



CASE STUDY

Climate Futures at Play: Performing Environmental Public Humanities

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Abstract

This article considers the role of the public humanities in fostering conversations about climate science and policy through a transdisciplinary performance at the University at Buffalo in New York. The Great Lakes Climate Theatre Initiative is a new project that brings together sustainability scientists with theater practitioners to create new and mixed methods for climate preparedness that are both inclusive and impactful. *Toward a Climate Haven* was the first project conducted by the initiative with the goal of exploring how Buffalo might become a safe and equitable destination for climate migrants. This first project resulted in a public event that combined the performance of a newly-commissioned play, a talkback session, readings from a local youth writing workshop, and a presentation from a local county official. In this article, our team reflects on how we brought these various threads together to leverage the public humanities in the effort to prepare for climate change.

Keywords: climate adaptation; environmental humanities; green theater; playwriting; scenography

1. Introduction

It is difficult to imagine climate studies as anything but public. Given the urgency of climate science addressing environmental problems and the activist impulses of ecocriticism, academic work on the climate crisis is inherently invested in having broader impacts beyond the academy. However, much work still remains to incorporate the approaches of the humanities and the arts into efforts to address issues such as the climate crisis. Approaching climate science as a form of public humanities presents possibilities for hosting conversations between scientists, policymakers, and the communities they are embedded in through creative projects. Our work bringing artists and thinkers together around a theatrical performance to engage the people of Buffalo, New York, in the planning process of climate adaptation may offer a model for others interested in creating similar projects.

The Great Lakes Climate Theatre Initiative (GLCTI) is an emergent group spearheaded by members of the Departments of Environment and Sustainability (EVS) and Theatre and Dance (THD) at the University at Buffalo. The initiative involves climate scientists, environmental humanists, and theater scholars and practitioners to deliver public programs that

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engage communities, both intellectually and emotionally, on the issues of ecological change and climate preparedness. The GLCTI advances sustainability science communication and green theater practice through our work. More than simply producing plays *about* climate change, our group has begun to create new methods for integrating theater into climate crisis planning and vice versa. We draw inspiration from the broad movement of eco-theater, which takes a holistic approach to theater-making and centers environmental justice in content, process, and production.¹ While eco-theater is nothing new, our project represents the embrace of theater by sustainability scientists as a *method* capable of contributing to climate planning efforts. Our emphasis on collaboration, both within and beyond the academy, resituates local theater and planning efforts from potential objects of study to key partnerships to build a stronger community. Our project is similar to and draws inspiration from other public humanities projects, such as *Imagining America*, which use the arts as a way to benefit communities.² Our project differs in the way it incorporates the sciences into such a project. Where many public humanities projects and eco-theater performances are grounded in community groups, few seek to intentionally include scientists in various stages of the dramaturgical process.

Despite dire warnings from the Intergovernmental Panel on Climate Change about the urgency of the climate crisis, action remains limited at both governmental and individual scales.³ It is not an uncommon question to ask why is it that with so much clear evidence of deleterious climate change, we continue moving closer to the precipice? While climate communication and education are organized around informing the public about the science of the problem, the issue remains deeply cultural as well as abstract and conceptual, or on a timeline that is simply difficult to imagine.⁴ (Does anyone really know what their life will be like in five or ten years, let alone twenty-five years?) Ecocritic Heather Houser has coined the term “infowhelm” to describe the dizzying effect of data on the environmental movement.⁵ She suggests that the narrative of a climate knowledge gap, while a useful starting point, is ultimately ineffective at building political momentum to enact change. Moreover, scholars have suggested that knowledge is necessary but insufficient for behavior change related to environmental issues.⁶ If the usual strategies for motivating climate action fall short, it is now necessary to seek out alternatives for engaging the public in conversations about how to meet the coming challenges that the climate crisis will pose. Surely, the ability of the public humanities to foster conversations among scholars, artists, and the broader public might be able to offer its potential to climate action.

Our project was motivated by what we perceive as a disconnect between scientists, policymakers, and the public that has resulted in a failure to implement meaningful climate action at any significant level. Typically, managers of infrastructure use standard twentieth-century notions of rational thought to effect change. In other words, they assume that when presented with a choice, their community members will systematically and rationally consider how resources are limited, time is short, and there are only a few possible ways to accomplish a goal. That is, policy is often written with the somewhat unlikely idea that most people will use logic and probability to make the “optimal” decision and adopt a proposed scheme, sometimes with incredible implications for day-to-day life.

¹ Superhero Clubhouse n.d.

² Haft 2012.

³ IPCC 2023.

⁴ Hoffman 2011.

⁵ Houser 2020.

⁶ See Colombo et al. 2023.

