

The Emerging Role of Artists in Co-Creation of Climate Adaptation

Die wachsende Rolle der Künstler bei Mitgestaltung an die Klimaanpassung

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Abstracts

The impact of rapid climate change presents unprecedented and complex challenges for public leaders and the citizens they serve. For this reason, communities require new solutions in climate disaster mitigation, education, and response. Through the lens of co-creation and co-production theory, this research investigates the emerging role of artists as co-creators of climate change adaptation strategies. We build upon the knowledge that artists are engaged in many dimensions of civic work (homelessness, transportation, inclusion) and that there are benefits to creative practices as a strategy towards building resilience to natural disasters (VAN LOON et al. 2020). Still, the roles, responsibilities, and outcomes of arts-based social change work vary widely depending on the community, scope, and context in which the artist is engaged. We examine representative cases to develop a typology of artist engagement in the context of climate adaptation, with a specific focus on water-related hazards. Our findings suggest a developing role for artists as citizen actors in climate change adaptation, with the unique ability to contribute to awareness and mitigation efforts prior to a climate disaster. This research fills a gap in knowledge and outcomes of artists and governments as co-creators in the realm of climate adaptation and resilience.

Die Auswirkungen des Klimawandels stellen die öffentlichen Entscheidungsträger und die Bürger vor komplexe Herausforderungen, weshalb neue Lösungen zur Eindämmung von Klimakatastrophen benötigt werden. Mit Hilfe der Theorie der Ko-Kreation und Ko-Produktion untersucht diese Studie die Rolle von Künstlern als Mitgestalter von Strategien zur Anpassung an den Klimawandel. Der Beitrag geht von der Erkenntnis aus, dass Künstler in vielen zivilgesellschaftlichen Bereichen tätig sind und dass kreative Praktiken zur Stärkung von Resilienz hilfreich sind (VAN LOON et al. 2020). Dennoch variieren die Rollen, Verantwortlichkeiten und Ergebnisse kunstbasierter sozialer Veränderungsarbeit stark, je nach Gemeinschaft, Umfang und Kontext, weshalb repräsentative Fälle untersucht werden, um eine Typologie des künstlerischen Engagements im Kontext der Klimaanpassung zu entwickeln. Die Ergebnisse deuten auf eine wachsende Rolle von Künstlern als Akteure bei der Anpassung an den Klimawandel hin, da diese in besonderer Weise zur Bewusstseinsbildung beitragen können.

Schlagworte / Keywords

artists/Künstler, social change/sozialer Wandel, government/Regierung

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1. Artist and climate change

Climate change and human-induced stressors explain increased water-related hazards worldwide, including a 134% increase in floods and 29% increase in duration of droughts since 2000 (WORLD METEOROLOGICAL ORGANIZATION 2021). Winsemius et al. (2018) examine the relationship between people living in poverty and natural disasters and found that “poor people are often disproportionately exposed to droughts and floods, particularly in urban areas” (328). Additionally, these authors note that increased climate change will impede solutions to alleviating poverty (WINSEMIUS et al. 2018). For this reason, water management is a top priority globally, yet many countries lack the ability to forecast and monitor water-related risks (WORLD METEOROLOGICAL ORGANIZATION 2021).

Climate adaptations are the adjustments to ecological, social, or economic systems in response to current and future impacts of climate change (UNITED NATIONS CLIMATE CHANGE 2022). Adaptation strategies are wide ranging and could include revised communication systems, physical infrastructure, consumption habits, and organizational and government policies (UNITED NATIONS CLIMATE CHANGE 2022). The United Nations Climate Change Regime embraces four components of the adaptation cycle: Assess impacts; plan for adaptation; implement adaptation measures; and monitor and evaluate adaptation (UNITED NATIONS CLIMATE CHANGE 2022). Climate adaptation is not limited to global policymakers, however. For example, Mees et al. (2018) discuss the need for holistic flood mitigation strategies that extend beyond the abilities of policymakers, including an increasing contribution by diverse actors and citizens to prepare for and assist with emergency services.

