

FULBRIGHT CHRONICLES



VOLUME 3, ISSUE 1 (APRIL 2024) - SUSTAINABILITY



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ARTIFICIAL INTELLIGENCE • CLIMATE CHANGE • CULTURAL EXCHANGE •
SDGS • SUSTAINABILITY • CARBON NEUTRALITY • FULBRIGHT PROGRAM
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• WATER • CALIFORNIA • ANTARCTICA • DROUGHT • INDIGENOUS
EDUCATION • EDUCATIONAL POLICY • QUALITY EDUCATION • LEARNING FOR
SUSTAINABILITY • PEACE EDUCATION • SCOTLAND • YOUTH EMPOWERMENT •
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Fulbright Chronicles is an independent, open access, peer-reviewed journal with contributions by and for the global Fulbright community. The journal is overseen by a global Editorial Board.

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About and Contributing

The journal provides a welcoming space for Fulbrighters to share their work and reflections on global issues with a broad audience. It features thoughtful, accessible articles that reflect on how Fulbright experiences have contributed to knowledge and cross-cultural understanding, or that comment on contemporary issues that affect the Fulbright program or cultural and educational exchange more broadly.

The *Fulbright Chronicles* can only succeed with the engagement of the Fulbright community. The editors strongly encourage Fulbrighters to contribute articles or commentaries on topics related to your research and practice and the critical issues of our times. Author Guidelines are available on our website (www.fulbright-chronicles.com).

The journal is an independent publication, overseen by the Editorial Board members under the guidance of the Co-Editors. Rob Ellis serves as Publishing Editor. For further information, visit the *Fulbright Chronicles* site (www.fulbright-chronicles.com).

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A FIRST FOR THE *FULBRIGHT* *CHRONICLES*

KEVIN F. F. QUIGLEY AND BRUCE B. SVARE

We are very pleased to present the very first special issue of the *Fulbright Chronicles*.

In launching this journal nearly three years ago, we sought to explore the enduring impact from the Fulbright experiences we have been privileged to have. We wanted to spotlight what our global Fulbright community was doing and discuss what difference that made. We were also eager to learn more about how Fulbrighters, with their remarkable expertise, experiences, insights, and global reach, were grappling with the critical issues of our times.

As we assembled our editorial team, virtually every discussion we had was whether the *Chronicles* would produce special issues providing opportunities for an in-depth consideration of topical issues. This special issue is the first realization of that goal.

We were indeed fortunate that associate editor Melanie C. Brooks volunteered to take on the herculean task of creating this first special issue. Over a good part of this past year, Melanie worked to develop this issue. Beginning with reaching agreement with the editorial team on the topic, she solicited proposals for articles, and then worked closely with the authors to produce this issue.

As you might expect given the broad range of interests, expertise, and experiences of our community, there is an extraordinary diversity in the topics represented in this issue. Melanie adeptly arranged the articles around four themes essential to sustainability: 1) indigenous wisdom; 2) cultural preservation and education; 3) innovation and technology, and 4) conflict resolution, social justice, and peacebuilding. Reflecting the global nature of our community and its interests, the contributors to this issue come from 12 countries and their articles touch all seven continents.

This first special issue provides a stellar example for future special issues, which we plan to do annually. Thank you, Melanie!

We also thank book review editor Erika J. Waters for curating the reviews to reflect the theme of sustainability.

Please share your thoughts on this special issue and ideas for future ones.

With deep gratitude for your ongoing interest in the *Fulbright Chronicles*.

FULBRIGHT CHRONICLES SPECIAL ISSUE: SUSTAINABILITY

MELANIE C. BROOKS

I'm writing to you today from Perth, Western Australia. For countless generations, the Noongar people, the indigenous inhabitants of this region, have been the custodians of this beautiful land. Their care has nurtured a rich cultural heritage deeply embedded in the landscapes, waterways, and resources of this area. I respectfully acknowledge the traditional custodians of this land and encourage you to pause and consider the traditional owners of the land from which you are reading this introduction. These profound ties to land serve as a powerful reminder of the imperative of sustainability—a principle that transcends time, cultures, and geography. Yet, environmental degradation and habitat loss is occurring at an unsustainable rate due to an insatiable consumer driven economic growth model reliant upon Earth's finite resources. Our current trajectory is unsustainable.

We are at a critical juncture where creating sustainable futures requires our willingness to identify and implement holistic solutions – something Fulbright has been at the forefront for the past 78 years. As an educator, I often hear the too-general, almost vapid statement, “We are living in an increasingly interconnected world.” In the most basic way, this is true. We are more connected than any other time in history, but it is more complicated than that. What this sentence fails to convey is the imperative that creating a sustainable world for people and planet requires interconnections grounded in a collective understanding based on mutual respect, responsibility, and benevolence. Fulbright is founded on these principles. This themed issue on sustainability serves as compelling evidence of Fulbright's role in shaping hopeful and purposeful futures on a global scale.

The articles featured in this issue go beyond a narrow view of sustainability as a concept singularly focused on climate change and efforts to avoid ecological imbalance. Rather, this collection reflects a much broader conceptualisation illustrative of the interconnected, complex challenges that must be addressed in order to identify solutions that initiate change relative to persistent challenges. To this end, the Fulbright scholars showcased here have taken significant action to advance sustainable futures aligned with their individual talents and passions. Their work falls into four themes, reflecting the breadth and depth of Fulbright Programs worldwide.

This themed issue on sustainability serves as compelling evidence of Fulbright's role in shaping hopeful and purposeful futures on a global scale.

The first theme centers on learning from Indigenous wisdom for climate adaptation. Water, the essence of life, is increasingly threatened by the impacts of climate change, intensifying the need for innovative solutions. Traditional irrigation systems, deeply rooted in indigenous knowledge and practices, offer invaluable insights into sustainable water management. By examining these systems through the lens of climate change adaptation, Emily Hayes-Rich uncovered promising pathways towards resilient water resource management. This theme further extends to comparative analyses of water stresses in diverse regions like Cape Town, Santa Cruz, and even the remote landscapes of Antarctica, where Gina Ziervogel investigated the interconnectedness of water issues and explored strategies for mitigating these impacts on communities and ecosystems.

The second theme focuses on the importance of cultural preservation and education for sustainability. Language embodies culture, identity, and knowledge systems, making it a powerful tool in sustainability efforts. In collaboration with indigenous communities in Mexico, Fulbright alumnae Leslie Ann Locke and Maika Dorantes worked to revitalize and preserve endangered languages within educational settings. This collaborative endeavour showed the importance of cultural heritage and strengthened the foundation for sustainable development rooted in Indigenous wisdom. Education is fundamental to instilling a culture of sustainability and empowering individuals to become agents of change in their communities. Sarah Anderson traversed landscapes from Norway to Scotland, engaged with diverse educational approaches that nurtured intercultural exchange that linked sustainability to democracy, global dispositions, and critical approaches to teaching and learning.

The third theme focused on the role of innovation and technology for sustainable development. Innovation lies at the heart of sustainable development, propelling us towards a future where technology serves as a catalyst for positive change. Edward Prados and Terhi Mölsä shared how they integrate sustainable practices into the work of their Fulbright Commissions. Their commentary recommends a rethinking of Commission practices to achieve sustainable outcomes. Waqas Idrees gave voice to Pakistani youth to advance ground-breaking solutions to environmental challenges. Uygur Özesmi developed the concept of a “prosumer” economy, where consumers become active participants in the production and conservation of resources, thus harnessing the forest’s bounty while preserving its ecological integrity. Polat Gokas pointed to the importance of incorporating artificial intelligence methodologies as a tool to navigate the multifaceted issues related to urban development and pollution.

Lastly, the fourth theme centered on conflict resolution, social justice, and peacebuilding. Through insightful case studies, William Timpson examined the complex interplay between conflict, learning, and sustainable development, uncovering lessons that illuminate pathways towards a more equitable and

peaceful world. Establishing sustainable communities often require processes of healing and reconciliation. Lekelia Jenkins' use of photovoice and narrative improved community trust and respect – critical to engender changes to Australia's large-scale fishing industry.

It is my hope that this issue serves as a beacon of hope for people, society, and the planet. Creating sustainable futures requires holistic, multifaceted, innovative solutions that are ecological equitable, while also being socially and economically just. Fulbright alumni throughout the world are uniquely positioned to identify and contribute to solutions to the world's most challenging and complex problems. As a member of the global Fulbright community, I take pride in our commitment to address sustainability through collaboration, creativity, innovation, and mutual understanding. Indeed, this is the only way forward.

COMMENTARIES

FULBRIGHT AND GLOBAL CATALYST: FRONTIERS OF SUSTAINABLE TECHNOLOGIES CONVERSATIONS FOR EARTH'S TOMORROW

POLAT GOKTAS

ABSTRACT

This commentary explores the shift towards sustainability in addressing global climate change, with a focus on integrating emerging technologies. Drawing from my experiences as a Fulbright alumnus, this article examines the Fulbright Program's ability to integrate environmental stewardship with its foundational goals of peace and global cooperation. It emphasizes the importance of international collaboration in advancing the United Nations' Sustainable Development Goals, underscoring the Fulbright program's vital contribution to a sustainable future.

Keywords: artificial intelligence • climate change • cultural exchange • SDGs • sustainability



In this era of significant environmental and geopolitical transformations, the Fulbright Program, established by Senator J. William Fulbright in 1946 with the goal of enhancing international goodwill and reducing conflict through knowledge and cultural exchanges, is evolving. Today, it confronts one of the most complex challenges of the 21st century: *global climate change*. Dr. Ian Fry, a United Nations expert, has identified climate change as an unprecedented threat to our environment and societies, a phenomenon that disrupts not just industries and education but also fuels conflicts, migrations, and nationalism—issues Fulbright aimed to alleviate through global understanding.

Facing these challenges, the Fulbright community is increasingly focused on how the program can effectively incorporate climate change into its mission. This involves adopting strategies such as endorsing greener travel for participants by drawing inspiration from initiatives like the Fulbright Leadership Camp 2023, which took place in Mui Ne and challenged participants to create greener community projects. Specifically, the 'Calmpybara' project encouraged greener atmospheres on campus by promoting plant care among students (Fulbright University Vietnam, 2023). We are also weaving environmental sustainability into program orientations, integrating climate actions into service components, infusing sustainability into educational content through the Fulbright-Environmental Protection Agency Award, which offers unique opportunities for postgraduate students or scholars to study or research in the US on critical areas such as climate

change evidence, green and circular economies, and the restoration of natural environments, aligning with national environmental policies and the United Nations' Sustainable Development Goals (Fulbright Ireland-USA, 2023), and nurturing online relationships to minimize carbon footprints. These efforts reflect a deep commitment to social justice and the transformative power of international education in an era marked by environmental crises.

As a Fulbright alumnus, my aspiration is to confront the urgent issue of climate change within the realm of emerging sustainable technologies. This article outlines my vision for integrating sustainability into the core ethos of Fulbright, emphasizing the program's active role in combining environmental stewardship with its long-standing objectives of peace and global cooperation.

ENRICHING THE FULBRIGHT'S MISSION THROUGH SUSTAINABILITY

My Fulbright Doctoral Research Fellowship in 2017-18 offered a unique opportunity to advance research at the Wellman Center for Photomedicine at Massachusetts General Hospital, Harvard Medical School, Boston, US. Engaging in groundbreaking projects at the intersection of healthcare and environmental impact allowed me to experience firsthand the program's potential to blend research excellence with addressing real-world challenges. My academic journey, spanning from Boston to Dublin and supported by collaborations with Harvard, MIT, University College Dublin, Enterprise Ireland, and the EU's Marie Skłodowska-Curie Career-FIT PLUS program, represents a testament to the power of international academic collaboration in pushing the boundaries of sustainable development. More than a personal or academic milestone, it highlights the collective effort in promoting sustainable development globally.

For instance, the endeavour to understand and mitigate the complexities of air pollution dynamics, particularly in densely populated urban centres such as Ho Chi Minh City, Vietnam, has highlighted an essential demand for innovative strategies. Although our investigation did not specifically address flooding concerns or engage directly with industries like mining, harbour operations, construction, and extensive retail complexes, we are aware of the profound influence these sectors exert on urban environments and overall sustainability. Our study is designed to contribute to the broader environmental issues that urban areas encounter, particularly focusing on air quality and sustainable urban development. These elements are crucial for enhancing a city's resilience against diverse environmental challenges. By providing insights and findings, we aspire to pave the way for future partnerships and to positively influence industry practices. Thus, this city, emblematic of the challenges faced globally, serves as a reminder of the

urgent necessity to devise effective solutions that can substantially reduce air pollution and its profound effects on public health and the environment. It is within this context that the application of explainable artificial intelligence (AI) methodologies emerges as a beacon of hope and progress.

By employing explainable AI to dissect and tackle the nuances of air pollution, we achieved a more nuanced understanding of its causes, effects, and potential mitigation strategies regarding the case study centered on Ho Chi Minh City. The integration of AI into environmental modelling represents a significant leap towards innovation, marrying the cutting-edge capabilities of technology with the depth of interdisciplinary research. This synergy is crucial in forging new pathways towards sustainability, offering scalable and adaptable solutions that can be customized to the unique needs and conditions of different urban environments.