Rational choice theory expects that the public will initially resist change but later be convinced of its necessity, and dissent can be “argued away.”⁷ The challenge of large-scale climate action may therefore be a shift away from standard assumptions rooted in rational thought theory and toward alternative ways of engaging the public. Recognizing the need for faster and more readily accepted adaptation, some social scientists have turned to embodied rationality theory as an alternative to the logic-based models of decision-making.⁸ Embodied rationality uses collaboration and communication between those offering potential solutions and those who are expected to drastically change their behavior. The “embodied” part is the key: the engagement of a person through experiential activity of some kind, engaging people physically, intellectually, and especially emotionally when thinking about how to actually accomplish something in the real world.⁹

Even in the absence of such carefully structured social science experiments, we might guess from more classic works that immersive, experiential encounters would be a boon not only for better persuading the spectator but also for truly engaging them in possible outcomes and consequences of important public concerns. The view that performance-based communication is unusually effective was made clear by anthropologists in the mid-twentieth century, especially Victor Turner, who saw ceremonialism and ritual among tribal people as sensory-drenched performances that were a focal point for unity and purpose within a group, affirming and motivating socially approved action.¹⁰ David Liu Palumbo argues similarly that “it is in what is necessarily absented from the calculations of a rational choice theory that a literary account takes over, in the realm of the psychology of the other, in her or his reasons for different kinds of choices, based on perhaps different sorts of rationality and imagination.”¹¹ Today, we know from cognitive scientists that the wiring of the human brain causes us to be most attentive when emotions are engaged, especially during embodied, multisensory experiences of light, color, sound, and meaning.¹² Theater scholar Richard Schechner picked up this thread with his concepts of “the fan” and “the web” to connect the power of performance across time.¹³ His inclusive theory of performance linked ancient and modern rituals in which performativity drew in community members for religious or curative purposes to ancient theater which functioned to mark events and serve as forums for debate, to political theater used to re-enforce their power, and to modern theater, in all its forms and goals, with the ability to “transport and transform” the spectator.

Rather than thinking of the problem of climate change only through quantitative measurements of its effects, theater allows us to take those same measurements and imagine what they might mean for daily life. As water levels and temperatures change, humans will respond in several ways, including migration, policy, and ritual. As an art form, theater is uniquely situated for such work, as it offers a space to create sometimes fantastic but often plausible situations. The term ecodramaturgy was first used by Theresa May in 2010 and has since found traction with performance scholars and theater artists.¹⁴ While there are many fictional representations of the potential doom yet to be wrought by the climate crises, our recent work with theater artists and climate scientists suggests that the combination of the two may be key to thinking *with* communities about the climate crisis and climate action.

⁷ Manheim and Spackman 2022; Spellman and Schnall 2009.

⁸ Gefei 2023; Manheim and Spackman 2022; Petracca 2021; Spellman and Schnall 2009; Xu et al. 2020.

⁹ Xu et al. 2020.

¹⁰ Turner 1985.

¹¹ Palumbo 2012, 31–32.

¹² McConachie 2015; Whitehouse 2012.

¹³ Schechner 1974, 1988.

¹⁴ May 2010, 2017, 2022 ; van Baarle 2023; Schroering 2024; Woyrnarski 2020.

That is, it is not enough to list the data projections on the one hand or, on the other, to spectacularly represent the worst-case scenarios of increasingly destructive storms and other weather patterns in CGI-laden cinema. Rather, integrating theater and climate science allows specific communities to imagine what life might be like in a future that might still be changed today.

In what follows, we consider how the public can interface with climate science and the environmental humanities through theater and performance. In particular, we believe it will be of interest (and use) to scientists and artists who plan to collaborate on projects related to the climate in their communities. Our experiences have shown us that there is great value in connecting the public humanities and the sciences through art, and that doing so has increased the impact and importance of the project. At a time of sharp national divisions and mistrust of the scientific process, public humanities projects such as ours have the potential to model effective civil discourse.¹⁵ By connecting experts across our university to think through our most pressing environmental issues and interpreting their findings through theatrical performance, we feel we have met Kathleen Woodward's vision that such a project "reduces the distance between the university and life, and offers civic education for all involved."¹⁶ More generally, we hope others will gain a broader sense of how the arts and humanities and the sciences can work alongside each other and toward common goals, even with often differing methodologies and disciplinary assumptions.