Art and artists have always inspired and contributed to social change. Some arts-based social change work focuses on the natural environment, including climate adaptation and resilience. Artists have already established a role in bringing awareness to climate-related problems through their work and participating in recovery efforts through fundraising events, for example. There is room, however, to expand their role in mitigation, education, and policy solutions, especially prior to climate-related disasters. In an examination of creative practice as a tool to build resilience to natural hazards, Van Loon et al. (2020) found an increased number of research studies on creative practices connected to environmental hazards, health, and social and economic equality. Of the near-

ly 270 papers in the sample, 18% were related to climate change; 15% related to environmental management; and 1-3% on natural disasters (VAN LOON et al. 2020: 456f.). A subset of these papers focused on water resources in the Global South and revealed a gap in instances when creative practice was used to both raise awareness and instigate action for improved preparedness and recovery (VAN LOON et al. 2020: 459).

Emerging arts-based social change work includes formalized partnerships between governments and artists to effect social change. Common organizations of these relationships include governments employing creative or arts-based practices; government-nonprofit partnerships, and artists embedded into government (TAYLOR 2021). In each, artists or citizen-artists contribute to both problem definition and solution in the public realm. Although the organization and implementation of these programs vary, the application of arts-based practice in government services offers unique advantages and ways of thinking in program design, implementation, and acceptance (HALE/WORONKOWICZ 2020). And importantly, some find arts-based practice is more pleasurable or appealing to citizens as compared to more traditional means of influencing public behavior (SOMMER 2014).

Co-production literature contributes to the notion that artists are involved in climate adaptation solutions in new and meaningful ways. This research advances the many instances of artists contributing to policy solutions as co-production. Co-creation refers to citizens (or groups) involved in the planning or initiation of a public service. Co-production is differentiated by some (BRANDSEN et al. 2018) to mean citizen involvement in latter parts of service delivery (such as implementation). Unlike public-private partnerships and cross-sectoral collaboration where governments collaborate with nongovernmental organizations, co-creation is often differentiated by the work of citizens or groups of citizens as the end users (BRANDSEN et al. 2018). However, some adopt a broader view referring co-production and co-creation to the involvement of general stakeholders, which could be citizens, communities, public-private partnership, and actors from diverse, relevant sectors (BRYSON et al. 2017; KLIJN/TEISMAN 2005). For this research, we embrace co-creation and co-production to refer to the process including actors “who are not in the same organization” (OSTROM 1996: 1073).

Still, there is limited research that identifies artists (as opposed to citizens) as co-creators in public service delivery. This research poses several questions to examine artists’ unique ability to be defined as co-creators in climate adaptation:

- How do artists engage as co-creators with public agents to advance climate adaptation?
- What are the structures, institutional arrangements, and processes that support artists as co-creators in climate adaptation?
- How do artists contribute to problem definition, solutions, and policy change in climate adaptation?

Examining the potentiality of artists as co-creators in climate adaptation, we offer an overview of co-creation and co-production literature that may be more formally adopted in arts-based practice. Then we examine three cases of arts-based climate adaptation projects through the lens of co-creation theory. Analysis is based on data collected using priori constructs developed from co-creation literature. Based on an analysis of these data, we draw conclusions across cases to identify the ways in which artists act as co-creators in climate adaptation. In summary, we highlight the emerging role and unique contributions of artists as citizens, co-creating with the public sector, to address complex global challenges.

2. An Emerging Role for the Arts in Co-Creation and Co-Production

The notion of co-creation and co-production originated as part of public management and policy literature concerning service delivery. The term *co-production* first appeared in the 1970s and refers to the participation of citizens in the creation and production of public goods and services (BRANDSEN et al. 2018). More specifically, co-production, according to Ostrom (1996), points to the input process of goods or services with involvement of individuals outside of the providing organization. Since the 1990s, there is a renewed interest in the reexamination and further development of co-creation and co-production as part of the paradigms of new public management and new public governance where nongovernmental actors, stakeholders, and citizens are involved in public service delivery and policy making processes (CINQUINI et al. 2017; KLIJN 2012).

The terms co-creation and co-production are not well defined and are often used interchangeably (BRANDSEN et al. 2018; VOORBERG et al. 2014). This ambiguity is exasperated by the increased use of the terminology across disciplines (BRANDSEN et al. 2018). Others clearly distinguish the two terms, where co-creation refers to participation in the

policy input stage (the design and initiation of services), and co-production refers to service outputs and implementation (BRANDSEN/HONINGH 2018). Additionally, among existing public management studies on co-creation and co-production, more attention has been given to citizens as co-implementers, as compared to situations where citizens were co-designers or co-initiators (VOORBERG et al. 2014). Bentzen (2021: 6) embraces a more inclusive definition of co-creation, wherein, “all actors, relevant to solving a problem, should be involved in defining the problem, develop solutions, and implement them robustly”.