In light of these advancements, embracing a motto, “*Towards a Breathable Earth*,” means actively pursuing projects that reduce environmental impacts and promote sustainable living on our planet. This is exemplified by our initiatives to improve air quality through the adoption of AI and sustainable urban planning, reflecting a clear translation of our motto into actionable outcomes.

GLOBAL DIALOGUES ON SUSTAINABLE DEVELOPMENT GOALS (SDGs) FOR A SUSTAINABLE FUTURE

Beyond individual research, my Fulbright journey embraced the ethos of cross-border dialogues and partnerships, particularly with institutions like Rennes University, France, and Marmara University, Turkey, aimed at understanding and advancing the United Nations’ 17 SDGs. This collaborative effort highlights the importance of shared objectives and communication in the pursuit of a sustainable future, bolstered by experiences in sustainable computing and AI.

The importance of these efforts is amplified against the context provided by the European Sustainable Development Report 2023/24. This document calls for a renewed European strategy and a collective global push to meet the SDGs in an increasingly divided and complex international landscape. It stresses the need for prompt, concerted actions both within the European Union and globally to prevent irreversible damage to our environment and society, offering essential insights into how academic and technological innovations can drive us towards a more sustainable future.

Additionally, while highlighting pioneering projects like Microsoft’s “*Planetary Computer*,” it is crucial to approach this discussion with a balanced perspective. We recognize Microsoft’s significant strides in environmental preservation and sustainability initiatives. However, it is essential to also consider the broader context of the company’s global operations, including its legal challenges and controversies. By presenting a more nuanced discussion,

we acknowledge the dual facets of Microsoft's involvement in environmental efforts—the innovative technologies and strategies they propose, such as the use of AI for earth's sustainability, contrasted against the backdrop of their corporate practices and legal disputes.

LEVERAGING SUSTAINABLE AI TO TACKLE ENVIRONMENTAL CHALLENGES

The rise of sustainable computing alongside the incorporation of AI into environmental research signal a transformative shift in our strategy for confronting ecological challenges. My initiatives in Dublin, enriched through collaborations with institutions and support from leading funding bodies, have showcased the role of AI and sustainable computing can play in tackling pressing environmental issues, such as air pollution and its subsequent health impacts. Beyond these individual endeavours, my active participation in the IEEE (Institute of Electrical and Electronics Engineers) Young Professional Climate and Sustainability Taskforce has immersed me in the wider conversation around sustainable computing, encouraging me to directly address current challenges, stay informed on emerging trends, and identify novel opportunities for breakthroughs in this field.

My involvement with the IEEE taskforce has underscored the importance of a multidisciplinary approach to sustainability, which we refer to as a '*holistic strategy*.' This strategy encompasses integrating technology, policy, and community engagement to ensure a comprehensive approach to environmental sustainability. By '*holistic strategy*,' we mean a unified framework that combines sustainable computing and AI with strong policy support and active public involvement. Examples of this in practice include our projects that align AI-driven data analysis with community-led environmental initiatives and policy advocacy, ensuring that technological advances in sustainability are grounded in real-world applications and community needs. At its core, merging AI with sustainable computing practices opens up a critical route for not only comprehensively understanding and tracking environmental issues but also for formulating and executing practical solutions.

CHARTING THE COURSE: IMPLICATIONS AND PATHWAYS FOR SUSTAINABLE POLICIES

The critical role of the Fulbright Program in promoting sustainable development, especially within the challenging context of implementing the SDGs in a divided global landscape, calls for a visionary outlook. By examining initiatives such as the European Sustainable Development Report and Microsoft's "*Planetary Computer*," I have aimed to delineate the policy

implications that emerge from our collective shift towards sustainability. This scrutiny sheds light on how the Fulbright Program can significantly shape future policy directions, advocating for an integrated approach that seamlessly blends environmental sustainability with technological innovation.

Within this context, the Fulbright Program transcends its traditional reputation for academic and professional excellence, evolving into a dynamic force for global transformation. At the confluence of environmental stewardship and technological innovation, Fulbright scholars worldwide can offer unique perspectives and actionable solutions. Their contributions—ranging from community-based sustainability projects to policy advocacy—illustrate the practical application of our discussions on marrying technology with sustainability. For instance, initiatives led by Fulbright alumni that integrate AI for environmental monitoring in urban areas exemplify how scholarly work can directly influence and enhance community resilience against ecological challenges.

At the confluence of environmental stewardship and technological innovation, Fulbright scholars worldwide can offer unique perspectives and actionable solutions.

Such collaborative and cross-disciplinary endeavours underscore the imperative of the Fulbright mission in today's world: to not only advance sustainable technologies but also to champion international cooperation for our Earth's tomorrow. By highlighting specific examples of Fulbright scholars' work in the realm of sustainable development, this conclusion aims to provide a clear, actionable vision for how the Fulbright Program can continue to play a crucial role in navigating the complexities of global sustainability challenges.



Fulbright alumnus, Polat Goktas delivering a talk at the Workshop on Artificial Intelligence for Sustainability, 26th European Conference on Artificial Intelligence, Krakow, Poland.

BIOGRAPHY

Dr. Polat Goktas was awarded a Fulbright Doctoral Research Fellowship in 2017-18 at the Wellman Center for Photomedicine, Massachusetts General Hospital, Harvard Medical School, Boston, US. At present, he is a Senior AI Research Scientist at the UCD School of Computer Science, and Ireland's Centre for Applied Artificial Intelligence. His accolades include the 2016 Young Scientist Award at the Lindau Nobel Laureates Meeting, the 2017 IEEE AP-S Doctoral Research Grant as the top global PhD student, the 2020 Marie-Curie Individual Fellowship, the 2021 METU Serhat Ozyar Young Scientist of the Year Award, among others. He can be reached at polat.goktas@ucd.ie. His social media handles include Twitter: @PolatGoktas and LinkedIn: <https://www.linkedin.com/in/polat-goktas-ph-d-29b24b58/>

LEADING THE CHANGE: FULBRIGHT'S ROLE IN FOSTERING SUSTAINABILITY

EDWARD PRADOS AND TERHI MÖLSÄ



ABSTRACT

Fulbright Commissions worldwide can take a broader role in efforts to mitigate climate change. We propose reducing the carbon footprint of administrative operations, integrating sustainability into program design, and allocating strategic grant funding for sustainability research. We advocate for the global Fulbright Program to take a leadership role in advancing sustainability in international exchanges.

Keywords: climate change • sustainability • carbon neutrality • Fulbright program • international exchanges



Climate change is increasingly becoming a pressing global issue. Recent data indicates a high likelihood of exceeding the Paris Agreement's 1.5°C

warming limit. With each incremental increase in temperature, the impacts of climate change affect us all. Despite the significant benefits international changes offer in education, science, and cultural diplomacy, it is crucial to acknowledge the indisputable climate impact of international travel. This makes it imperative that the field of international education prioritizes sustainability in all aspects of program design and implementation to address and minimize negative climate impacts.

As Executive Director of the Fulbright Jordan Commission and Chief Executive Officer of the Fulbright Finland Foundation, we are of the opinion that Fulbright Commissions have the potential to contribute to sustainability in much more significant ways than they currently do. We believe that collectively, Commissions can take a leading role in promoting sustainability in international education and exchanges. Therefore, we propose that all stakeholders incorporate sustainability into program design and Commission practices.

RETHINKING INTERNAL COMMISSION PRACTICES

Embracing and implementing eco-friendly practices is crucial for all organizations. However, Commissions vary considerably. Yet, collectively, they can serve as a valuable resource for learning and offering examples of sustainable solutions that can be adapted appropriately to various contexts.

For example, the Jordan Fulbright Commission provides an illustrative example. The Commission is in the process of transitioning to solar power as the main source of electricity for office operations. Once implemented, we expect to recover the cost in less than three years. We will also reduce our administrative transportation budget by 90% through the purchase of an electric vehicle that will be charged via our own solar energy.

The Commission is also transitioning to cloud computing. While server farms consume energy, a dedicated on-site server is far less efficient compared to a cloud-based server. Additionally, opting for paper over online documents and forms contributes to the production process of paper produces, involving harvesting, milling, and transportation, which releases significant amounts of carbon into the atmosphere. By transitioning most of the Commission's systems online, Fulbright Jordan is not only decreasing its carbon footprint, it is saving thousands of dollars per year on supply and printing expenses.

Integrating sustainability into everyday practices involves raising awareness about ecosystems and emphasizing the importance of energy-efficient practices. For example, many Commissions adopt hybrid work policies. When staff members drive to work, incorporating a day or two of remote work not only reduces carbon emissions but also offers and appealing employee benefit.

Integrating sustainability into everyday practices involves raising awareness about ecosystems and emphasizing the importance of energy-efficient practices

SUSTAINABLE PROGRAM DESIGN

In-person intercultural exchange continues to be the cornerstone of the Fulbright Program. However, by thoughtfully integrating new [digital and hybrid opportunities](#), we can significantly add to, and enhance, these traditional activities. These innovations can extend the reach of experience and connections, while also amplifying the value, impact, and sustainability of programs. A concrete example is a comprehensive, hybrid pre-departure or reentry orientation training delivered through flipped classroom pedagogy along with the smart integration of blended learning models. Strategic assessment of the contents of the entire program lifecycle – the applicant-grantee-alumni continuum – informs the process of selecting optimal delivery methods for each content segment. The goal is to increase even further the value of all in-person experiences, simultaneously helping to eliminate any unnecessary travel, a win-win for both sustainability and the program itself.

Current grant programs, iterations, or cohorts can be strategically focused. However, integrating sustainability into program design can also offer components aimed at developing grantee competencies for green transitions, irrespective of their particular grant program. For instance, the Fulbright Finland Foundation collaborates with the [Finnish Innovation Fund SITRA](#) to provide hands-on workshops to US Fulbrighters to learn about Finnish

approaches to the circular economy, green lifestyles, and the role of active citizenship in sustainable development. In their evaluations of the workshops, the US student grantees noted that the workshops helped them identify concrete actions to mitigate climate change and fostered a sense of agency that turned anxiety into hope, rather than apathy.

CREATING STRATEGIC FUNDING OPPORTUNITIES

Fulbright Commissions can use funding strategically to promote and prioritize specific emphases in their award programs. Prioritizing research and/or professional projects in areas such as climate change, biodiversity, food security, clean energy, disaster resilience can catalyze collaborative research, cross-cultural innovation, social enterprises, and climate advocacy. Commissions can use funding to make long-term contributions to global sustainability initiatives. Fulbright Finland, for example, offers a strategic award program for researchers and professionals, the “Seeking Solutions for Global Challenges Award.” This award is broadly aligned with the United Nations Sustainable Development Goals.

STEERING THE FULBRIGHT COMMUNITY TOWARDS SUSTAINABILITY

The forty-nine binational Commissions across the world can choose their own practices and processes; however, a significant share of program administration lies outside of the Commissions’ influence – including the US Department of State and its cooperating agencies that support the administration of the global program. Streamlining Fulbright’s myriad systems and administrative practices to make them more sustainable is already a topic of discussion amongst the US State Department and the Commissions. These discussions should be broadened to include a focus on climate-related sustainability.

Sustainability demands both active discussion and tangible actions within the global Fulbright network. However, achieving a comprehensive understanding of sustainability also relies on cross-border, interorganizational learning. [The Climate Action Network for International Educators \(CANIE\)](#) exemplifies an initiative that brings together practitioners from around the world to catalyze action. Founded by volunteer grassroots initiative formed by international education practitioners, it offers a valuable public resource library on its website, featuring scalable ideas.

SUSTAINABILITY REQUIRES LEADERSHIP

Moving a global program towards greater sustainability requires leadership and significant organizational effort. There is no panacea. Many current climate mitigation measures have well-documented side effects. It is easy to argue that individual actions seem inconsequential compared to the magnitude of the crisis. Nevertheless, we should do everything we can to mitigate against such impacts. It is pertinent to increase our efforts in learning and have frank conversations about our individual and collective roles in leading the change we want to see. This can be achieved by adopting actions currently available along with continuously adapting our responses as new methods and solutions are discovered and developed.

The complex, multifaceted, and global climate crisis is a preeminent challenge for the international community. International exchanges cultivate leadership and empower individuals to use their creativity to solve challenging problems. This is exactly the kind of task for which we believe the Fulbright Program was designed – to create solutions, ignite action, and foster hope.