2. Toward a climate haven

The work of the GLCTI involved a newly commissioned and performed play, a community workshop, and a symposium with climate scientists and theater artists. This first stage of our project, *Toward a Climate Haven: Preparing for Climate Change in the Great Lakes Region by Combining Performance and Science*, was a direct reflection of changes in the conduct of research over the last three decades. *Toward a Climate Haven* brought together climate science and green theater practice as a way to engage the public in conversations about climate planning in Buffalo, New York. While the natural sciences often relegate the value of humanistic approaches to communicating about science, our project is developing new methods for incorporating performance and creative writing into the processes of climate science and climate planning itself. That is, the arts and humanities are not merely mouthpieces for the sciences, but mutual partners in approaching the problems and potential ways of living with a rapidly changing climate.

Toward a Climate Haven is the result, but how did we get there? A team of PIs was assembled from the two departments. Expertise in anthropology and political ecology, sustainability leadership and climate change policy, environmental humanities, performance theory, and stage design (scenography) for new plays provided the foundation. The five PIs committed to biweekly meetings to flesh out a unique process for building a program aimed at improving engagement with climate issues at a local level. The group answered the call for an internal grant for project seed money encouraging collaboration from the arts and sciences. Through collaborative writing, the PIs generated a successful proposal that facilitated their mixed methods aimed to encourage adaptation to a changing climate.

We asserted that *Toward a Climate Haven* would address an imminent dilemma facing Western New York: the region is often referred to as a destination for individuals to escape

¹⁵ Leskes 2013.

¹⁶ Woodward 2009.

the worst effects of the climate crisis while its own climate becomes less predictable.¹⁷ We aimed to answer the question: how do we create a city that is both socially just and ecologically sound amid these changes – how might Buffalo build a haven for future climate migrants? Our project employed a transdisciplinary approach combining the expertise of sustainability scientists with that of performance scholars and artists to engage the public in dialogue to plan for the changes that lie ahead. We proposed creative and scholarly outputs that included experiential public activities, a festival of new theatrical works, a conference encompassing scientific, social, and artistic perspectives, a series of articles, and an academic volume on our topic. We were able to achieve a scaled version of these outcomes in our May 2024 program. Our process can be summarized simply as: think big and try to represent that big idea quickly! We have plans for future stagings of *An Unlikely Refuge*, the play commissioned for the project and written by Bella Poynton. We have also begun to think about other ways to produce new works. We are now networking with colleagues across the Great Lakes watershed and beyond to build our network as we seek further support.

One particular area that we see our work contributing to is the use of scenario planning for climate change adaptation planning. Scenario planning has been used by businesses, organizations, and even the military for decades as a tool to strategically plan despite uncertainty. Recently, scholars and practitioners have been adopting scenario planning frameworks for decision-making and more robust planning despite uncertain climate futures.¹⁸ We envision co-creating multiple plausible climate futures with local community partners for strategic planning purposes and using the power of performance to more effectively engage the public in the planning process. This could be a model for more meaningful, inclusive, and participatory climate adaptation planning across cities and regions.

The first thing we did with our seed money was expand our circle of collaborators. The budget was distributed to support honorariums for speakers, community artists, student participation stipends, and technical support. Colleagues from across the university joined us for our first co-curated public presentation, a mini conference, which allowed us not only to share our mission but also to gain knowledge of each other's disciplines through active participation in discussions we ourselves designed. Just as our own interdisciplinary conversations had been generative during the initial stages of the project, the diversity of perspectives included in the panel brought theater practitioners and climate scientists together and led to a discussion about the very idea of climate havens. The mini conference raised new questions about how science and dramaturgy mix (assuming they could), while helping the team to reframe the knowledge produced in our own home disciplines. In other words, by inviting guest speakers from very different backgrounds, we began testing the feasibility of using theater as a way to prepare for climate change.

The mini conference was an extension of our already fruitful interdisciplinary conversations. In the simplest terms, the novelty of this project was in bringing together diverse thinkers who otherwise would not be in contact. We identified experts who could help us as we consider the intersection of climate change resilience and green theater to join us for a hybrid event. The session, held on March 4, 2024, featured a mix of researchers, creative artists, and theater production practitioners. We heard from five experts including three professors and two industry professionals. The topics ranged from climate science and adaptation, geovisualization, sustainable art practice, climate theater, and Broadway Green Alliance (BGA) methodologies. The scientists in the room were struck by the power of

¹⁷ Marandi and Main 2021; Morris, Cousins, and Feldpausch-Parker 2023; O'Connell-Domenech 2023; Socio 2024.

¹⁸ See Goodspeed 2019; Serrao-Neumann and Low Choy 2018.

theater to communicate ideas and engage public audiences. The theater practitioners found inspiration in the scientific information presented. For example, conversations emerged about the representation of place through both the map layers of geovisualization tools and the techniques of scenography. The group spent a significant portion of the meeting discussing the very possibility of a place being a climate haven and came to a fuller understanding of how *all* communities have vulnerabilities to climate change.