In the public sector, co-creation and co-production are attractive concepts because end-user feedback and participation contribute to efficiency and effectiveness of goods and service, thereby facilitating social innovation and public service reform (EVERS/EWERT 2021; STROKOSCH/OSBORNE 2021; VOORBERG et al. 2014). As Osborn et al. (2021) point out, beyond the improvement of service delivery, the key contribution of co-production is the creation of value, including positive user satisfaction and wellbeing, service outcomes, whole-life experience, increased capacity for future change, and societal (public) value. Cases of co-creation and co-production could be observed in health care, safety, education, natural resources, and infrastructures (BRANDSEN et al. 2018; OSTROM 1996). Brandsen et al. (2018) suggest the possible effects of co-creation in the public sector including increased or decreased trust in government, empowerment by citizens, service quality and effectiveness, and access of vulnerable groups to the benefits of the service.

In local government, co-creation and co-production play a growing role in public governance where citizens could actively engage in development planning or contribute to budget decisions (SIEBERS/TORFING 2018). Particularly, in urban governance, planners recognize the importance of co-design and co-production processes in local development by involving multiple stakeholders, such as local authorities, nonprofit organizations, academia, residents, and businesses (SCHLAPPA, 2017; WAMSLER, 2017). This may be explained by the fact that co-design helps improve the individual and organizational learning of participating actors in the public service ecosystem (OSBORN 2021). Despite these positive attributes, critiques of co-production include the potential exclusion of certain perspectives (LUND 2018; MERILUOTO 2018) and the imbalanced influence or conflicting interests between that of the organizational professionals and other stakeholders (SCHLAPPA/YASSAMAN 2018). In an examination of co-creation of governance

systems, Bentzen (2021) finds that the approach has benefits but is also resource demanding.

Select factors may contribute to the effect and outcome of co-creation and co-production. For instance, the relationship between participating actors and professionals is key (BRANDSEN et al. 2018). In other words, trust building is a critical element in co-creation and co-production endeavors. An example, in a small rural town in Italy, saw the long-term engagement of an academic partner, the local government, and citizens culminating to “building reciprocal trust and developing social capital locally” in which these partners reimagined the town’s future through a series of participatory design workshops (VERDINI et al. 2021: 73). Leadership is another factor in co-production, including power dynamics between professionals and other actors in facilitating shared leadership (SCHLAPPA/YASSAMAN 2018).

3. Arts-based Approaches

Arts and culture have long been recognized by their instrumental benefits and public value. For example, in education, art knowledge and skills enhance the cognitive process, thereby improving individual learning of non-arts subjects (HAMBLEN 1993). More recently, the worldwide crisis brought by the COVID pandemic has illuminated the indisputable public role of the arts and culture. As Meyrick and Barnett (2021) argue, the value of the arts and culture should be holistically evaluated beyond the instrumental framework. Accordingly, the idea of public value being “a social dialogue of the commons in which plural perspectives about what is of value co-exist in a non-hierarchy of proof” is applicable in understanding the value of the arts and culture (MEYRICK/BARNET 2021: 79).

This view of public value may help explain the increasing adaptation of arts-based approaches in participatory action research, which is a methodology emphasizing the participation of those being affected by research and highlights the collaborative and collective engagement of individuals in finding practical solutions to address issues in communities (REASON/BRADBURY 2008). In participatory action research, arts-based methods are recognized as an effective approach since they encourage creative thinking, often leading to better reflection of multiple perspectives (KUNT 2020). The collective reflectiveness enabled by creativity is especially critical in assisting communities to assess their

history and experiences because “a community can use art to introduce and distribute meaningful, topical themes to itself and its surroundings [...] artistic activity observes a community’s sociocultural environment and traditions, which can undergo transformations in artistic processes and affect the future” (JOKELA et al. 2015: 440f.).

Moreover, due to its potential in improving public value, arts-based co-creation has emerged to enhance delivery for health and social services (DAYKIN et al., 2017; SEGAL-ENGELCHIN et al., 2020). For example, as refugee crises intensify across the globe, Gross et al. (2021) highlight the positive role that arts service organizations could play in helping integrate refugees into the receiving country. This idea is built on the premise that arts organizations provide a space for mutual learning among the citizens and participating refugees. Their research results show that integrative arts projects featuring performances or exhibitions inclusive of topics of migration crisis or refugees as participants contribute to the improved well-being of participating citizens and refugees, thereby co-creating transformative value for society (GROSS et al. 2021).