NOTES

1. The Intergovernmental Panel on Climate Change (IPCC) report states that unless there are immediate, rapid, and large-scale reductions in greenhouse gas emissions, limiting warming to close to 1.5°C or even 2°C, will be beyond reach. See, for example: [Climate change widespread, rapid, and intensifying – IPCC — IPCC](#)
2. For full information about the COP 28 conference and its results, navigate to the conference’s website: [UN Climate Change Conference - United Arab Emirates | UNFCCC](#)
3. For more information about the debate between electric cars and internal combustion engines, see: [Electric vs. Gas Cars: Which Is Better For The Environment? | EnergySage](#) or [Factcheck: How electric vehicles help to tackle climate change \(carbonbrief.org\)](#)
4. While there has been extensive emphasis on the carbon footprint of cloud computing, on-site data centers consume relatively larger amount of energy, see: [Cutting Down CO2 Emissions: What Is the Environmental Impact of Cloud Computing? \(relevant.software\)](#)
5. To explore the voluntary carbon market, including offsets, see: [2023 State of the Voluntary Carbon Markets Report: Paying for Quality - Ecosystem Marketplace](#)

BIOGRAPHY

Edward Prados is the Executive Director of Fulbright Jordan, and a Fulbright US Student alumnus to Yemen (1993-94). He can be reached at ed@fulbright.org.jo. Terhi Mölsä is the CEO of the Fulbright Finland Foundation, and she can be reached at terhi.molsa@fulbright.fi

ARTICLES

EL AGUA ES VIDA, AL-MĀ' AL-HAYĀT, AMAN IMAN, WATER IS LIFE: TRADITIONAL IRRIGATION SYSTEMS AS A SOLUTION TO CLIMATE CHANGE

EMILY HAYES-RICH

ABSTRACT

With the growing pressure of climate change threatening many desert ecosystems around the globe, many communities have been returning to traditional forms of technology. From 2022 to 2023, I spent my Fulbright project using remote sensing and community-based archaeological survey to study one of these traditional technologies, an ancient irrigation system in Morocco known as the *kbettara*. This short piece for *Fulbright Chronicles* outlines some findings from my recently published article, which showed that the *kbettara* is a sustainable and drought-resilient technology for arid regions. Furthermore, I discuss the personal connection between Morocco and New Mexico that drew me to this project.

Keywords: traditional water management • *acequia* • *kbettara* • Morocco • New Mexico • communal systems



The sun is just starting to peak over the tops of the mountains, bathing the Jebel Kest in a warm, early pink glow. The *adhan* (call to prayer) echoes off the cliffside. Most of the landscape in the Tafraoute valley is barren. Small shrubs and gnarled Argan trees force their way through the rocky surface. But here, in the small *douar* (town) of Imi N'Tizghet, the *adhan's* morning sound is matched by the soft gurgling of water flowing through small earthen canals. The presence of water has created a pocket of greenness, with tall palms providing shade and shelter for a thriving agricultural system. The *adhan* ends, and the white mosque from which it came now stands silent, a stark contrast to the mudbrick homes around it, which blend seamlessly into the landscape. I stand on the porch of Mostapha's house overlooking this tiny valley. It is January 3rd 2023, and I am celebrating the new year in Imi N'Tizghet. It is my third time visiting this region, and I am back now to spend another few weeks further documenting the valley's ancient irrigation systems. The Tafraoute Valley is home to a cluster of *kbettara*, a water management technology that has provided life to this region for centuries. By New Year's 2023, I had been fortunate enough to document well over 300 *kbettara* throughout several dozen communities in Morocco. However, I kept coming back to Imi N'Tizghet, to the Tafraoute Valley. It is the one that felt the most like home.

FIELDWORK AND MYTHOLOGY

From 2022 to 2023, I completed a Fulbright Research Grant in Morocco. My project involved a community-based archaeological survey of 473 *kbettara* systems throughout 96 rural oasis communities in the Anti-Atlas, southern Sahara, and Upper Draa Valley. The goals of this research were to create a holistic understanding of the distribution and usage of the *kbettara* across Morocco. Throughout this research, both in Morocco and at my home institution, the University of New Mexico, I used a combination of remote sensing and community-based archaeological surveys. Due to the structure of the *kbettara* system, the ventilation/maintenance shafts (which provide access to an underground tunnel) are easily visible on most high-definition public satellite imagery. Using remote sensing techniques, I was able to produce a map that showed the status and distribution of around 2,500 *kbettara* systems spread throughout six modern Moroccan provinces.

COMMUNITY ENGAGEMENT AND FINDINGS

While on the Fulbright grant, my research methodology focused on community-based archaeological surveys of the *kbettara*. This type of research usually entails trained archaeologists working with descendent communities that are currently involved or have historically been involved with the heritage being studied. Throughout the project, approximately 300 community members actively participated in collaborative surveys. While previous literature indicated that the *kbettara* was an abandoned system used very scarcely throughout the country, the results of my research showed that this system is very much alive and still represents an integral part of many oasis water management practices.

COMPARING ACEQUIAS AND SEQUIA

In Imi N'Tizghet, the *kbettara* has been the sole source of water for at least 800 years. There was much about Imi N'Tizghet that reminded me of my home in Pojoaque, a rural town in northern New Mexico. The mudbrick homes, which provided cool spaces to shelter from the hot summer months and warmth in the cold, high altitude winters; the brisk and clear morning air before the sun had time to bake the landscape; the smell of the ground after it had rained; and the vast expanse of land stretching as far as the eye could see. But, what most reminded me of home were the small, earthen canals that carried water from the mountains down to the valley.

The desert has always been my home. Growing up, however, I was very quickly exposed to the harsh reality facing my beautiful, arid piece of land. One of my earliest memories is of the Cerro Grande fire that consumed much of the mountain forest only mere miles from my house. It was supposed to be “the fire of the century,” but less than a decade later, the Las Conches fire burned bigger and brighter than its predecessor. The *arroyo* (a semi-active

riverbed) by my house ran drier, the mountain I had been raised skiing on received less snow, and the summers became hotter as each year passed. Nevertheless, the small earthen irrigation canals that ran past my house never stopped flowing.

These traditional irrigation and water management systems go by many names and are interconnected with many histories. In northern New Mexico, I knew them as *acequias*. For over 300 years, earthen canals brought water from mountain springs, seasonal rivers, and nearby reservoirs to towns across the state. They are a communal system, and rights to the water are connected to historical land ownership traditions. Management of the water is done by locally elected community members, known as *mayordomo*, who facilitate the distribution of water. There are annual cleanings of the canals in which everyone with use rights comes together to ensure that debris is removed and that any damaged ones are repaired. For this reason, the *acequia* systems are considered not only a physical system but also a social one. Frequently throughout northern New Mexico, the phrase “*el agua es vida*” is uttered; water is life.

PRESERVING HERITAGE, SUSTAINING FUTURES

The deep history of the *acequia* is also important to its continual use as an irrigation system. In towns and villages throughout the region, the thread of tradition runs strong, creating bonds between people and the land of their ancestors, their culture, and their traditions. In general, *acequias* in Pojoaque were connected to the Spanish heritage of the community. Throughout Northern New Mexico, many irrigation systems have histories that connect back to the Pueblo and tribal people who settled and practiced agriculture in this region. An example of this is at the border of Southwestern New Mexico/Southeastern Arizona, where there are ruins of a complex network of earthen irrigation canals that the Hohokam people developed.

In Morocco, the earthen canals are known as *seguias*, and the word is the linguistic root of the word *acequia*. In form and function, they are almost identical. A similar communal system dictates the management of the *seguias* canals, and the position of *mayordomo* is known as *amazǧal*. Traditionally, this role is inherited through generations, but in many communities across Morocco, it is also a locally elected position. Similarly, rights to the water from the *seguias* canals are inherited, and this method is known as *nouba*. Like northern New Mexico, there are semi-annual and annual cleanings of the canals in which members of the community gather in what is known in some communities as *tizwi*. Moroccans also have their own words that are commonly uttered in the oases: *al-mā’ al-bayāt*, *aman iman*; water is life.

While the *segua* of Morocco can draw their water from springs, rivers, and reservoirs (like their sister systems in Northern New Mexico), there is an additional water management technology that is used in these deserts. A subterranean tunnel is dug from the aquifer to the surface, allowing the groundwater to flow naturally and create a “man-made” spring. This system allows water from the aquifer to be used without requiring an external source of power to pull water up, like what is necessary to use a well. Furthermore, the structure of the underground tunnel taps only the upper layers of the aquifer, which keeps the groundwater recharge cycle in balance. In Morocco, it is known as the *kbettara*, but this unique and complex piece of technology can be found in 46 countries around the world and is called by names such as *qanat*, *karez*, *galeria*, *aflaj*, *foggara*, *mambo*, *puquio*, *surangam*, and *kanerjing*. Deserts from Japan, across Central Asia, Europe, North Africa, and Central and South America have been using this technology (some for over 3,000 years) to bring water to arid and semi-arid regions. Both the physical and social structures of these traditional technologies have been developed over centuries and have been shown to be drought-resistant and sustainable ways of practicing agriculture in desert lands.

Traditional technologies have been developed over centuries and have been shown to be drought-resistant and sustainable ways of practicing agriculture in desert lands.

The first *kbettara* that I entered was in the small *douar* of Tazoult in the Anti-Atlas. It was mid-afternoon, and I was surveying the *kbettara* with my research (and life) partner Jackson, Muhammad, who is a member of the local Ammeln Association, and two members of Tazoult, one of whom was the local *amazɣal*. We were walking along the ventilation shafts of their community’s inactive *kbettara*. We are nearing the mother well (the first ventilation shaft at the start of the *kbettara*) when the *amazɣal* looks at Muhammad and says this is an excellent spot for him to take me down into the *kbettara*. This suggestion was relayed to Muhammad in *tashlbeet* (a local Amazigh dialect that I only know a few words of) rather than in *darija* (the Moroccan dialect of Arabic I spoke). Therefore, it was quite shocking to me when Muhammad suddenly opened the ventilation shaft and started climbing into it, then looked up at me and told me to follow him. I turned and stared at the two older men, and they eagerly gestured at me to follow. It was roughly 10-15 meters (32-50 feet) down. The bottom was hot and humid, and even though this *kbettara* was not in use, the ground was muddy. Muhammad decided it would be a good idea to walk down the tunnel and go up at the next ventilation shaft. I followed him, at some points crawling on my hands and knees in the mud, until we reached the exit. When I finally emerged, I felt a newfound appreciation for my New Mexican *acequias* whose water comes from the surface and not the depths of the earth.

Conflicting narratives surround the history of this complex subterranean technology. Until recently, the most common theory was that the qanat (*kbettara*) system originated in 6th-century BCE mountains that span modern-day western Iran, eastern Turkey, and northern Iraq. Scholars argue that it was diffused around the world through empirical expansions, slave trades, and technology sharing. However, recent archaeological studies challenge this theory, suggesting independent nodes of development catalyzed by changing climates and adaptive water management. The history of the Moroccan *kbettara* is similarly contested, with competing theories that the technology was first constructed in Marrakech during the 12th century C.E., carried with the spread of Islam in the 8th century C.E., constructed during the Roman occupation of North Africa in the first century C.E., or adopted by local Amazigh populations through diffusion between the oases of North Africa, possibly originating from the Libyan Fezzan over 2,000 years ago.

Despite the importance of the *kbettara* to both the heritage of Morocco and the continual agricultural and domestic water use in oases throughout the country, the *kbettara* are facing widespread abandonment. As of 2023, between 65% and 80% of the systems are estimated to be inactive. The reasons behind the widespread abandonment of these systems range from climate change to introducing modern technology (such as the pump well), to shifts in cultural/political/economic values, and rural exodus. Despite the difficulties that the Moroccan *kbettara* are facing, hundreds of communities across Morocco are still incredibly dedicated to the preservation and management of their systems. Likewise, New Mexico has from 800 to 1,000 working *acequia* systems across the state. The tradition has been held there for centuries by farmers who see the *acequias* as sustainable, environmentally friendly, and resilient water management systems.

One of the things that I often said in the oases was “*bladi bhal bladek*,” which, in Moroccan Arabic, roughly translates to “my land is like your land.” Many people in the oases would say things to me like, “I bet you’ve never seen anything like this in America,” to which I would respond with stories about New Mexico. Stories of the *acequias* and of the mudbrick houses. I’d show them pictures of home, and they would light up saying “*bladek bhal blad?*” “your land is like my land!” It was this connection that initially inspired my research, and it was what continued to fuel my passion for this project. As I continued to study, it became clearer that for various communities, traditional forms of water management are often more resilient and sustainable than modern technologies; however, their local and global importance is often negated. By bringing awareness to the connections between rural arid and semi-arid communities around the world (starting with my personal connection between Morocco and New Mexico), I believe that the ancient technologies that have sustained desert communities for thousands of years can continue to sustain them well into the future.

I continued this inter-community dialogue when I returned to the United States, and people would ask me about my Fulbright. In New Mexico, everyone I talked to would light up when I said I was studying something like the *acequias*. People were thrilled to hear that the *acequias* were not only valued within their community but also within so many other communities around the world. Traditional water management systems do not exist as isolated technologies. They are part of a large narrative of community-based water management systems that are valuable not only within the local contexts in which they are used but also as a global heritage and way of life. The findings of this research echo similar studies that have been undertaken in Algeria, Iran, Iraq, Afghanistan, Pakistan, Oman, and many other countries. It is crucial to acknowledge that this research is not solely applicable to the Moroccan *khattara* but to countless other communities around the world who recognize the importance of traditional forms of water management.

The sun is starting to peak over the top of the mountains, bathing the Sangre de Cristo in a warm, early pink glow. The sound of my neighbor's rooster echoes. Most of the landscape in Pojoaque Valley is barren. Small shrubs and angry looking cholla cactus force their way through the rocky surface. The rooster's morning crows are matched by the soft gurgling of water flowing through the small earthen canals. Tall cottonwoods loom over the apple orchard, and my neighbor is out tending the fields. Today is his turn with the *acequia* water. I sit on the porch, looking out at this beautiful little valley. It is September 2023, and I have just returned from Morocco. In the transition period between the end of my Fulbright and the start of my new, post-graduate career, I am back at my childhood home in Pojoaque. This morning especially, I am missing Morocco. Along my morning walk, the small, earthen canals line our county road. My parent's house resembles Mostapha's in Imi N'Tizghet, a place where I spent so much time because it reminded me of home. But now that I am home, home reminds me so much of Morocco. And the sound of the water flowing through the *acequias* brings me back there, and it reminds me that water is life, *al-mā' al-bayāt, aman iman, el agua es vida*.