The conversations at our mini conference also established norms for our collaborative workflow. When scheduling speakers, we staggered science and theater so that there would be no repetition of disciplinary perspective. This had the wonderful effect of helping our team, and the participants themselves, to see connections across the divide that they had not considered before. As we moved into the iterative process of commissioning and staging a play, we tried to maintain this balance. For example, our scientists provided feedback to our playwright during the drafting process. This back and forth may seem inefficient, but it was crucial to producing something that was both imaginative and scientifically possible. For us, interdisciplinarity does not mean losing one's own discipline. While we stepped outside of our comfort zones and tried other approaches, passing ideas back and forth across the art–science divide helped us to combine and enhance our individual areas of expertise instead of simply blurring boundaries.

The event was incredibly helpful as we prepared to engage a playwright to produce new work and set our efforts in motion for the first public performance in June. The information from the mini conference served as one source of inspiration for new dramatic work and how it would be made. The difficulty answering whether or not Buffalo was a climate haven – and if such a place was possible – was translated to the characters of the play as they navigate life in the city. Two additional sources included creative writing from an imaging futures workshop led by the team's environmental humanist and attended by young writers, and the other from local governance, the Erie County Climate Action Plan.¹⁹ Having a team member who was part of the Erie County Community Climate Change Task Force, who worked on the plan, meant there was built-in attention paid to what the play predicted and how it could help our region through the climate crisis.

This collection of knowledge and materials influenced what was to come, inspiring a three-part public program in May 2024. Two PIs met with playwright Bella Poynton whose work is influenced by science fiction and speculative fiction. They described the aims of the project, provided digital folders full of climate science resources and ethnographic research from the Buffalo area, and then remained in contact as the playwright developed a draft. While this work was underway, a production team including designers (sets, costumes, lighting, sound, and projection), technicians (set fabrication and theater rigging), and stage management assembled. One PI served as production coordinator and another as production director. With the help of stage management, local professional acting talent was contracted. A call for students to work as assistant designers, fabricators, and technicians was answered by theater design and technology majors and represented freshmen to seniors. At this point, the team had rapidly grown from five PIs to 46 collaborators (Figure 1). With this large of a team, previous experience in producing new works and the ability to establish positive working relationships quickly were key to success. Core members of the design team had extensive experience in creating designs for new plays and the undergraduate creative artists who joined the team had successfully held leadership roles in technical production during the Department of Theatre and Dance's main season, with all having been previously

¹⁹ Erie County 2023.



Figure 1. *Towards a Climate Haven* pilot project provided foundation for The Great Lakes Climate Theatre Initiative. The figure illustrates the subject area expertise that combined to inform and produce the public programs.

mentored by the designers of *An Unlikely Refuge*. The design team started from a foundation of well-established design practices for new works and student–mentor relationships, and therefore was positioned to make green theater practice paramount in the work at hand. The green theater values were experienced by professional actors, all of whom are highly regarded in the Buffalo theater scene. The expert company/stage manager was instrumental in engaging these community performers through steadfast communication as they worked in our university performance labs.

With many collaborators involved, from different disciplines, backgrounds, and experiences, the team had to overcome challenges related to balancing artistic freedom and creativity on the one hand and scientific context and plausibility on the other. The first play reading was an opportunity for the EVS and THD communities to come together around a new and shared object – the script – for which many on the team had provided resources. The development process opened the door for questions about the script and room for revision. Elements of the play such as timeline, temperature, and wildlife were adjusted to better align with scientific climate projections, whereas other aspects that centered on social and technological changes were given more freedom of the imagination. These discussions were key in developing work across disciplines. As Una Chaudhuri and Shonni Enelow remind us: “The first thing that makes climate change difficult to represent in art is the maddening fact that climate – unlike weather – can never be directly experienced ... Another way of putting this is that climate change belongs to a mode of unfolding whose features are inherently resistant not only to representation but even to simple, everyday, embodied observation.”²⁰ There was an iterative back-and-forth process between the

²⁰ Chaudhuri and Enelow 2014, 23–24.

scientists and the creative team to not only strike a balance between creativity and plausibility but to consider the ways that audiences might imagine the immensity of the climate crisis through what could be represented on stage.