As demonstrated in the fields of sustainable governance, climate, or environmental policy, enhanced learning could lead to co-creation or co-production of knowledge among scientists, policy makers, and stakeholders (COGGAN et al. 2021; FRANTZESKAKI/KABISCH 2016). Artistic activities can facilitate this individual and collective learning in the environmental context. In one case, researchers adapted participatory qualitative methods integrating with broad art forms, including photography, poetry and songs, and paintings, in their collaboration with indigenous communities in the exploration of challenges in preserving biodiversity (LOPEZ et al. 2018). Here, creative artwork by participants offered a channel for individuals to become self-aware of the community’s core concerns regarding conservation, and further catalyzed collective level reflections of the topic (LOPEZ et al. 2018).

4. The Role of the Artist

Among the theoretical developments and literature on co-production and co-creation, a limited number of examples accent the involvement of artists. For example, a multidisciplinary team of scientists and artists worked with four partnering organizations to identify community concerns through the collection of personal narratives of select local stakeholders as part of a climate justice initiative in France (BAZTAN et al.

2020). These collaborations resulted in a series of art performances and shared knowledge creation underscoring the apprehension related to longstanding non-climate social issues in the community, and how these concerns could be integrated in future climate adaptation (BAZTAN et al. 2020).

In a separate example, artists have played a part in the work of a civil society organization in the city of Marseille, where participatory art projects included underprivileged populations that were marginalized in the process of gentrification, and empowered them to reclaim the public space in their community (EYNAUD et al. 2018). Residents engaged in artists-initiated, artists-guided projects, including discussion, exchange, and debate in the art making process. These interactions foster an environment for collective creativity, building a shared space of socialization among the residents, artists, and professionals of the nonprofit organization. The co-creation process has been further broadened to another related collaborative community project involving other nonprofit partners, a group of architects, residents, a visual artist specializing in street art, and the city's urban department. This joint effort resulted in "the transformation of two green spaces into a shared garden and the creation of movable street furniture that could be integrated into the spatial characteristics of the space and supporting recreational activities" (EYNAUD et al. 2018: 628).

Artists taking an active role in social value creation is not a new concept. Still, artists are not explicit in the frameworks of co-creation or co-production, as compared to the utilization of the arts or arts-based strategies. The creative mind of artists proves to be a source of innovation for the public sector; an example is artists-in-residence in government. Broadly speaking, artists' residencies are "thematic [arrangements] with the artists in residency working with other artists, scientists, and professionals from a range of disciplines and sectors and/or working within defined communities on specific themes" (EUROPEAN COMMISSION 2014: 9). Artists-in-residence refer to embedding artists in non-art contexts in public agencies and offices (TAYLOR 2021). Objects of these residencies vary, from creating commissioned public art to more targeted goals of addressing social, political, or environmental issues. As noted by Taylor (2021), there are several contemporary examples of artists-in-residence in municipal government. Additionally, Hale and Woronkiewicz (2021) point out that artists contribute intrapreneurship in group problem-solving settings. In an experiment involving 49 public sector workers and 10 artists who were placed into treatment

groups (teams with artists) and control groups (teams without artists) to work on solutions for hypothetical public sector problems, this research found the groups with an artist demonstrated a higher level of creativity and novelty in their proposed solutions as compared to those without (HALE/WORONKOWICZ 2021).

In the examples of arts-based co-production reviewed for this research, public value of arts and culture is undoubtedly recognized. However, the public value of artists is not necessarily at the forefront of these discussions. Instead, in the limited cases that mentioned the participation of artists in the process of co-creation or co-production, artists are often considered a “professional” (versus a citizen), although they do not have an official role with the organization that provides the service. This phenomenon may be possibly explained by Carol Becker (1995; 2001) in her piece titled, “The Artist as Public Intellectual,” where she questions the traditional Western canon that downplays the potential role of artists as thinkers, leaders, and problem solvers.