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BIOGRAPHY

Emily Hayes-Rich holds an M.S. in Anthropology, Public Archaeology from the University of New Mexico and a B.A. in History from Lewis & Clark College. She received a Fulbright Research Grant and an American Institute of Maghreb Studies Award to Morocco 2022-2023, where she studied the *kbettara* (qanat), a traditional water management system. While in Morocco she was affiliated with Mostapha Nokraoui and Hassan Adounouh of AIDECO in Imi N'Tizghet, Taфраoute. She also worked closely with Hassan Elmrani of the Centre d'Etudes Oasiennes, Jorf, PhD candidate Abdoulah Saadi at the University of Ibn Zohr, Agadir, and the Miftah Essad Foundation for the Intangible Heritage of Morocco, Rabat. Her research focuses on the importance of traditional knowledge as a way of mitigating the effects of climate change in rural, arid and semi-arid communities around the world. She has conducted archaeological studies, research, and professional work across six US states in the Southwest and Pacific Northwest, South Korea, Australia, and Morocco. Currently, she works as an archaeologist in the Pacific Northwest and is based out of Portland, Oregon. She can be reached at her email: emily@hayes-rich.com

CHANGING WATERS: FROM CAPE TOWN AND SANTA CRUZ'S WATER STRESSES TO ANTARCTICA'S SHIFTING ICE

GINA ZIERVOGEL

ABSTRACT

In 2021, I spent 6 months at University of California Santa Cruz as a Fulbright Scholar. During my time there, I focused on understanding local water governance issues in Santa Cruz county. This related closely to previous work in my home country, South Africa, where I work on climate adaptation and water governance issues. During my time in the US, I was engaged in a women in science leadership program called Homeward Bound. The program was supposed to culminate in a voyage to Antarctica in 2022. Due to Covid-19, the voyage was delayed until November 2023. The program connected me to a number of women in the US and has helped to support my commitment to responding to climate change and development challenges, both in southern Africa and globally.



Keywords: water • climate change • California • Antarctica • drought

The environment and water have always been interests of mine. During my undergraduate studies, I delved into oceanography and environmental science, laying the groundwork for my current research pursuits as an Associate Professor at the University of Cape Town. Presently, my focus centers on investigating climate change adaptation through a water lens.

While my academic journey initially centered on biophysical issues, I transitioned to examining social issues. This shift underscored the critical importance of comprehending people, politics, and governance to support more sustainable practices. Specifically, my research focuses on adapting to climate change in an urban contexts, exploring how actors at different scales interact. I look at how cities and municipalities engage with neighbourhoods and how local individuals and organisations engage with the state to mitigate climate risks effectively.

Conceptually, I am intrigued by the intricate interactions among stakeholders across various scales. I examine how cities and municipalities collaborate with local neighborhoods, and how individuals and grassroots organizations engage with governmental entities to mitigate climate risks effectively. My work in southern Africa has focused on how people adapt to

droughts and floods, with a particular emphasis on the Cape Town “Day Zero” drought. During this time, I was actively involved in the City of Cape Town’s Water Resilience Advisory Committee, producing numerous academic and popular outputs on the drought’s impact and response from low-income households.

When considering where to take a sabbatical, I was interested in visiting California due to similarities between California and the Western Cape, South Africa where I reside. Both regions have a Mediterranean climate and frequent droughts. Santa Cruz was of particular interest because, like Cape Town, it relies on water from surrounding reservoirs. Therefore I was excited to be awarded a Fulbright scholarship to spend time at the University of California Santa Cruz, from July 2021 until January 2022.

CHANGING WATERS ACROSS CONTINENTS

Initially scheduled to start my Fulbright visit in January 2021, the Covid-19 pandemic delayed our plans. However, by July 2021, we arrived at the University of California Santa Cruz, the campus had reopened, allowing our children to attend the local elementary school. Eager to explore water governance issues in California, I embarked on a research project to investigate water governance issues in California over the last decade. Through a series of interviews, I discovered that the focal point of water governance in the county was the Santa Cruz Water Supply Advisory Committee (WSAC), established by the City of Santa Cruz in 2014. This committee epitomized collaborative governance by bringing together citizens and city officials to chart a sustainable path forward for the city’s water availability and usage.

The city of Santa Cruz appointed fourteen individuals, primarily from non-governmental backgrounds, to serve on the Advisory Committee. These appointees represented organizations with interests in environmental and business matters, along with some concerned citizens. The committee received support from the Santa Cruz Water Department, with Rosemary Menard, the department head, serving as an ex-officio non-voting member.

In an unconventional move, the City of Santa Cruz delegated water planning responsibilities to individuals outside the city government who may not have been experts in the field. This approach marked a departure from traditional practices and underscored a commitment to inclusive decision-making. While academic literature extensively discusses the concept of co-production and collaborative governance in managing natural resources, real-world examples are less common.

At the end of the 18-month process, there was unanimous agreement on the recommendations. They agreed to prioritize “excess” surface water from north coast streams and the San Lorenzo river to recharge their aquifers (the Beltz well field) or send it across to adjacent water districts who can either use it in lieu of their groundwater, or actively store it in their aquifers (“water transfers”). If surface water can recharge aquifers when possible, then in drought years, there is more water available. If water is sent to the adjacent water districts, these adjacent districts could then send water back to Santa Cruz when needed (“water exchanges”). This approach means that excess water is not running out to sea, but rather being used instead of draining ground water supplies. This can hopefully help to prevent saltwater intrusion in the aquifers, which is a growing concern. Because the water is stored in the aquifers, there is less evaporation which is important given climate change and rising temperatures. As the groundwater levels rise, the stream base flow levels may rise, which is important for the fish and ecosystem. As one committee member told me, this consensus was impressive, given “You can’t get a group of 10 in Santa Cruz to agree on the color of the sky!”

What is surprising to me is that the City handed over a process of water planning to a group of people outside of the City government who were not experts. They were, however, supported by an independent review panel of four experts and a technical team that included representatives from eight different organizations that provided input on topics from geology to water modelling, to law, and econometrics. Yet, agreements on the final recommendations lay with the committee.

The outcomes of the Santa Cruz Water Supply Advisory Committee aligned with some of the themes emerging in the Homeward Bound leadership program I was involved in during my sabbatical. This included bold leadership (by a woman) that was collaborative. It was also a holistic approach that included innovative thinking about the biophysical system, while considering social dimensions as well.

HOMEWARD BOUND: LEADERSHIP PROGRAM FOR WOMEN IN STEM

In 2020 I was selected to be part of the sixth cohort of the Homeward Bound programme, an Australian leadership program for women in science. One of the reasons I signed up for the online leadership program was because it culminated in a voyage to Antarctica with the other 100 women in the program. Going to Antarctica had been one of my dreams since I studied oceanography as an undergraduate. Although I was excited to be admitted to the program, I was disappointed when, due to Covid-19, it became clear the voyage could not go ahead as planned. However, I really enjoyed the online leadership program, half of which I did while I was in Santa Cruz, which helped me to reflect on my own leadership and understanding leadership

within the Santa Cruz Water Supply Advisory Committee. The timing of the online program meant that I was meeting online with others in the cohort, some of whom lived in California. It was therefore exciting to meet up in person with three others from the programme during my Fulbright visit.

VOYAGING TO ANTARCTICA

In November 2023, I set off to Antarctica with 99 other women and non-binary people in science from around the world. It was a 19-day voyage on a ship from Argentina that travelled down to the Falklands and then to the Antarctic peninsula and surrounding areas. We were due to go to South Georgia in the south Atlantic ocean, but an outbreak of bird flu meant we had to revise our itinerary. Landing was not allowed and it made sense not to stress the animals or potentially bring any pathogens with us. This kind of adaptive decision making was core to the type of thinking that guided the group.

Although we took a number of modules about leadership and personal development as part of the online program, the time on the ship gave us an opportunity to explore a number of topics more deeply. Some of the sessions included thinking about leading in complexity and developing skills for adaptive leadership. We were also supported in thinking through our personal strategies. We often worked in groups to share insights on different themes and worked alone to think and plan our way forward.

The work sessions were interspersed with chatting, laughing, walking around the deck, yoga sessions and a lot of food. There were two dining areas, with the one on the top deck offering fabulous views, though it was at times closed if too windy. But what a treat to be eating dinner with an iceberg drifting past. One of the things I was most looking forward to were the icebergs. They did not disappoint. In fact, they were much more than I could've imagined. I absolutely loved how the ship glided past them. Sometimes there were huge icebergs not far from the ship and other times there were small pieces that you could see melting as we sailed past.

According to the captain, the Gerlache Strait around the Antarctic peninsula had much more ice when we were there than usual for that time of year. The one night he tried to get through, he was concerned because there were more "choke points" than usual at the straight which was harder for our ship, because it was not an icebreaker.

We were able to see some of the changes the captain referred to in our many landings. One landing that was a highlight for me was Cuverville Island. Coming ashore in the small black Zodiac boats was particularly special, through many pieces of smaller broken up ice and crystal-clear water beneath through which we could see penguins swimming and then porpoising, which is when they dive in and out the water. As we disembarked from the Zodiac, a small glacier calved off so we had to do a rapid emergency disembarkation,

but all was well. The place was filled with Gentoo penguins, shuffling along their “penguin highways” to their breeding ground or up the slope. They weren’t able to nest yet as there was still too much snow on the ground. With climate change, there has been an increase in snowfall, as there is more evaporation due to higher temperatures. This is contributing to changes in Antarctica, known as the “driest continent,” because it is so cold. Walking up the hill through the snow and looking down over the penguins, their colony and the icy bay beyond was spectacular.

As mentioned earlier, there were three women on the voyage that I had met up with in person during my Fulbright visit to California and had met many others online. I was intrigued to see how the relationships and group dynamics would play out. I have to say I was blown away by the inspirational and fun women. There were geologists, astrophysicists, geographers, mathematicians, engineers, doctors, innovators, explorers and more. We had many conversations about life, the environment, work, personal issues and went from discussing formal work into informal spaces. We each had to do a “Symposium at sea,” where we had three minutes to talk about ourselves. This was a fantastic way to get insight into the 99 other women and non-binary people, some of whom shared more personal stories and others who shared more about their work. With some people I had one-on-one conversations about challenges at work, where I have recently stepped into a leadership role as the Director of the ACDI (African Climate and Development Initiative) at UCT. There were also opportunities to work in groups on issues we might want to take forward. I was part of a group that started working together on the ship and are continuing afterwards to write a piece about our personal stories working on environment issues from a social science perspective.

BRINGING IT HOME

Both my Fulbright trip to Santa Cruz and my trip to Antarctica highlighted the importance of collaboration and connecting different parts of the system for supporting change. As I saw in Santa Cruz, engaging citizens in environmental governance contributed significantly to urban resilience. It helped to build trust between citizens and local government as well as provide the opportunity to hear multiple perspectives and co-develop robust responses. On the Homeward Bound Antarctica voyage, the personal connections we built were deep. We are continuing to collaborate and feel part of a group of women that support courageous leadership for people and planet.

Our behaviour and emissions around the world are impacting the precious Antarctic wilderness. We are all connected, and we need to remember and factor it in more into what we choose to do as we go into the future

Both Fulbright and the Homeward Bound programs centered engagement with the whole self and system. Our behaviour and emissions around the world are impacting the precious Antarctic wilderness. We are all connected, and we need to remember and factor it in more into what we choose to do as we go into the future. I have come back to my role at UCT with renewed enthusiasm to undertake research that contributes to a more sustainable and just world. We can make different decisions, that consider others and the planet more carefully and compassionately.

BIOGRAPHY

Gina Ziervogel is Director of the African Climate and Development Initiative (ACDI) and Associate Professor in the Department of Environmental and Geographical Science at University of Cape Town. Her research on climate change adaptation and governance across scales from the household to municipal level draws on transdisciplinary methods to support just climate action. She was a Visiting Fulbright Scholar at University of California Santa Cruz from July 2021 until January 2022. Gina.Ziervogel@uct.ac.za

INDIGENOUS LANGUAGES AND SCHOOLING IN MEXICO: A FULBRIGHT ALUMNAE COLLABORATION

LESLIE ANN LOCKE AND MAIKA DORANTES

ABSTRACT

The Covid-19 pandemic forced Fulbrighters across the globe to return to their home countries. The Fulbright alumnae featured here were in the midst of their Fulbright experiences in March of 2020 when such decisions were made. After return to their countries, Locke–Garcia-Robles Scholar (Mexico), and Dorantes–Hubert Humphrey Fellow (US), crossed paths through service as panelists for Fulbright interviewees. They later collaborated on a Fulbright-inspired but independent research project specific to public schooling in Mexico. Steeped in this collaboration, they examined the Indigenous language policy for public schools in Mexico and highlight its practice in schools in the Yucatán. They trouble this policy and practice as a natural resource—that is, the conservation and promotion of Indigenous language as a culturally-validating and sustaining natural human resource and a means for a sustainable future.