In a short amount of time, playwright Bella Poynton's 15-min play *An Unlikely Refuge* received a full-mounted production. The play follows two climate migrants, a man and a woman, from their arrival in Buffalo in the fall of 2075 through four seasons in their new city. In the first scene, the audience learns that they are from Arizona and have been chosen by the climate lottery to relocate to Buffalo. The two characters marvel at all of the fresh water flowing in the Niagara River even as a man who greets them at the station warns them that they should not drink directly from the river, and that they probably would need to wash their hands after touching the water. It is the first hint that the climate haven is not a climate paradise or utopia. The second scene takes place in winter in the middle of a terrible blizzard. The climate migrants have lost power and are freezing. Luckily, help arrives when a snow traveler knocks on their door and installs an emergency heater. We learn that the heater runs on water, which is a bit of science fiction amidst a play informed by scientific climate projections and historic weather events in Buffalo (the deadly blizzard of 2022 is alluded to, for instance). This bit of invention in imagining technology fifty years into the future prompted discussion in the talkback following a performance regarding the possibilities and limitations of current and future technology amidst the climate crisis. Along with the lifesaving warmth, the snow traveler also delivers a chastising message about being prepared and reminds the climate migrants that a place can be a haven but still have problems. This echoes conversations related to climate havens regarding the planetary nature of the climate crisis and the notion of the tradeoffs involved has been another important point of discussion following performances.



The third scene takes place in spring and finds the climate migrants in a much better place. They are preparing for the spring water festival joined by another couple. They pour water from a shared bowl into glasses as they make wishes for the future. The four characters wish for peace, the safety of their child, a travel certificate, better jobs, to finish writing a novel, and to have a baby, among other things that give audiences a glimpse into a possible world in the future. They are familiar wishes but encourage the audience to imagine how these hopes and dreams might be different in fifty years amidst a vastly changed climate. In the last scene, a character is on a ladder working with tomato vines hanging from above. The characters discuss the summer heat and missing air conditioning and the floods of the 2050s, and now-rare fruit like bananas. The female climate migrant and her friend are interrupted by the arrival of a deer, which we learn are far more abundant now and bring with them more ticks and other pests. The climate migrant offers a tomato to the deer. The play concludes after she is complimented by her friend on the batch of tomatoes and she declares “we’re really starting to get the hang of it here.” It is a hopeful note that also acknowledges the work involved in day-to-day life amidst the climate crisis.

The play production itself and the design choices were driven by green theater practice. Inventories were maximized, new materials were limited, sustainable lumber was used, and digital scenery was integrated. The Broadway Green Alliance has a number of web-accessible guides that contain practical advice for greening the scene. In our production process, a few examples that take the lead from the BGA include reducing paper waste using digital scripts and digital playbills, increased use of LED lighting fixtures over instrumentation that uses disposable lighting filters, a move toward rechargeable battery use, and the incorporation of used set and costume materials to the greatest extent possible. The team framed the performance of the play through a presentation from the Erie County Sustainability Coordinator, recognition of young writers who participated in the workshop, and was followed by a question-and-answer period with the PIs and their production collaborators. We now look ahead. *Toward a Climate Haven* aimed to foster public engagement and planning through activities, theatrical works, and publications, focusing on creating a socially just and ecologically sustainable community in Buffalo, a projected “climate haven” for climate migrants. Our May 11, 2024, program was a first offering and a chance to workshop *An Unlikely Refuge*, which was further developed and included in a fall 2024 University at Buffalo College of Arts and Sciences event.

3. Mixing methods for public projects

This experience was unlike anything any of us had done prior and it required the creation of new methods to successfully engage our audience while remaining grounded in the latest scientific climate projections. In an inter- and trans-disciplinary experiment, we mixed methods to invent new ways to combine scholarship and artistry for the community beyond our campus. Up until the late twentieth century, the traditional three sectors of academia – natural sciences, social sciences, and the arts and humanities – were seen as antithetical in their modes of study, even as science has often found a public venue through performance.²¹ The call for increased interdisciplinary research and education is common at many institutions – particularly in fields related to sustainability.²² Following this experience, we are convinced that public humanities, and public scholarship more generally, is greatly benefited by bringing these different modes of research together. Indeed, the interplay of these

²¹ Conti and Appler 2022, 2023 ; Parry 2020; Tibbetts 1982.

²² Annan-Diab and Molinari 2017; Lang, Wiek, and Bergman 2012.

different approaches is generative of novel approaches to community-engaged climate adaptation.

Natural and Social Scientists use similar deductive methods based on the collection and analysis of data derived from the lab or field experiments. Some social scientists use qualitative data such as interviews and observation of human practices and material culture because of the way human sociality cannot be experimented upon – at least not within accepted ethical constraints. Beyond the sciences are the inductive methods of Humanism, evaluating the human condition through *texts*, performance, visual arts, and other forms of representation and cultural practice. While both the natural and social sciences operate by creating and testing hypotheses, humanists more typically identify a culturally and temporally specific case study and thoroughly analyze it (think close reading) to ultimately extrapolate meaning for the broader world.