In our Western consciousness [...] and unconsciousness [...] we do not have popular images of artists as socially concerned citizens of the world, people who could serve as leaders and help society determine, through insights and wisdom, its desirable political course. We do not typically ask artists what they think about social conditions or politics—the degeneration of our cities, our natural environment, school systems, or young people. We do not ask them to help solve these problems, even though problem solving and communication at the visual and spatial levels are much of what they are trained to do. Artists are also conscious of negotiating audience involvement and response, skills that are not taken into account when most people describe the work of artists. (BECKER 2001: 12)

When artists are involved in socially engaged practices through collaborations with non-art professionals and/or citizens, there is often detachment of artistic authorship because participatory arts are often appraised less in their aesthetic quality than their social and political impact (JOHANSON/GLOW 2019). This construction of value equates the contribution of the participating artists with aesthetic merits alone. It misses the qualities that could be derived from artistic development and professional fulfillment of the artists involved, the motivation of the artists in sharing their artistic skills, “the quality of [artists in] providing a forum for the exploration of broad socio-political issues, as the different perspectives that people bring provide a resource for new ways of thinking,” and the contribution of artists in bringing elements of play

to participants and communities (JOHANSON/GLOW 2019: 422f.). Citing Edward Said's discussion on the role of public intellectuals, Becker (2001) made an impassioned appeal advocating for a changing perception of artists as public intellectuals because many of them create work that speaks for multiple points of view, provides critique of society, and represents injustice. These views expressed in the literature point to the need to accentuate the role of artists as co-creators of public value.

5. Research Method

We examined three select cases to understand the ways in which artists have engaged as co-creators. Specifically, we collected data from arts-based climate adaptation projects through related frames from co-creation literature (BENTZEN 2021; BRANDSEN et al. 2018). This method allowed us to offer a thick description, draw comparisons across cases, and expose gaps in which this work may advance and be more widely adopted. The three cases were selected because they similarly meet the standards of co-creation (BENTZEN 2021), but differ in that they are unique in scope, representing a local, national, and international example. The application of the co-creation theoretical framework allowed us to make generalizations from research that was otherwise exploratory in nature and contributed to internal validity and reliability (YIN 2018).

5.1 Data Collection and Analysis

We relied on existing documentation as evidence for each case; this included systematic internet searches for each selected case and use of the snowball technique to obtain related literature and documentation. This type of evidence was appropriate given our research questions that are focused on a description of artists as co-creators in climate adaptation. Yet, documentation lacks the insight of interviews or direct observation that could be employed in future research. After these data were collected, we first developed a complete case description which is a useful first step in case analysis (YIN 2018). We then mined each case and related documentation for components of co-creation theory as defined by Bentzen (2021) and Brandsen et al. (2018). Bentzen's (2021) frame relies on the actors and type of involvement of actors to determine a co-creation system, as opposed to a traditional system in the context of governance. Brandsen et al. (2018) provide the possible effect or impact of co-creation, including increased or decreased trust, service capacity,

and access. In the data collection process, we looked for intended and actual impacts based on this frame and other long-term effects. Additionally, we mined other descriptive data, including the project initiator, scale/scope, budget, and products, as these data were available. During the data mining process, we discussed each case to come to a resolution on classifications. After the data were collected and sorted according to our theoretical frames, we looked for patterns and unique characteristics across cases to reveal best practices and research conclusions.

6. Findings

In this section we offer a brief case description of each arts-based climate adaptation case used in this research. Following the case description, we offer a summary of findings based on our analysis through co-creation literature. Ultimately, data reveal that the role of the artist in adaptation is similar to that of the outside citizen in the co-creation process.

Enough Pie: Awakening V: King Tide, Charleston, South Carolina, USA

Awakening V: King Tide was a month-long project incorporating a wide variety of artistic activity designed to raise awareness of the significant flooding issues facing the city of Charleston, SC and its surrounding areas. The goal of the project was to raise awareness of the problem overall while also spurring action among both direct and indirect participants to “help people take personal, community and civic action to offset rising water” (ENOUGH PIE: 9). The project brought together hundreds of diverse partners including environmental groups, area schools, multi-disciplinary arts organizations, community centers, individual artists, private companies, governmental actors, higher education, and more. Collaboration was the key to the entire project and the initiatives were representative of that approach. It involved some large-scale efforts such as an immersive multimedia project, and an interactive parade designed to be a sister to the annual National Climate March in Washington, DC, but with a strong emphasis on creative expression. It also included place-based projects such as a 100-foot banner created by a local artist that highlighted Charleston’s ongoing flooding problems, and a large mural at an inner-city pool. In keeping with the mission of Enough Pie and the focus on minimizing barriers to entry, all programming was free and open to the public.