Keywords: indigenous education • educational policy • Mexico

We are Fulbright alumnae. Leslie was a Fulbright Garcia-Robles Scholar (2019-20) at the Universidad Autónoma de Yucatán in Mérida, Mexico. Maika was a Hubert H. Humphrey Fellow (2019-20) at Vanderbilt University in Nashville, Tennessee in the US. Leslie's Fulbright project was focused on public schooling in Mérida, specifically gathering the perspectives and experiences of teachers in public schools regarding their teaching. Maika's Fulbright project also centered on public schooling, specifically related to understanding public school teachers' social and emotional competence and their students' social and emotional learning across the Yucatán state of Mexico.

However, because the Covid-19 pandemic forced Fulbrighters across the globe to return to their home countries in March 2020, our projects were cut short. Leslie's project was most significantly impacted as she had arrived in Mexico only in January 2020. Data collection for her project had not yet started when she had to leave. Maika's project began in person in the fall of 2019 while she was at Vanderbilt University, and then shifted online after March 2020. A key outcome of her project was teachers' acknowledgment of the intrinsic link between emotional balance and creating conducive learning environments, thereby decreasing discipline issues and building peaceful, safe, and healthy classroom spaces.

While we did not meet during our Fulbright experiences, our paths crossed as we both served as panelists for Fulbright applications and interviews. As education scholars and practitioners, we found a common interest and passion, and began communicating regularly about public education in both Mexico and the US. Eventually we collaborated on a study of public schooling in the Yucatán region of Mexico, specifically in Mérida. Important to this collaboration is that Maika is from Mérida and served there as a Supervisor with the Yucatán Secretariat of Public Education for seven years. One outcome of our work together is an interrogation of Mexico's Indigenous language policy which affects public schools across the country. Here we discuss the Indigenous language policy and highlight two bilingual (maaya [the Yucatec Maya language] and Spanish) schools in the state of Yucatán. We are specifically interested in how this policy as well as the practice of Indigenous language learning could be a natural resource. In other words, viewing the conservation and promotion of Indigenous language as a culturally-validating and sustaining natural human resource and a means for a sustainable future.

EDUCATION IN MEXICO

In Mexico, educación básica or public basic education includes preescolar/preschool (3 years), primaria/primary (6 years, grades 1-6), secundaria/secondary (3 years, grades 7-9), and preparatoria/upper secondary (3 years, grades 10-12). Each of these levels is compulsory. Public schools across the country are the charge of the Secretaría de Educación Pública or the Ministry of Public Education located in Mexico City. The curriculum at all levels that schools must follow is centralized and established by the Ministry. This includes curricula related to Indigenous education. Public schools have little autonomy as the decision-making processes are regulated by national policy.

National policy, alongside the Mexican Constitution, prohibits discrimination based on several grounds, including those related to national or ethnic origin. It recognizes Indigenous peoples' collective right to "preserve and enrich the languages, knowledge and all the elements that constitute their culture and identity" (Article 2 Section A.IV) and to communicate in their own languages without restriction. There is also a law specific to Indigenous peoples' languages, the Ley General de Derechos Lingüísticos de los Pueblos Indígenas. This law stipulates that Indigenous languages are national languages, and that the State will recognize, protect, and promote the preservation, development and use of national Indigenous languages. Important for schools, this law confirms individual and collective rights of Indigenous peoples and communities, such as access to compulsory education that is bilingual and intercultural. It also establishes the government's duty to take positive and compensatory measures to promote equality of opportunities for Indigenous populations such as bilingual education programs that promote

cultural interchange, scholarships to promote alphabetization, education at all levels, and vocational training. Last, it stipulates that Indigenous peoples and communities can be co-responsible for the implementation of the objectives of this law and active participants in the use and teaching of their languages.

In simple terms, the government recognizes Indigenous languages as national languages, at the same level as Spanish. It further mandates that Indigenous students have access to compulsory education in their own language and in Spanish. Mexico's General Law on the Linguistic Rights of Indigenous Peoples, specifically, is a measure aimed at improving educational opportunities for Mexico's diverse Indigenous populations who continue to experience poverty, low rates of literacy, and limited educational opportunity. This law gives Mexico's Indigenous students the right to teachers who both write and speak the language of their community. It also requires Mexico's teacher education institutions to establish programs in Intercultural Bilingual Education (IBE) and to include Indigenous cultures and languages in the curriculum. This is the largest public school campaign centered on Indigenous languages and cultures in the Americas. We see this legislation as a potential means toward a sustainable future (sustaining Indigenous languages) for Mexican youth. Moreover, it is a systemic approach to honoring the histories and cultures of families and communities who have been marginalized. Schools that center Indigenous languages and cultures provide spaces of belonging for students, families, and communities, thereby increasing and enhancing student learning outcomes.

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There are 68 surviving Indigenous languages spoken in Mexico and Indigenous primary education is offered in 24 of the 31 states across the country. In practice, most of the Indigenous bilingual education in public schools is focused on the preescolar and primaria levels (preK-grade 6). Teachers in Indigenous bilingual programs are to be either native speakers of the Indigenous language offered or have knowledge of the Indigenous language.

However, despite IBE programs centered on bilingual education and Indigenous curricula and pedagogies, Indigenous language teachers may be susceptible to reproducing the text-centric practices they experienced in school. Thus, regardless of decades of scholarly advocacy for ideological understandings of literacy and the development of multiliteracies through which learners engage critically with diverse linguistic and cultural communication, students are often evaluated on a narrow conception of literacy as speedy reading and standardized writing. That is, Indigenous

people's belief systems and knowledges appear to be largely absent from these programs in practice, with a prominent focus on simplistic linguistic aspects. Many Indigenous populations continue to experience a process of assimilation and language subordination in schools.

INDIGENOUS LANGUAGES AND SCHOOLING IN THE YUCATÁN

The Yucatán region is home to one of Mexico's largest Indigenous populations (Mayans) and has one of the highest percentages of Indigenous language speakers. This region encompasses three states—Campeche, Quintana Roo, and Yucatán. Within the Yucatán, the multiliteracies of the Maya are often overlooked by schools — despite a law recognizing the linguistic and cultural rights of people. Further, there is no bilingual or intercultural education provided by the state beyond the primaria level. While education at the secundaria level is compulsory, Indigenous students in the Yucatán experience high levels of school incompleteness. Additionally, many schools in the Yucatán, particularly those focused on Indigenous languages, struggle with a lack of qualified teachers and insufficient materials.

In and around Mérida, the capital city of the Yucatán, there are a few schools that use bilingual curricula. Most of them are at the preescolar level, however there are a few at the primaria level. At these levels, educators are to provide sustained bilingualism, which manifests as teaching half the day in the Indigenous language, that is, *maaya*, and half the day in Spanish. A goal of the curricula is for students to appreciate their own culture and acquire a second language, in this case, Spanish.

EXAMPLES OF INDIGENOUS SCHOOLING IN MÉRIDA

The preescolar “Sastal” is located in Acanceh. The student body of this school includes 85 students (over half of students are girls). The students range from 3 to 6 years old and are in pre-k through the third grade. There are four teachers and a principal, all women. Three of the four teachers have a specialization in Indigenous and bilingual education to teach *maaya* and Spanish. While Sastal is an Indigenous school, most of the students communicate in Spanish which is supported by the parents. This is not unusual according to the literature as many parents, while they may speak *maaya* at home with their children, support the school teaching in Spanish, as this is the dominant language of the country and fluency is understood to provide for future opportunities for their children. The principal and teachers at Sastal have been working with parents to communicate and collaborate around the value of teaching in both languages. At Sastal, some of the activities that focus on Indigenous language include reading stories and legends in *maaya* and Spanish; posting signboards around the school with *maaya* translations; dedicating specific time to the teaching and learning of *maaya*; and providing students with board games with *maaya* words (i.e., *loteria*, memory cards).

“Salvador Alvarado” is a large *primaria* located in Seye. Salvador Alvarado serves 389 students (over 50% are girls) in grades 1 through 6. There are 16 teachers, two have specializations in Indigenous languages. Seye has a substantial *maaya*-speaking population (approximately 18% of the community). However, recent generations have become more Spanish-dominant, and concomitantly, the collective knowledge of the rich linguistic and cultural heritage is diminishing. In recognition of this shift, Salvador Alvarado was chosen by the Ministry for an initiative aimed at revitalizing the *maaya* language among children at the *primaria* level. An important component of this innovative program allowed for the *maaya* language to be integrated into the curriculum, with dedicated lessons occurring biweekly. Additionally, a visibility campaign was implemented, showcasing various *maaya* words throughout the school. Beyond the classroom, Salvador Alvarado has engaged the community through fairs and festivals that feature interactive games and activities, and where students have the opportunity to present and share their learning and knowledge of *maaya*.

As part of our collaboration, we conducted an informal interview with Ligia Zobeida, the principal at Sastal who also identifies as Maya. We asked her to reflect on the Indigenous schooling occurring at her school and others in the area. She said, “With my background in Indigenous education and coming from a community rooted in authentic Mayan heritage, I find fulfillment in the opportunity to not only preserve but also enrich our culture and language alongside the minds of our preschoolers.” She continued about one activity that she found particularly powerful:

... a project that particularly resonates with me is the creation of a communal storybook. Collaborating with the teachers, children, and their parents, we compiled an anthology featuring legends, domestic narratives, and oral stories. These serve as conduits to tell the richness of our traditions, intertwining with our everyday activities.

Ligia went on to describe how she feels about her work with Indigenous education, “While it would be nice for our achievements to be more widely acknowledged, to know that we are actively aiding children in preserving their heritage and language fuels our belief in the significance of our daily efforts.”

There are exceptionally dedicated teachers and leaders, like Ligia Zobeida, who support Indigenous schooling. Maika, with seven years of experience as a Supervisor within the Yucatán Secretariat of Public Education, was able to identify many challenges. Specifically, during her tenure she noted that Indigenous schooling was met with enthusiasm among school staff, presenting an opportunity to integrate this knowledge into other subjects. However, even with proficient *maaya* language instructors, Indigenous education suffered for a variety of reasons. One notable challenge was the reluctance of students to engage in conversations in *maaya* within the school setting. Despite their understanding of *maaya*, and it being commonly used

in their homes and with their families, the dynamics shifted within the school environment. The schools struggled with creating buy-in with students that language as cultural heritage was worth preserving. Additionally, although school curricula and activities centered around language development and oral communication, students faced insufficient opportunities to apply these skills with practicability. The schools also experienced a noticeable absence of sustained engagement around Indigenous education programming from the Ministry. This limited local educators' autonomy in decision-making and hindered the execution of their plans due to inadequate support and communication.

CONCLUSIONS AND REFLECTIONS

Solutions for Indigenous language policy lie with increased community involvement to instill a sense of ownership and pride over schooling to foster a deeper connection between students and their linguistic heritage. Addressing these limitations is crucial for the success of projects aiming to revitalize Indigenous languages within the educational landscape of the Yucatán. The *de jure* recognition by the Mexican government of Indigenous language rights is an important step; however, in practice, schools may operate under a model that continues to marginalize these same languages. The contradictions within the bilingual education movement and reality are stark. That is, despite federal legislation to the contrary, Indigenous children's right to receive education in their native languages largely remains to be granted. While laws and policies are a start, language as a natural human resource will struggle to become a reality without significant dedication and committed change by the Mexican government.

CLOSING THOUGHTS

Although we were not able to complete our planned time as a Fulbright Scholar or a Fulbright Fellow due to the Covid-19 pandemic, our experiences with and because of Fulbright have been rewarding and provided collaborative possibilities. Our shared interests in education spurred our Fulbright-inspired but independent collaboration on a project centered on the experiences of teachers in public schools in Mérida, Mexico. One outcome of our collaboration is the current work troubling the Indigenous language policy for public schools in Mexico as a natural human resource. Our Fulbright experiences, while shorter than planned, allowed us to grow as scholars, learn from dedicated educators, students, and community members, and see new educational contexts. It deepened our commitment to education for the public good. We plan to continue our collaboration with future work centered on public schooling in Mexico, the US, and Canada.



Maika Dorantes

BIOGRAPHY

Leslie Ann Locke, PhD is an Associate Professor in the Department of Educational Leadership at Minnesota State University, Mankato. Her research, teaching, and service is informed by a desire to understand the barriers students experience in education systems and to broaden access and opportunity for *all* students. She was a Fulbright Garcia-Robles Scholar at the Universidad Autónoma de Yucatán in Mexico in 2020 where she studied public schools and learned from public school educators. Leslie can be reached at leslie.locke@mnsu.edu

Maika Dorantes is a PhD student in Education at the University of Manitoba, Canada. As a former Supervisor of elementary schools in Yucatán, Mexico, she developed different projects to enhance learning, inclusion, leadership, and social-emotional learning (SEL) within the schools in her charge. She was a Hubert H. Humphrey Fellow at Vanderbilt University in 2019, improving her leadership and project development skills. Her current research encompasses inclusion, SEL, and leadership to continue improving educational settings in Mexico, the US, and Canada. Maika can be reached at dorantem@myumanitoba.ca

EXPERIENCES IN SUSTAINABILITY EDUCATION: AN AMERICAN FULBRIGHT SCHOLAR'S JOURNEY FROM NORWAY TO SCOTLAND

SARAH ANDERSON

ABSTRACT

As a Fulbright Scholar in Norway in 2011-2012, I was able to establish a professional disposition well situated to contribute to a more sustainable future. I have identified three keyways the Fulbright experience prepared me for education for sustainability in Scotland: (1) an orientation towards diplomacy for impact acceleration, (2) exemplifying global dispositions, and (3) validation of the affirmative ethos of post-critical pedagogy.