These differences have been described broadly as opposites: sciences begin with generalities that can then be applied to cases, whereas humanities begin with specific cases that are eventually used for generalizations. During much of the later twentieth century, as part of the conflict between positivism and constructivism, it was believed that these differences rendered the three approaches incompatible, engendering debate and even mutual contempt: in many quarters, all-out war ensued over which method was “best” or most “valuable” and which were “worthless.”²³ In the 1970s and 1980s, a handful of scholars proposed that these methods could be complementary rather than at odds, and by the late 1990s, advocates were converging on an idea they called “mixed methods” research.²⁴ In the early 21st century, more formal mixed methods models appeared, using different approaches to answer different questions about the same problems, which together might resolve certain puzzles around human sociality. The new *Journal of Mixed Methods Research* launched in 2007, energetically announcing an era of research breakthroughs, “sharing ideas across disciplines, across philosophical and methodological boundaries, and among different cultures around the world.”²⁵ Since then, multitudes of proponents have used qualitative research to help explain quantitative findings. Collective, cumulative, and depersonalized data importantly reveal trends and patterns, but by their very nature are also dehumanized. Qualitative data concerning the same topic can add person-level perspectives back in.

Our team worked both deductively and inductively as we hypothesized outcomes for civic engagement and created meaning from scientific data through its transposition into performance. For example, “kicking off” a public humanities program with a conference that included guidance on sustainable theater practice as well as climate planning had a direct impact on production design. Set and costume designers, especially those who began working on storefront venues, regularly transform the ordinary into the extraordinary through designs birthed from repurposed thrift store finds. By embarking on a new design for *An Unlikely Refuge* with BGA principles in mind, the motive to repurpose shifted from “making theater magic on a budget,” to “making magic theater while creating less waste.” This shift in thinking rippled into the cast, as just by being a part of a climate play, one actor communicated to our talkback audience how they have been reminded to recycle. As the BGA states, “Each of us can begin by doing something to benefit our environment today, no matter the size of the action.” In addition to these green theater design principles,

²³ Lemke 1984; Tashakkori and Cresswell 1998; Tibbetts 1982.

²⁴ Tashakkori and Teddlie 1998.

²⁵ Tashakkori and Creswell 2007, 3.

collaboration with environmental experts made sustainability a driving force of play production. Even hiring local community actors was an important design decision as we wanted the play to be as representative of Buffalo as possible.

Mixed methods are difficult because of the varying assumptions, data types, and tools used by different disciplines. Our project leaned into this difficulty. By focusing on questions, we found our project to be a starting point for conversation. We offered more provocations for audiences than we proved any new concept of climate change. Our recent project was developed with an aim to approach a public that is frequently lectured with facts and figures about the climate crisis and impending doom scenarios, resulting in denial, desensitization, or unfocused anxiety. Our qualitative methods – a story, unique characters, and specific situations and throughlines – re-humanize and personalize the issues. Our expectations – hypotheses – were that this would create two outcomes: instilling a desire to take action when presented with opportunities and to replace feelings of powerlessness and hopelessness with the ability to imagine an optimistic future.

Mixing methods for this project involved an iterative process of conversations, sharing our disciplinary perspectives, and coming up with new ways to build a project together. We looked for resonance in the topics we each worked on and considered how our different skills and expertise could be leveraged to make something greater. To put it simply, we made room in our schedules to talk about the things we are passionate about. What this process really comes down to is an openness about new ways of doing. To successfully mix methods, collaborators must be ready to listen to one another and resist knee-jerk impulses, which put us back into our own boxes. Our team became so practiced at learning from one another that by the time our large public event ran in May, we each were comfortable discussing climate change with others and shed our expectations about where new insights might come from. During the question-and-answer portion of our event, the conversation was natural and flowed across generations. Problem-solving public humanities are possible and most effective when organizers do not see themselves as experts simply conveying information to an audience, but as active collaborators *with* that audience, inviting them into ongoing dialogues, and giving them a place to be heard – just as we did for one another.

Kacey Stewart is a writer and educator interested in how storytelling and other creative arts shape human understanding of environmental issues. He recently completed a postdoctoral fellowship in the University at Buffalo's Department of Environment and Sustainability and currently serves as Program Director for Health, Wellness, and Climate at D'Youville University where he is building a new interdisciplinary master's program. He is currently working on a book about the Susquehanna River combining memoir and environmental history to explore the many kinds of energy a river can provide. He holds a PhD in English from the University of Delaware.