US Water Alliance and ArtPlace America, USA

The US Water Alliance and ArtPlace America partnership was launched in 2018 and motivated by the shared view “that arts and culture strategies have the power to transform the way the nation views, values, and manages water” (US WATER ALLIANCE 2018b). The subsequent culminating report, *Advancing One Water Through Arts and Culture: A Blueprint for Action*, emphasized the importance of “cross-sector capacity” to “allow for fruitful partnerships between water leaders and arts and cultural leaders and enable a robust field of practice to take hold in more communities across the country” (US WATER ALLIANCE 2018a). It is, as it sounds, a roadmap for action and includes multiple case studies of this cross-sector partnering throughout the country. In effect, the report lays out the path for collaborative creative engagement within the water management policy realm while highlighting the impact such involvement is likely to see on a community level. Additionally, the US Water Alliance has used this partnership, which ended with the scheduled dissolution of ArtPlace in 2020, as the jumping off point for current initiatives such as their Artist-in-Residence program (currently Benny Starr from Charleston, SC) and the Water, Arts, and Culture Accelerator which supports partnerships between local artists and public water utilities to address climate-related water challenges (US WATER ALLIANCE 2022).

Cultural Adaptations: Embedded Artist Program, International

Cultural Adaptations is an “action-research” project funded by Creative Europe (a program of the European Union) as part of a €199,999, three-year grant in 2018 with matching funds provided by the Scottish government. The goal is to understand the role of culture in climate change adaptation practices. The Embedded Artist portion of this project utilizes partners across four countries (Belgium, Ireland, Scotland, and Sweden) and is “focused on developing a new area of work for artists and the cultural sector and contributing to society’s work on climate change adaptation” (CREATIVE CARBON SCOTLAND 2018: 5). The role of the artist in this type of project is clearly differentiated from that of a traditional artist-in-residence in that there is a clear expectation that the artist takes an active leadership role in all aspects of the decision-making process from start to finish. Put simply, the role of the artist here is not necessarily to create art (though that is still a reasonable outcome) but rather to utilize their creative skills to help steer a deliberative body towards

creative engagement with a problem, or as *The Embedded Artist Toolkit* states “to apply the creative process and skills of artists—‘creative logic’--to a complex problem” (CULTURAL ADAPTATIONS 2021: 9).

Resulting embedded artist projects include Creative Carbon Scotland (project lead) with Sniffer and the Climate Ready Clyde Project; Axis (Ireland) with Codema, Dublin’s regional energy agency; Greentrack Gent (Belgium) with the City of Ghent local authority; and TILLT (Sweden) with the City of Gothenburg local authority. Thus far, the results from these projects have led to the creation of two overarching toolkits embodying best practices and lessons gained (*The Embedded Artist Toolkit* and the *Adapting Our Culture Toolkit*), multiple transnational partner workshops, and a recurring international conference.

	Enough Pie	US Water Alliance & ArtPlace America	Cultural Adaptations
Scale/scope	Local	National	International
Actors involved	Nonprofit Organizations (Arts, Environmental, Preservation, Social Service); Governmental (Local, State, National); Educational (Public, Private, Public/Private Partnership); Individual (Artists, Advocates, Educators)	Nonprofit Organizations (Arts, Environmental, Advocacy); Governmental (Local); Individual (Artists)	Nonprofit Organizations (Arts, Environmental); Governmental (Transnational, National, Local); Educational; Private Business; Public/Private Partnerships; Individual (Artists, Advocates)
Project initiator	Enough Pie	US Water Alliance & ArtPlace America	Creative Europe and Scottish Government
Project leader	Enough Pie	US Water Alliance & ArtPlace America	Creative Carbon Scotland (NGO)

<p>Time and level of involvement</p>	<p>Continuous: Multiple actor involvement by design</p>	<p>Continuous: Multiple actor involvement by design</p>	<p>Continuous: Multiple actor involvement by design</p>
<p>Power (shared, distributed)</p>	<p>Individual artists determined projects within issue definition parameters.</p>	<p>Partnerships built on shared power amongst all actors that resulted in foundational knowledge to share and distribute with others.</p>	<p>Shared power across actors, with an emphasis on the role of the artist as a critical thinker with fresh perspectives rather than solely concerned with an end aesthetic product.</p>
<p>In-tended impact</p>	<p>To change citizen and government behavior; To increase empowerment of citizens; To increase access for vulnerable populations.</p>	<p>To change citizen and government behavior; To increase empowerment of citizens; To increase access for vulnerable populations. To increase water-related service quality and effectiveness by partnering with local artists; To build trust with citizens by learning about community needs.</p>	<p>To change citizen and government behavior; To increase empowerment of citizens; To increase access for vulnerable populations.</p>