Keywords: quality education • learning for sustainability • peace education • Scotland



As a Fulbright Roving Scholar in Norway, my program involved traveling throughout the country giving presentations and seminars for teachers and pupils in secondary schools and to students in teacher education programs. I facilitated inquiries about interests and preconceived ideas about the US, current events, and issues in American society. I also provided an occasion for individuals to practice English. With teachers, I facilitated sessions on effective pedagogy and interdisciplinary literacy and shared a sense of the American teaching experience. These engagements provided a forum for constructive dialogue about cultural perceptions and stereotypes. Norway is the only country in the world with the Roving Scholar program, and the ‘roving’ descriptor of my experience proved true as I accomplished visits with 6,675 students, 320 teachers, and 75 pre-service teachers in 44 cities, 55 schools, and three universities. Without an international understanding of the diverse political landscapes I gained as a Fulbright Scholar, I would not have been as well suited for my current post at the University of Glasgow in Scotland, which boldly made reparations for financial gain from slavery and is ranked 20th in the QS World Sustainability Rankings.

Sustainable development has been defined as: “meeting the needs of the present without compromising the ability of future generations to meet their own needs.”¹ Established in 2015, the global Sustainable Development Goals (SDGs) are an international commitment to tackle some of the more pressing challenges facing the world today. The 17 interconnected goals are viewed as a chance to build a safer, more prosperous planet and improve life for

future generations. In Scotland's schools, Learning for Sustainability (LfS) is an essential component of quality education, put forward as 'an approach to life', an 'entitlement', and a part of everyday learning. LfS is intended to enable stakeholders to build a socially just and equitable society. Encompassing the three pillars of sustainability of the environment, the society, and the economy, LfS must be implemented in a way that "weaves together global citizenship, sustainable development education, and outdoor learning to create coherent, rewarding, and transformative learning experiences." This commitment maintains a focus on critical engagement of active citizens with issues they and their families experience.² The prominence of LfS responds to the realization that globally we are operating outside, "a social foundation of well-being that no one should fall below and an ecological ceiling of planetary pressure that we should not go beyond." Young people and those who teach them play a vital role in protecting the planet and creating sustainable futures.

Sustainable Development Goal (SDG) #4, Quality Education, within the social pillar of sustainability remains my keen area of interest and vocational aim as a teacher educator, to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all".³ My teaching and research in the social sciences focuses on civic engagement, peace education, and equity. Upon reflection, I have identified three keyways the Fulbright experience prepared me for sustainability education in Scotland: an orientation towards diplomacy for impact acceleration, exemplifying global dispositions, and validation of the affirmative ethos of post-critical pedagogy needed for sustainability education.

A DIPLOMATIC ORIENTATION FOR IMPACT ACCELERATION

There are two valuable conceptualizations to unpack – diplomacy and impact. Diplomacy involves the art and practice of building and maintaining relationships and conducting conversations with people using sensitivity and mutual respect.⁴ Impact can be defined as a demonstrable contribution, an effect on, a change or benefit. Fulbright scholars operate in the space of consistently accomplishing both as they foster ties amongst institutions and forge relationships through teaching and scholarship which aids intercultural understanding. The US – Norway Fulbright Foundation views the Roving Scholar program as an essential bridge between its academic and public diplomacy roles. I was able to engage in knowledge exchange in Norway on educational issues that affected teachers and students of both nations. Upon my return to the US, I was able to bring my cross-cultural learning into decision making and school improvement efforts.

In many ways, I now serve as a dual representative of my home nation and country of residence. This includes establishing partnership between organizations working towards SDG #4, such as member councils of the Global Network of Deans of Education, thus increasing the flow of people and expertise between academia and amongst partners, one of Fulbright's

aims. I have been able to share Scotland's approach to education for sustainability with American teacher educators and respond to the Scottish national government's education reform agenda. I also foster connections in the UK's four nations through my role as Scotland's convenor for the British Educational Research Association's special interest group on teacher education. I also maintain connection with the US Consulate General in Edinburgh, working with educational programming to further the reach of knowledge exchange opportunities through external engagement events.

Research I conducted in Norway regarding teaching evaluation practices has had an impact on research and practices in the US regarding mechanisms for measuring teaching effectiveness, as well as my current research agenda regarding school improvement through practitioner enquiry and how judgements of teaching effectiveness are made. Additionally, my current work involves developing partnerships between academic organisations in the US and UK based on the principle that knowledge exchange occurs and impact amplified through the movement of skilled individuals into and out of universities. The opportunities for impact acceleration abound, and my experiences of diplomacy in Norway prepared me to effect change in this international sphere.

A GLOBAL DISPOSITION

A Fulbright experience develops competence in the global arena. It is a prime way to equip oneself with the capacity and disposition to understand and act on issues of global significance, without which none of the 17 SDGs really have potential to be realized. Building a global competence is an affective learning intention within the teacher education courses I instruct, that when embodied, become the learning objectives of the pupils my students will someday teach. Boix Mansilla (2016) expressed that global dispositions are about "the kind of person" a learner will become: (a) inquiring about the world, (b) understanding multiple perspectives, (c) an inclination towards respective dialogue, and (d) taking responsible action (4). As an educator of future teachers, I am dually charged to teach evidence-based practices for LfS and a global disposition while simultaneously modeling them. Students need to hear and see the congruity between my beliefs and my actions.

The first and second dimensions I will consider together: *investigating the world* and *appreciating perspectives*. Those who engage in intercultural exchange often share the characteristics of curiosity and a hunger to learn beyond the immediate environment. I encourage future teachers in my university courses to become T-shaped individuals, educators who have a depth of skills and expertise in their field as well as a desire and ability to investigate

Those who engage in intercultural exchange often share the characteristics of curiosity and a hunger to learn beyond the immediate environment

areas outside their specialism. The complexities of sustainability undoubtedly require both. As I work with high school social studies teachers, this often involves interdisciplinarity of literacy, numeracy, and wellbeing explored through the primary topics of social justice and international affairs.

I also advance concepts of LfS by modeling expectations for future teachers, thus I aim to demonstrate how I embrace curiosity about the world. One of the most impactful ways I have shown an enquiring stance in personal development is through an organically organized non-fiction book club. This small group of six formed through a desire to seek a diversity of perspectives and ideas outside our own organizations and industries. The group includes me as an educator/academic, an actuary, a solicitor, an ecologist, a partner of a business firm, and a learning and development consultant. For those who might be curious, feel free to email me for our reading list. We have embraced how what we read directly influences our lived experiences and understanding of environmental, social, and economic sustainability. For example, Gloria Liu's (2022) *Adam Smith's America: How a Scottish Philosopher Became an Icon of American Capitalism* led us to attend a lecture from the Chief Economist of the International Monetary Fund as part of the Adam Smith celebrations which marked the 300th anniversary of this University of Glasgow alumni. We have been challenged to consider what we read and have diversified our bookshelves, moving beyond the familiar to engage wider perceptions. Interestingly, it was a catalogue of the contents of Smith's library described as a "glimpse into the workroom of the great economist" that brought further consideration of what our libraries say about us and what we value.

A disposition towards *understanding perspectives* is what we strive for in university and school classrooms, places in which multiple perspectives and social cohesion are nurtured. Plurality and difference are inseparable from the human condition. Thus, we ask young people to consider cultural contexts, resist stereotypes, and position themselves to value shared human dignity, especially when interacting with those whose path has differed greatly from their own. To do so, we identify influences on our perspective including intercultural interactions (or the lack thereof), and we consider shared values to build on universal understandings, such as security, benevolence, stimulation, and self-direction. We reflect on the ways a natural empathy towards others (i.e., the moral sentiment of sympathy per Adam Smith) might frame shared influences or mark cultural distinction as we respond to the pressing needs of climate justice. And we examine opportunities that might challenge us to attempt to pluralise thinking instead of reducing alternatives. To this end, we consider a reversal of thinking about education; from giving students answers about sustainability to asking students, and ourselves, difficult questions about what it means to be human and how to lead a human life. Such questions I contend, are increasingly essential for us living in the Anthropocene.

The third disposition towards global competency involves the ability to *communicate ideas effectively across differences* and with diverse audiences. We listen generously and share courageously, openly, and appropriately given the audience and context. We consider our expressive and receptive communication through verbal, nonverbal, visual, and written modalities, and we contemplate ways we use language that invites multiple ways of thinking and respectful dialogue. We grapple with controversial and emotive issues in LfS, such as a just transition to sustainable energy and economic practices that don't ignore the importance of human flourishing. As an educator, I am keenly aware that curricular choices – what is included and what is excluded, communicate much about what we value.

The fourth disposition involves *taking action*; accordingly, educators identify and create opportunities to assess options, improve conditions, and plan activities. I utilize the 'head, heart, and hands' model of transformative learning in educating for sustainable futures. First, LfS requires knowledge of sustainability itself (the head). Second, the heart recognises recognizes the role of relationships, feeling, values, empathy, and compassion necessary to fulfill LfS; connections made cognitively and emotionally can be translated to will and ability to act, and educators must be adept at creating opportunities for learners to do so. As Singleton (2015) stated, "people care about and tend to who or what they love" (2). Third, the hands, involves involve citizens taking action. In my own teaching, I embed civic engagement tasks rich in transferable skills; these often involve service learning and synthesising synthesizing course learning outcomes with SDGs. Educators are positioned to identify and create opportunities for personal and collective action to improve conditions around environmental, economic, and social components of sustainable development.

My current research regarding peace education sits at the confluence of SDG #4, Quality Education and SDG #16, Peace, Justice, and Strong Institutions. In 2011 had the honour of attending the Nobel Peace Prize ceremony in Oslo; that year the award was given for advancing women's rights and safety. This experience had a profound personal impact as well as influenced the trajectory of my professional career. I now use the rationale of each year's winning laureate for the promotion of peace as an interdisciplinary theme in teacher education courses, and I introduce new teachers to the classroom resources of the Nobel Peace Center. According to the Global Peace Index, Norway is one of the more peaceful countries, and although the UK is relatively peaceful, Glasgow, Scotland is identified as the least peaceful place in the UK.⁵ My research has consequently focused on peace education in the Scottish national curriculum and utilizing democratic research methods with youth as co-creators of knowledge.

AFFIRMATIVE ETHOS OF A POST-CRITICAL FOUNDATION

I have found through working with educators in multiple countries that creating peaceful, sustainable futures requires a foundation on the affirmative ethos of a post-critical pedagogy, an assertion of positivity and hope that is often missing in the present dialogue. Hodgson, Vlieghe, and Zampjski (2017) put forward in *Manifesto for a Post-Critical Pedagogy*, an optimistic attitude, a post-critical direction, for which LfS can ‘gain purchase’ in the hope for what is still to come. It is a belief in the transformative potential of education, a shift away from exposing what is wrong and trying to use education to solve it.

A post-critical inclination might help us better specify what *is* actually worthwhile to sustain. It brings forward the belief in the possibility of change and a validation that there is good in the world worth preserving. Otherwise, why would it be necessary to concern ourselves to operate within planetary boundaries, ensure a social foundation of well-being, or consider intergenerational equity? If criticality is continuously wielded to find fault in everything, we risk destroying morale as well as potentially missing out on solutions. This really brings the heart back to the center of LfS. I do wonder how LfS might change with a shift from focusing on deprivation, degradation, and disruption to emphasizing optimism through a positive ethos.

CONCLUSIONS

There is still much work to do. According to the UN progress update on SDG #4, school completion rates have increased little and the goal of expanding the number of qualified teachers is still to be met.¹ The World Bank has shown that low-income countries continue to have high learning poverty rates, and Covid-19 has set back learning for at least one year. We should be encouraged by ‘The Fulbright effect’ which demonstrates the lasting impact recipients make in their academic communities and beyond, and that this impact increases instead of diminishes over the post-award years. My Fulbright experience is certainly an affirmation of this finding. There are Fulbright awardees and alumni around the world poised as global citizens and cultural diplomats to effect change and advance mutual understanding. Indeed, that should inspire hope for a more sustainable future.

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BIOGRAPHY

Sarah K. Anderson is a Senior Lecturer in Education and Research & Teaching Group Leader of Pedagogies, Praxis & Faith at the University of Glasgow in Scotland. Sarah has a PhD in Teacher Education with a cognate in Educational Leadership from the University of North Dakota, US in addition to a master's degree in special education and an undergraduate degree in teaching secondary level social sciences. Sarah was a Fulbright Scholar to Norway (2011-2012). She can be reached at sarah.anderson.3@glasgow.ac.uk and her full biography accessed via her website <https://www.gla.ac.uk/schools/education/staff/sarahanderson/>.