Dr. Susan Spierre Clark is an Assistant Professor of Environment and Sustainability at the University at Buffalo. She is also the Director of the Master's in Sustainability Leadership and the Edward J. Kikta Jr. Innovation Professor of Experiential Learning. Dr. Clark's expertise and experience span the topics of sustainability education, climate change policy, sustainable development, and community resilience. Clark's research focuses on quantifying the social burden of power outages due to natural disasters and extreme events. She also serves as Chair of the Erie County Community Climate Change Task Force that recently completed its Community Climate Action Plan. Dr. Clark holds a PhD in Sustainability from Arizona State University, an M.S. in Earth System Science from the University of New Hampshire, and a B.S. in Atmospheric Science from the University of Albany.

Eero Laine is an Associate Professor and Chair of the Department of Theatre and Dance at the University at Buffalo, State University of New York. He has published widely on topics at the intersections of theatre, labor, sport, and performance. He is currently developing research that examines performances of wilderness and waterways. Eero is a co-editor of *Lateral* (csalateral.org), the journal of the Cultural Studies Association and co-edits the book series *Emergent Ideas: Lateral Books in Cultural Studies* for Amherst University Press. He regularly facilitates research through the Performing Ends initiative and network (<https://performingends.com>), which is a multimodal and

international group of performance studies practitioners and academics working to reconsider methodologies in arts scholarship amidst the climate crisis and other apparent ends. Through this network, he is one of fifteen co-authors of the book *Mourning the Ends: Collaborative Writing and Performance*, among other publications.

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References

- Annan-Diab, Fatima, and Molinari, Carolina. 2017. "Interdisciplinarity: Practical Approach to Advancing Education for Sustainability and for the Sustainable Development Goals." *The International Journal of Management Education* 15 (2): 73–83.
- Chaudhuri, Una, and Shonni Enelow. 2014. "Theorizing Ecocide: The Theatre of Eco-Cruelty." In *Research Theatre, Climate Change, and the Ecocide Project: A Casebook*. Palgrave Pivot, 22–40. https://doi.org/10.1057/9781137396624_2.
- Colombo, Serena L., Salvatore G. Chiarella, Camille Lefrançois, Jacques Fradin, Antonino Raffone, and Luca Simone. 2023. "Why Knowing about Climate Change Is Not Enough to Change: A Perspective Paper on the Factors Explaining the Environmental Knowledge-Action Gap." *Sustainability* 15 (20): 14859.
- Conti, Meredith, and Vivian Appler. 2022. *Identity, Culture, and the Science Performance, Volume 1: From the Lab to the Streets*. Methuen.
- Conti, Meredith, and Vivian Appler. 2023. *Identity, Culture, and the Science Performance, Volume 2: From the Curious to the Quantum*. Methuen.
- Erie County. 2023. *Erie County Community Climate Action Plan*. Erie County Department of Environment and Planning.
- Gefei, Dong. 2023. "Embodiment of Rationality: Philosophical Interpretation of Embodied Cognition." *Philosophy* 13 (2): 78–91.