Tangible out-comes	Public artworks: Conversations, and demonstrations; Over 20,000 artist-designed “takeaways,” that provided information on lessening personal climate impact.	Blueprint report for future action; Artist-in-resident program; Support program (accelerator) for local artists partnering with public water utilities	Blueprint report for future action; Four embedded artist programs (Belgium, Ireland, Scotland, Sweden); Workshops; Transnational partner meetings; Large-scale international conference
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Table 1. *Summary Characteristics of Co-Creation in Climate Adaptation Cases¹*

After examining these three projects through the lens of co-creation, we offer commonalities that may be seen as ingredients for future arts-based or artist-led climate adaptation projects. As the project descriptions show, these cases differ in many ways, yet all share similar characteristics of co-creation. In each, nonprofit or nongovernmental organizations took the lead in organizing the co-creation process. Co-creation in climate adaptation was in-line with the organizations’ charitable missions (for example, civic engagement) and advanced action towards a complex public issue—climate change and resilience. Here, we highlight the elements that allow for contributions of the artist to both problem definition and policy solution, drawing particular attention to their involvement in front-end design rather than project implementation.

6.1 Actors and Involvement

Across the three projects, partners included nonprofit, governmental, and individual artists as well as multiple public or private environmental organizations, for example the National Oceanic and Atmospheric Administration and the Sierra Club, to name a few. Two projects extended involvement to educational and private organizations as well. These many actors—including artists—were organized as steering committees or as formal partners in each instance. The committee structure provides

1 Elements of framework adapted from Bentzen (2021) and Brandsen et al. (2018).

an organizational form to multiple stakeholders (in some instances over hundreds of partners) under the direction of a leading organization. In the example from Charleston, SC, artists were at the forefront of the project throughout, but the associated partnerships were vital to the broader reach achieved and showed how easily these disparate groups could work together to influence a policy narrative.

In two of the three examples, a private nonprofit was the initiator and the project lead. In the international example, the project was initiated by a public-private partnership and then led by a non-governmental organization, Creative Carbon Scotland. In each case, the lead organization, with early and ongoing input from the multiple stakeholder groups, was then the implementor. Implementation varied across projects, suggesting artist co-creation in climate adaptation takes many forms. For example, projects ranged from public art and demonstrations to embedded artists or artists-in-residence with government agencies.

All three examples employed the continuous involvement of partners for the project duration. Bentzen (2020) defines continuous involvement to include diagnosis, solution development, implementation, and evaluation. Although our evidence did not reveal details on all phases of involvement for each case, documentation suggested that at least this was the intention. This was particularly clear with the international embedded artist example, where the artists' contributions were valued most, during the process, rather than with a particular artwork (CREATIVE CARBON SCOTLAND 2018).

An Embedded Artist is expected to contribute across all areas of the project, attending meetings, contributing to decision-making and planning, helping to solve problems and bridge gaps. Depending on the context, this may or may not result in the production of artistic objects or works: their contribution will consist of the process, not particular artworks. Their work requires buy-in from the most senior people involved in projects in order to influence decisions and bring about change at a strategic level. (CREATIVE CARBON SCOTLAND 2018: 4)

6.2 Outcomes and Impact

The unique organization and implementation of these cases yields various outcomes and potential longer-term impact. The work products are where these three cases are most dissimilar (in addition to scope). Long-term impact and desire for change, however, are similar across the cases.

In the local example (Enough Pie), outcomes included public artworks (sculpture, murals, poetry, photos, and paintings), community

events (artist talks, community parade, among other examples), and “artistic takeaways,” which were flyers that provided tangible action to lessen personal impact on the climate. Although Enough Pie was the organizer, artists and community members took the lead in designing these related project outcomes, with the ultimate intention of affecting personal, community, and civic action. This desired change was focused on water-disaster mitigation and awareness, as opposed to support or recovery post-disaster. Existing documentation does not include evaluative measures, so we do not know what longer-term impacts these efforts had on individuals and the community.