FULBRIGHT FOUNDATIONS TO FULL BRIGHT FUTURES

WAQAS IDREES

ABSTRACT

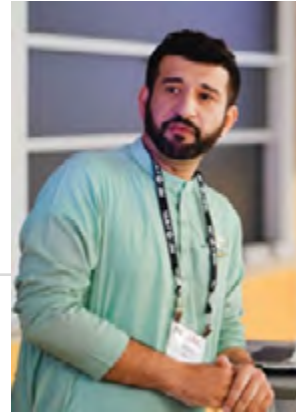
In the tapestry of life's trials and tribulations, sometimes, a single thread of resolve stands out. For me, that thread was the Fulbright scholarship, a goal that took three attempts. But once secured, it became a gateway to a world of possibilities, which later translated into groundbreaking work on sustainability in Pakistan.

Keywords: youth empowerment • actionism • collaboration

“The greatest threat to our planet is the belief that someone else will save it” – Robert Swan.

It is often said that sustainability is not solely about preserving our resources but also about instilling a legacy of empowerment and benevolence. Growing up in a middle-class working family in Pakistan, I've realized that true sustainability lies in 'actionism' and 'paying it forward' – creating a cascade of opportunities that empower others. It's a philosophical dance between being a steward of the environment and a nurturer of potential, ensuring that our footprints on this earth are not just shallow imprints but deep, nurturing grooves that guide future generations toward a brighter, more sustainable future.

This philosophy began to take root in my childhood when my art teacher, Ms. Ambreen, gave us the task of going home and collecting trash for our next art class. I still remember my revulsion as I collected toilet paper tubes, used paper plates, and discarded milk bottles, mixed with confusion as to how this assignment constituted art. The next day, as we sat down at our tables with our “trash” in front of us, Ms. Ambreen started by saying, “Today, we will convert trash into treasure.” The next hour saw a world emerge in front of me: picture frames, decorative plates, and a windmill that could light a bulb using wind power. Every creation was a celebration, a testament to the potential of 'waste' transformed into wonder, instilling in me an enduring lesson in resourcefulness, creativity, and the profound beauty of giving new life to the discarded. A testament to this experience was my first art exhibition at the National Lifestyle Exhibition in 2002, where I showcased art pieces made from recycled materials. My beloved art teacher had started a domino effect. I started teaching my friends how to recycle, reuse, reduce, and repurpose their trash. Little did I know that this small action of guiding others would lead to a life-long love for teaching and mentoring those around me.



WHEN PASSION BECOMES PURPOSE: THE JOURNEY TOWARDS FULBRIGHT

“Study the science of art. Study the art of science. Develop your senses - especially learn how to see. Realize that everything connects to everything else”-Leonardo da Vinci

I am a man of art. Surface aesthetics inspire me. I am also a man of science. To go beyond apparent beauty is my passion. That childhood endeavor of crafting art from trash, especially the windmill made from scraps, left a lasting impression. The bulb powered by nature sparked my curiosity on the connection between art and science. The answer dawned on me when I learned about da Vinci and his contributions to the world. Here was a man who belonged to both religions: art and science. As a polymath, he perfectly understood the importance of harmonious coexistence with nature. While the term ‘sustainability’ wasn’t used in his era, many of da Vinci’s works and notes reflect a deep appreciation for the natural world, an understanding of the interconnectivity of all living things, and thoughts on harnessing energy in sustainable ways, like his studies on water flow and the development of renewable energy sources. His holistic approach to science, art, and nature embodies principles we now associate with sustainability. This man was the inspiration for my desire to pursue a career in engineering, that masterful discipline where art and science are one.

When you embark on a journey that truly reflects your inner calling, the universe has a way of aligning its forces to guide you towards your destined path. In 2005, a 7.6 magnitude earthquake hit the city of Muzaffarabad in Pakistan, and the death toll reached 79,000. I volunteered at the Pakistan Institute of Medical Sciences (PIMS) and saw that among all the other problems afflicting the people in the area, the most crucial ones were no power due to poorly managed electrical setups, major dependency on fossil fuels alone, and no means of alternate energy in case of emergencies. In the children’s ward, the earthquake’s impact was heartbreakingly clear. Deprived of essentials and education, these young souls faced overwhelming adversity. Drawn to their resilience, I devoted my time to storytelling and crafting, transforming simple materials like gauze, wood sticks, and surgical tape into toys and tokens of joy. These moments, reminiscent of my childhood creativity, became a shared language of hope and expression amidst the shadows of disaster.

Back in school, I began thinking about the role of engineering in mitigating harm from natural or forced calamities. At the time, I was in my third year at university, studying specialized courses in Electrical Engineering. It was the basic principle of a generator that made me research further on electricity production. I became interested in electrical power generation using intermittent sources. Also, I had read in *New Scientist* that engineers were

trying to generate useful power from human muscle activity. After meticulous research, I finally locked on to a final-year project about energy generation through muscle movement. Based on a research paper from MIT, I graduated with practical results, a sense of purpose, and a passion to change the world.

However, the initial thrill of graduation soon faded into a sobering understanding. In Pakistan, not only was active research in sustainability limited, but efforts in renewable energy were siloed, rendering them largely out of reach for students and researchers nationwide. This situation was exacerbated by the prevalent reliance on imported technology, as local indigenization of technology lagged, and cutting-edge topics remained absent from university curricula. This disconnect between academia and industry created a gaping void, further sidelining the youth whose potential to drive innovation and foster change in these pivotal fields was left largely unexplored and unutilized.

Driven by a need for hands-on experience and a broader view of the world and inspired by my mother's unwavering belief in the power of quality education and international exposure, I decided to pursue a master's degree abroad. However, the financial barriers seemed insurmountable until my mother introduced me to the Fulbright scholarship. To me, Fulbright became more than a scholarship; it was a lifeline, offering a chance at unparalleled growth and learning for someone from a humble background, turning dreams of international education into attainable realities.

MERGING OF PROFESSIONAL AND PERSONAL PASSION: THE SEEDS FOR I CARE

“We cannot always build the future for our youth, but we can build our youth for the future”-Franklin D. Roosevelt

I went to the US to study energy systems from the lens of policy reforms and regulations. At Northeastern, I studied under Dr. Gregory Kowalski, an eminent professor in the field of mechanical engineering. At Massachusetts Institute of Technology, I studied ‘Engineering, Economics, and Regulation of the Electric Power Sector’ under Dr. Ignacio J. Pérez Arriaga, who has played a monumental role in the liberalization of the electric power sector of the European Commission and Latin America. Under their guidance, I was able to critically analyze Pakistan's power sector and determine the barriers to switching to more sustainable options. Fulbright helped me set Pakistan toward a more sustainable, energy-independent future. As a sustainability and climate risk expert and the youngest technical member on a USAID-funded project, I facilitated the financial closing of 12 wind and four solar power projects that will provide 860MW of renewable energy for Pakistan's national power grid. This represents a private and public sector investment of \$922 million in clean energy projects, which is an extraordinary achievement given Pakistan's credit rating, political instability, and risk perception. I am also assisting the

government in designing a competitive procurement process for renewable energy generation, which will serve as the foundation for renewable energy auctions in the future. I have also developed a comprehensive investment strategy to help Pakistan achieve its ambitious NDC targets for 2030.

In addition to my professional development, I was also able to refine the solution to a social problem I had been observing growing up: access to education. UNICEF estimates that 22.8 million children are out of school in Pakistan. As a kid, I offered free tuition classes to underprivileged children in my neighborhood. However, the gesture often felt pointless because of its limited geographic reach. It was only when I had to take online lectures during Boston's infamous blizzard season that I truly began to appreciate the potential of digital learning. Upon returning to Pakistan, I conducted studies on the efficacy of digital learning in educating underprivileged and displaced children through the lens of P21 century skills. The results for both studies were overwhelmingly positive and presented at MIT's LINC 2016 and 2019 conferences. In a world altered by Covid-19, the real impact of these studies became even more apparent, and researchers from all over contacted me to discuss adapting the findings for their regions.

While on the Fulbright scholarship, I was also able to study sustainability through the lens of 'activism' and 'actionism' and became involved in the Official Children and Youth Constituency of the United Nations Framework Convention on Climate Change (UNFCCC), YOUNGO. I was surprised to see how the youth of Pakistan were underrepresented on international platforms, especially those belonging to underprivileged areas. This revelation became the catalyst for an initiative aimed at amplifying their voices on a global stage. By nurturing a program rooted in cultural resonance and linguistic empowerment, my mission was to bridge the gap between local voices and global platforms, ensuring that the youth of Pakistan could contribute meaningfully to the discourse shaping their future and, in doing so, redefine the landscape of international environmental dialogue.

I CARE: NURTURING SUSTAINABLE YOUTH LEADERSHIP AND CLIMATE RESILIENCE

"Change will not come if we wait for some other person or some other time. We are the ones we've been waiting for. We are the change that we seek." - Barack Obama

Before receiving the Fulbright scholarship, I was captivated by stories of transformation—how individuals were empowered to chart their unique courses upon returning from their Fulbright journeys. For me, the impact of Fulbright was significantly more profound; it was the gateway to discovering my voice and

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amplifying the voices of many in Pakistan. The insights and experiences accumulated over two years ignited breakthroughs that became the foundation of I CARE (Initiative for Climate Awareness and Resilient Earth). With a profound impact on over 6000 Pakistani youth, I CARE has embarked on a transformative journey that resonates with the pressing need to address climate change, environmental degradation, and socio-economic disparities. Through I CARE, I have extended Fulbright's impact to the local level, fostering youth leadership and climate resilience, a testament to the lasting influence of Fulbright in sculpting a world where there are no obstacles to learning, understanding, and collaboration.

One of I CARE's primary focuses is education. Recognizing the critical role of knowledge in fostering a sustainable future, I CARE endeavors to provide marginalized youth with access to education that extends beyond traditional classroom boundaries. Leveraging digital platforms, it has developed educational content and resources tailored to the needs of underprivileged children in Pakistan. These resources are designed to instill in them not only academic skills but also meta, humanistic, and life skills, equipping them to face the challenges of the 21st century.

A standout achievement of I CARE is its role in organizing Pakistan's first-ever Local Conference of Youth (LCOY), officially endorsed by the United Nations Framework Convention on Climate Change (UNFCCC). This groundbreaking event provided a platform for Pakistan's youth to raise their voices on the global stage, enabling them to contribute meaningfully to discussions on climate action and sustainability. Through LCOY, I CARE not only empowered young individuals but also facilitated the creation of Pakistan's first youth-led policy paper, reflective of the viewpoints of Pakistani youth, which was synthesized into the Global Youth Statement (GYS) presented at the 18th United Nations Climate Change Conference of Youth (COY18) and subsequently at COP28.

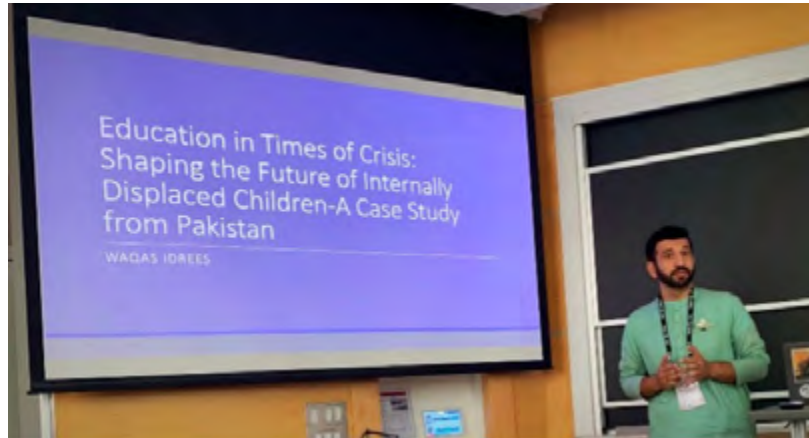
Collaboration lies at the heart of I CARE's mission. Through partnerships with influential entities like UNICEF, UNDP, and Pakistan's Ministry of Climate Change, I CARE has amplified its impact and engaged in projects of national and international significance. "COP in My City" is a project that promises to shape Pakistan's youth into global climate leaders. In 2023, I CARE empowered young individuals from diverse backgrounds, equipping them with the knowledge and skills to participate actively in climate discussions and represent Pakistan on the global stage. Eight select participants got the unparalleled opportunity to attend COP28 on Party badges and sit in actual negotiations to discuss and understand the nuances of international diplomacy. Recently, I had the honor of being chosen for the esteemed One Million Leaders in Asia (OMLAS) Fellowship. This opportunity will significantly amplify I CARE's reach as we join forces with counterparts across Asia, heralding a new era of expanded impact and collaborative efforts for sustainable change.

I CARE's work extends to environmental literacy and awareness. Recognizing the urgent need to address climate change, I conduct awareness campaigns, workshops, and seminars, spreading the message of sustainability and climate resilience to communities across Pakistan. These sessions are tailored to the local and cultural context so that the sessions are relevant and helpful for the participants. Additionally, the sessions are augmented through various games and experiments to keep the participants engaged, and complex theories are easily understood. By promoting environmental literacy, I CARE seeks to create a groundswell of informed citizens who understand the gravity of climate-related challenges and are inspired to take meaningful action.

In addition to these efforts, I CARE utilizes the power of media to foster awareness. "Climate Conundrum" is a Radio podcast I regularly host through Pakistan's Planet FM87.6 radio station. It aims to dispel climate myths, educate people on adopting sustainable practices and empower the youth to make the world around them better through small acts of change, like composting, recycling, etc. The podcast and news articles published in various national and international media serve as powerful tools to disseminate information on climate change, sustainability, and youth empowerment. These multimedia platforms provide a voice to the youth, allowing them to share their insights, experiences, and solutions with a wider audience.