- Goodspeed, Robert. 2019. *Scenario Planning: Embracing Uncertainty to Make Better Decisions*. Lincoln Institute of Land Policy.
- Haft, Jamie. 2012. "Publicly Engaged Scholarship in the Humanities, Arts, and Design." In *Animating Democracy*, 1–15.
- Hoffman, Andrew J. 2011. "The Culture and Discourse of Climate Skepticism." *Strategic Organization* 9 (1): 77–84.
- Houser, Heather. 2020. *Infowhelm: Environmental Art and Literature in an Age of Data*. Columbia University Press.
- IPCC. 2023. *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by Core Writing Team, H. Lee and J. Romero, 35–115. IPCC. <https://doi.org/10.59327/IPCC/AR6-9789291691647>.
- Lang, Daniel J., Arnim Wiek, Matthias Bergmann, Michael Stauffacher, Pim Martens, Peter Moll, and Christopher J. Thomas. 2012. "Transdisciplinary Research in Sustainability Science: Practice, Principles, and Challenges." *Sustainability Science* 7: 25–43.
- Lemke James. 1984. "The Humanism-Positivism Debate in Sociology: A Comment on Tibbetts's Reconsideration." *Sociological Inquiry* 54 (1): 89–97.
- Leskes, Andrea. 2013. "A Plea for Civil Discourse: Needed, the Academy's Leadership." *Liberal Education* 99 (4): 44–51.
- Manheim, Marisa K., and Christy Spackman. 2022. "Embodied Rationality: A Framework of Human Action in Water Infrastructure Governance." *Current Opinion in Environmental Sustainability* 56: 101170. <https://doi.org/10.1016/j.cosust.2022.101170>.
- Marandi, Anna, and Kelly Leilani Main. 2021. "Vulnerable City, Recipient City, or Climate Destination? Towards a Typology of Domestic Climate Migration Impacts in US Cities." *Journal of Environmental Studies and Sciences* 11 (3): 465–80. <https://doi.org/10.1007/s13412-021-00712-2>.
- May, Theresa. 2010. "Kneading Marie Clements' Burning Vision." *Canadian Theatre Review* 144: 5–12.
- May, Theresa. 2017. "Tú eres mi otro yo – Staying with the Trouble: Ecodramaturgy & the AnthroScene." *Journal of American Drama and Theatre* 29 (2), 1–18.
- May, Theresa J. 2022. "Kinship and Community in Climate-Change Theatre: Ecodramaturgy in Practice." *Journal of Contemporary Drama in English* 10 (1): 164–82.
- McConachie, Bruce. 2015. *Evolution, Cognition, and Performance*. 1st ed. Cambridge University Press. <https://doi.org/10.1017/CBO9781316134122>.
- Morris, Erin, Joshua J. Cousins, and Andrea Feldpausch-Parker. 2023. "Transformation and Recognition: Planning Just Climate Havens in New York State." *Environmental Science & Policy* 146: 57–65.
- O'Connell-Domenech, Alejandra. 2023. "Cities Are Advertising Themselves as 'Climate Havens.' Experts Say There's No Such Thing." *The Hill*, September 7.
- Palumbo, David Liu. 2012. *The Deliverance of Others: Reading Literature in a Global Age*. Duke University Press.
- Parry, Simon. 2020. *Science in Performance: Theatre and the Politics of Engagement*. Manchester University Press.
- Petracca, Enrico. 2021. "Embodying Bounded Rationality: From Embodied Bounded Rationality to Embodied Rationality." *Frontiers in Psychology* 12: 710607.
- Schechner, Richard. 1974. "From Ritual to Theatre and Back: The Structure/Process of the Efficacy-Entertainment-Dyad." *Educational Theatre Journal* 26 (4): 455–81.
- Schroering, Abby. 2024. "'Nobody Loves Me and the Sun's Going to Kill Me': Toward a Darker Ecodramaturgy." *Modern Drama* 67 (2): 174–95.
- Serrao-Neumann, Silvia, and Low Choy, Darryl. 2018. "Uncertainty and Future Planning: The Use of Scenario Planning for Climate Change Adaptation Planning and Decision." In *Communicating Climate Change Information for Decision-Making*, 79–90. Springer.
- Socio, Mike De. 2024. "US Cities Are Advertising Themselves as 'Climate Havens.' But Can They Actually Protect Residents from Extreme Weather?" *BBC News*, July 1. <https://www.bbc.com/future/article/20240628-us-climate-havens-cities-claim-extreme-weather-protection>
- Spellman, Barbara A., and Simone Schnall. 2009. "Embodied Rationality." *Queen's LJ* 35: 117.
- Superhero Clubhouse. n.d. "Ecotheater Manifesto." <https://www.superheroclubhouse.org/what-is-ecotheater/>.
- Tashakkori, Abbas, and Creswell, John W. 2007. "The New Era of Mixed Methods." *Journal of Mixed Methods Research* 1 (1): 3–7.
- Tashakkori, Abbas, and Teddlie, Charles. 1998. *Mixed Methodology: Combining Qualitative and Quantitative Approaches*. Sage.
- Tibbetts, Paul. 1982. "The Positivism-Humanism Debate in Sociology: A Reconsideration." *Sociological Inquiry* 52 (3): 184–99.
- Turner, Victor. 1985. "Epilogue: Are There Universals of Performance in Myth, Ritual, and Drama?" In *On the Edge of the Bush: Anthropology as Experience*, 291–304. University of Arizona Press.
- van Baarle, Kristof. 2023. "Ecodramaturgies in Times of Climate Crisis." In *The Routledge Companion to Contemporary European Theatre and Performance*, 314–21. Routledge.

- Whitehouse, Harvey. 2012. "Ritual, Cognition, and Evolution." In *Grounding Social Sciences in Cognitive Sciences*, edited by Ron Sun, 265–84. The MIT Press. <https://doi.org/10.7551/mitpress/8928.003.0015>.
- Woodward, Kathleen. 2009. "The Future of the Humanities in the Present & in Public." *Daedalus* 138 (1): 110–23. <https://doi.org/10.1162/daed.2009.138.1.110>.
- Woynarski, Lisa. 2020. *Ecodramaturgies: Theatre, Performance and Climate Change*. Springer Nature.
- Xu, Fuming, Peng Xiang, and Long Huang. 2020. "Bridging Ecological Rationality, Embodied Emotion, and Neuroeconomics: Insights from the Somatic Marker Hypothesis." *Frontiers in Psychology* 11: 1028.

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