The national and international examples were larger in-scope, and both resulted in umbrella blueprints designed to provide clear guidance for those working to incorporate arts and culture in diverse projects impacting climate change in a multi-actor partnership model. On the national level, a blueprint report created by the US Water Alliance and Art-Place America fed projects that supported local artists working directly with water-related public utilities, including a formal artist-in-residence program. Like the local project, artists were valued in the planning and design stages of the initiative and valued for their nontraditional approaches to problem solving. “As creative thinkers and doers, artists can be powerful partners for water leaders seeking to reimagine traditional approaches to water planning and management and connect with communities in new ways” (US WATER ALLIANCE 2018a: 1).

On the international level (Cultural Adaptations), cultural organizations and embedded artists were first paired with an “adaptation partner,” essentially a local agency working to prepare their communities for climate change. “The Embedded Artist will make use of their relatively autonomous position as an ‘outsider’ to help to provide new ways of thinking, fresh perspectives and different approaches to the challenges of adapting to climate change” (CREATIVE CARBON SCOTLAND 2018: 5). The notion of the artist as an outsider is similar to the values about artists from the previous two examples and comports with the idea of outside citizens contributing solutions to public problems (OSTROM 1996). These four embedded artist programs were implemented first. The subsequent outcomes of these programs informed a future-oriented framework for best practices and comprehensive project development (Cultural Adaptations Toolkit), as well as ongoing projects and transnational conferences.

7. Conclusions and Future Research

This research addresses a gap in academic literature that connects arts-based solutions to public problems (such as artists embedded in government), co-creation theory, and environmental adaptation. The arts and artists have been contributing to discussions and solutions related to the environment for centuries and citizens are increasingly defined as co-creators in climate adaptation and other public-oriented challenges. As Heras et al. (2021) point out, within the sustainable scientific community, researchers are interested in the use of arts as a method to aid in the research process, but joint analyses of the studies by researchers, artists, and practitioners are still uncommon. To realize the potential of these actors in collaboration, there must be mutual trust and equal acknowledgement of the contributing parties. Adequate structural support, such as funding and distributed power and relationships, is equally key (HERAS et al. 2021). The examination of the three cases demonstrates that with appropriate partnerships and organizing structure, artists were supported to bring diverse qualities and new ways of thinking to climate adaptation projects. Our contribution positions artists as co-creators—bringing unique skill sets and perspectives to problem definition and policy solutions related to environmental adaptation and resilience.

We were particularly struck by the role of the artists—as opposed to arts-based strategies—in these cases. A unique feature of co-creation is the involvement of the outside citizen (BRANDSEN et al. 2018; OSTROM 1996). As we previously discussed in this paper, it is common for 1) artists to make contributions to social change and 2) for communities and governments to employ arts-based strategies. The projects in this research study differ, however, in that the artist was given a formal role and voice throughout the process, which is in-line with the role played by citizens in co-creation processes.

The immediate outcomes of each case were unique, but all positioned artists as change-agents working directly with public agents and systems to affect awareness, preparedness, and ability to manage climate hazards. We found different types of evidence, and in some instances little evidence, to understand the long-term impact of these cases. Across cases we were able to understand the project intention, however, including: to change citizen and government behavior; to increase empowerment of citizens; and to increase access for vulnerable populations (BRANDSEN et al. 2018). Building trust with citizens was only evidenced in the national example, where the US Water Alliance explicitly noted that

trust with citizens would be earned by knowing more about their needs related to water access (US WATER ALLIANCE 2018a). Although not an intended outcome of these cases, we considered the ways in which these significant contributions by artists to complex environmental issues will secondarily shift the narrative of artists' engagement in society. Artists' unique ability to cultivate new ways of knowing can result in outcomes beyond entertainment and pleasure and give meaning and applicability in broader contextual areas of civic and public life.

Still, our effort is exploratory and reflects on the potentiality of artists in this role. This research is limited to three case studies that were purposely selected to highlight artists co-creation in climate adaptation. Our resulting best practices may be applied in other projects, but the context, scope, and actors will vary. As such, this research has limited generalizability. However, our co-creation frame gave validity to our data mining and analysis process as we were able to compare similar components across the research sample. Future research includes defining the contributions and products of artist-citizens as compared to other citizens in the co-creation process.

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