates called *Symbiodinium* that live within their tissues. In turn, without the dinoflagellates’ photosynthesis to feed them, corals typically starve and die. Corals can recover from bleaching and reverse the process by being re-colonized by their symbiotic food source if the stressor (temperature) normalizes quickly enough, but bleaching can also lead to coral death, algal domination and reef erosion, not to mention the gradual destruction of a complex hideout for countless fish and invertebrate species that live among the corals—like a city going bankrupt and letting its buildings fall apart.

Hayley: Do you feel that art is an effective method to get people engaged in their community?

Respondent 10: We protect what we care about, and we care about what we know and understand. Art has a unique power to influence how we understand our lives and our planet and can make us connect emotionally to concepts or environments that we would otherwise ignore. Art can bring the plight of coral reefs, for example, above the surface and into view, making us appreciate their fragile beauty and empathize with the threats they face in ways that drive us to change our behavior.

Art affects us emotionally in a way that scientific data often struggles to. When people look at a graph showing rates of global warming over a period of time, that information means so much less on a personal and emotional level than seeing a work of art that translates those data in a visual, aesthetically powerful way. Art can make us see the world differently and can make us connect in unexpected ways to the natural environment that we rely on for life and that we impact every day. Art has huge power to inspire people to change their lifestyle choices and become more aware of how they're connected to everything else.

Hayley: In the current state of environmental uncertainty, there is a growing need for effective communication among people of all disciplines. In my work, I am looking towards how culture and the arts have worked together to address current environmental issues. In your experience, what do you believe are the benefits or drawbacks of being an interdisciplinary artist?

Respondent 10: I already touched on a lot of that above, but I will add that I think of art and science as two ways in which humanity explores and explains the world. Artists and scientists actually have a lot in common: they thrive on a shared sense of curiosity about the world and work to form a better understanding of it. Not all artists care about science and vice versa, but both artists and scientists use creativity to come up with solutions to questions about the world, often developing meticulous techniques to achieve answers to these questions.

Clearly I think that being an interdisciplinary artist is wonderful and important, with potential to harness the power of both art and science to inspire people to see the world differently. As a graduate student when I was still figuring out how to be an interdisciplinary artist (as most of my background was in science), I did run into lots of people who didn't consider me part of their tribe; my peers in marine conservation science and policy considered me an artist, while my art student peers at RISD considered me a scientist. I didn't fit cleanly into one box or the other, so people I decided I was the other. But that experience only challenged me to get better at

explaining what I do and define my own path. Without that process I would never have become successful doing what I love.

Hayley: Do you believe that there should be a larger focus on teaching with an interdisciplinary approach?

Respondent 10: Definitely! The ivory tower mentality of many academic institutions has caused the fields of art and science to grow apart in what I consider unnatural ways. They've become isolated from one another. I don't want to generalize too much, but many science students have been encouraged to specialize and subspecialize so intensively in one particular field that even their peers in the lab down the hall can't understand their discoveries, and the researchers themselves have trouble explaining their findings to the public. Many art students have been encouraged to create art for art's sake that is divorced from any didactic, moral or utilitarian function. Ceramics students in particular, who are often thought to be studying and creating works of *craft instead* of works of *fine art*, often become even more isolated by delving into conceptual projects that manipulate the properties of their medium—clay and glaze—in a microcosm that often avoids creating a conversation with the greater art world, not to mention the scientific community or society at large.

I feel fortunate that I attended Skidmore College because their liberal arts approach to teaching is based on interdisciplinarity. Without the freedom to explore different subjects that interested me and figure out how they fit together, I think I would have felt pressured to pick a more traditional career path that wouldn't have been as fruitful—or fun.