In essence, I CARE embodies the spirit of transformation and empowerment. It is a movement that seeks to nurture a new generation of leaders who are not only aware of the pressing climate and sustainability issues but are also equipped with the knowledge, skills, and determination to address them. With every initiative and partnership, I CARE takes Pakistan closer to a sustainable and resilient future where no one is left behind, and the youth are at the forefront of positive change.

Creating a sustainable future is akin to weaving a tapestry with threads of resilience, innovation, and collective conscience. It's about understanding that our actions today script tomorrow's narrative, ensuring that the legacy we leave is one of balance, harmony, and empowerment. The Fulbright journey, as chronicled in this article, mirrors this ethos, translating academic excellence into actionable wisdom. It's not just about lighting a path for oneself but igniting beacons that guide entire communities toward enlightenment and sustainability. My Fulbright journey embodies this philosophy and is a testament to the power of collaborative effort in crafting legacies that transcend arbitrary borders and generations to ensure collective good for all who inhabit this earth.



BIOGRAPHY

Waqas Idrees is a certified Sustainability and Climate Risk (SCR) expert, a seasoned Electrical Engineer, and a Fulbright Scholar with a Master's in Energy Systems from Northeastern University, supplemented by advanced studies at the Massachusetts Institute of Technology. Over the past decade, Waqas has been instrumental in integrating sustainable energy sources into Pakistan's national grid, spearheading the mobilization of over 800 MW of solar and wind assets, a testament to his leadership in facilitating significant private sector investment exceeding \$900 million. He is currently working as a Senior Energy Specialist at The World Bank. Waqas's professional work and investment in social causes not only paves the way for a more sustainable and resilient energy future but also fosters a brighter, more educated generation. For inquiries and collaboration, he can be reached at waqas.idrees@fulbrightmail.org

A CONCEPTUAL JOURNEY TO THE FOREST: PLANTING A PROSUMER ECONOMY

UYGAR ÖZESMI

ABSTRACT

Thirty years after my Fulbright MSc Scholarship at Ohio State University in 1993-93, what I learned and experienced then, has still a profound impact in my work. Since then, I have worked on ecology and complex systems in NGOs and social enterprises. While my love of scholarship and writing continued, I ended up working in the area of economics, circling back to the ‘eco’ of ecology, developing the prosumer economy to get us out of polycrisis.

Keywords: ecology • systems science • ecological modeling • prosumer economy • polycrisis



I started very early with the intention of becoming a scientist. In 1983, at the age of 13, I began conducting scientific research on planktonic species and later, aquatic Heteroptera and Coleoptera species in Sultan Marshes – a vast wetland complex in Central Anatolia. Every month I collected water samples from floodplains and identified and counted the species under a microscope. I remember puncturing holes in the ice when Sultan Marshes froze so that I could collect samples. When I started studying at Kayseri Science High School, I wrote peer-reviewed articles and won first prizes twice in Turkish Scientific and Technical Research Council (TÜBİTAK) competitions for my work on plankton and insects. In 1986, I worked with fellow students Oğuz Onay and İsmet Bayraktaroğlu on a project to create the first known expert system software on identifying aquatic insects. The research thesis and the peer-reviewed articles were cited extensively, and my work was deemed at the level of a master’s and PhD in Biology; therefore, I was recommended to study something else for my Bachelor’s degree. I intended to study environmental science; however, there was no such undergraduate department in Turkey at that time. Therefore, I pursued a degree in Earth Science (Geological Engineering), the foundational field of environmental sciences, at the Middle East Technical University (METU) in Ankara.

While doing research at Sultan Marshes, I sent monthly reports on the status of birds to the General Directorate of Environment in Ankara. No one had asked me to do this, but somehow it must have gained some interest in the “Capital,” as I was asked by the General Directorate to be the Turkish President’s guide for his visits to Sultan Marshes and Seyfe Lake. During this

trip, I was approached by the Minister of State, Adnan Kahveci, and asked to be one of his advisors. I accepted and served until he became Minister of Economy during my freshman year at METU. Little did I know that I would end up in economics.

SHIFTING TO ECOSYSTEM SCIENCE THROUGH FULBRIGHT

While I gained an excellent foundation in geology at METU, I wanted to continue with my initial intention: environmental science. Although geology allows us to understand the dynamics of our lithosphere and its interaction with the atmosphere, hydrosphere, and ecosphere through hundreds of millions of years and is crucial to having ‘a bird’s eye view,’ a sustainable future also needs to be built through the understanding of *how* humans and their economy interact with their environment today.

It is with this in mind that I proceeded to apply for a Fulbright Masters Scholarship. The scholarship enabled me to enter Ohio State University’s Environmental Science Master’s Program. My thesis advisor was the famous Professor Dr. William J. Mitsch. While I knew him from his very impactful “Wetlands” textbook, upon entering his lab I had the opportunity to learn from him directly. This also included being able to engage with his researchers and collaborators who were working on range of other topics that continue to shape my thinking today. I became acquainted and even dug deep into systems science, systems dynamics, ecological modeling, ecological engineering, and finally, ecological economics.

There, I started Stella™ programming and built systems dynamics models. These were informed by H.T. Odum’s work, as Dr. Mitsch was his student. Back in 1958, H.T. Odum had already considered the valuation of ecosystem services and ecological economics. He divided fossil fuel use by GNP at the national scale to estimate a ratio of calories per USD. From this, Odum calculated the ecological energy flow he called “life support value.” He used energetic models to demonstrate how energy flows through ecosystems. As Dr. Mitsch used to say, referring to Odum’s work, it is because “the food system is subsidized by fossil fuels [that] we eat –petroleum.”

Being at Ohio State University allowed me to branch out into areas of discrete event modeling, encompassing operations research at the industrial engineering department, satellite imagery, raster Geographic Information Systems (GIS), and GIS Modelling from the geography department. I published papers on estimating viable populations of Piping Plovers *Charadrius melodus* using discrete event models and artificial neural network models using geospatial data for bird breeding habitat identification. Dr. Mitsch taught us about ecological engineering at the Olentangy Wetland Research Park, which we helped build as graduate students. He was also part of a larger network including S.E. Jorgensen of Ecological Modelling and Robert Costanza of

Ecological Economics (also an H.T. Odum PhD student). Both helped me develop a systemic perspective and its intersection with human society and human behavior and its impact on nature. I also developed an acute sense of humans being part of the larger ecosystem.

HUMANS AS AN INTEGRAL PART OF NATURE

As a former nature “protector,” my view was very well summarized in Gary Larson’s “Wildlife Preserves” cartoon. Wildlife or nature was a place where there were no humans. I came to realize that, especially after my Fulbright experience, studying Systems Science and Ecological Modelling, Ecological Engineering, and Ecological Economics, humans were part of it, and “yes” were usually a destructive element. How do we turn them into change agents for a symbiotic relationship with nature rather than destructive? As such, I decided to study Conservation Biology and became a MacArthur scholar at the University of Minnesota to not only pursue a PhD in Conservation Biology, but also a minor in Development and Social Change. I studied Environmental Sociology, Anthropology, Public Policy, History, and even ended up teaching a class in Human Ecology with Phillip J. Regal. My PhD advisor, the late Professor William P. Cunningham, gave me a foundation in environmental ethics and how to approach “human” as part of a future. His influence would manifest itself in our article published in “Posthumanism Journal,” 24 years later.

THE JOURNEY AFTER FULBRIGHT

While attending METU in Ankara, I founded the first birdwatching club in Turkey called “Ankara Kuş Gözlem Topluluğu” in 1989. We went on field trips together and entered our observations on a computer into “DBASE 3+,” a cumbersome but useful software for researchers.

A core premise was the notion that if we had enough people who loved birds, we could conserve them and prevent habitat-related loss. With this intention, we started a movement, creating bird-watching clubs nationwide with the Society for the Protection of Nature in Turkey. While creating bird-watching clubs was a positive start, the most crucial aspect for me was fostering a sense of unity and camaraderie among these groups. To achieve this goal, we decided to organize a bird-watching conference at Erciyes University in Kayseri, where I started as a faculty member after receiving my PhD in 2000. These conferences continue today, with the ‘20th Turkey Bird Watching Conference’ recently held by Nature Society in 2023.

During the first conference, I introduced ‘Kuşbank’ (Bird Bank), an internet database for recording and sharing bird observation data online, wherever you are. We encouraged everyone to enter and share their observations on this platform instead of storing data only in notebooks. It worked, and we collected data at a scale and amount never before achieved through crowd-

sourcing birdwatching. KuşBank became the pilot project for WorldBirds by the Royal Society for the Protection of Birds and Birdlife and eventually merged with eBird to become a global system. To give you an idea, in 2023, more than 340 thousand birdwatchers entered data in eBird with more than 247 million observations from 249 countries. This was a great lesson for me on how crowds and people as whole can create extensive change. Combined with what I learned during my Fulbright experience, a pathway forward emerged.

THE POLYCRISIS

We are currently in a global polycrisis. The human economic system driven by an anthropocentric growth mindset is destroying planetary life support systems. The global surface temperature has increased by 1.1°C since the pre-industrial period, hitting a maximum of 1.46 in 2024. Climate Change has reached levels where the UN Secretary-General warned in July 2023, “the era of global warming has ended” and “the era of global boiling has arrived.” In the paper by Richardson et al. in *Science* in September 2023, it was reported that six out of nine planetary boundaries have already been transgressed, indicating the earth is not a safe space for humanity anymore. The root cause of the polycrisis that humanity is experiencing can be attributed to current economic practices and the broader normalization of unjust practices in the current socio-economic paradigm.

The dominant socio-economic paradigm is focused on profit maximization and seeks infinite growth, even though the concept of infinite growth with finite resources is not physically possible. That is why, across the last decade, different movements such as Degrowth, Solidarity Economies, Commons Movement, Peer to Peer Movement, Community Economies, Transition Networks, Social Enterprises, and cooperatives have gained significant importance – and people started to create alternative ways of transforming the current socioeconomic paradigm. More people have started to realize the consumer-based economy is neither ecologically nor socially sustainable and have become involved in those movements. In simpler terms, the rise of all such alternative economies implies the world needs a new, ecologically, and socially just economic system.

THE SOLUTION: PROSUMER ECONOMY

Being first exposed to biology and then earth science, having emersed myself through the Fulbright scholarship experience in systems science and dynamics, ecological modeling, engineering, and economics, and with the realization that it is really about people and their paradigms, and finally observing first-hand how crowds can make a huge difference – I invented the idea of a “Prosumer Economy.”

The Prosumer Economy, if implemented, could solve the polycrisis in all aspects as it looks to create an ecosystem that is considerate of social, ecological, and economic inequality and unjust practices. In other words, the prosumer economy is a circular economic system that brings socially and ecologically just prosumers together to create symbiotic relationships among themselves and all other beings. In biology, there are no consumers; everything prosomes, and every organism transforms something into something else used by something else. The significance of the prosumer economy is that it is an ecosystem like a forest that creates positive ecological and social externalities. For example, the ecosystem service of Amazon forests was estimated to be approximately 3.527 billion in the 2007 USD price index, 3 to 4 times more than the total income of the world's 20 most valuable companies. Or, in more specific definitional terms, "prosumer economy is a macroscale circular economy with minimum negative or positive ecological and social impact, an ecosystem of producers and prosumers, who have synergistic and circular relationships with deepened circular supply chains/networks, where leakage of wealth out of the system is minimized."

As there is an overlap with many alternative economies at the goals and tools such as degrowth, solidarity, community economies, and commons movements, any economy can call itself a prosumer economy if:

1. the economic system, the ecosystem, and the community are established upon ethics. The system embraces the golden rule, which is "do unto others as you would have them do unto you." Others include all the organisms and planetary life support systems; crucial when considering the biodiversity crisis we are currently experiencing;
2. all members of the ecosystem aim for solidarity, collaboration, cooperation, and ecological and social justice and work towards this shared goal;
3. the sustainable supply chains in the ecosystem are deepened, circular, and reinforced by the support systems built in the prosumer economy ecosystem; and,
4. the community is governed by democratic local governance.

In a prosumer economy, the leakage out of the ecosystem is minimized so that the money in the system circulates among producers and prosumers. As more prosumers enter the system and support just producers, more resources become encompassed into the ecosystem and circulate. When leakage is minimized, and more prosumers are embodied in the ecosystem, the common consumer-based economy will become a prosumer economy. As more prosumer economies form worldwide and change the conventional paradigm from within, the dominant paradigm will eventually get smaller, and the socially and ecologically just economies will become the conventional paradigm.

For the conventional paradigm to become the prosumer economy and be adopted by different communities to create awareness around it, the “Prosumer Economy Society” has been a working case study in Turkey since 2015 and an apt model for reference. The Prosumer Economy Society encourages ecologically and socially just business models, reinforces and strengthens good practices, and informs the public about the prosumer economy’s positive impacts on ecology and in building a sustainable society.

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THE LABORATORY: GOOD4TRUST.ORG

The prosumer economy was an idea, a theory, a must, but we also needed somewhere to demonstrate what is practical and realistic. In this light, we needed to build a macrocosm to explore the concept, see the problems and challenges, and demonstrate it to others “live.” We called it Good4trust.org. You can think of it as an economic equivalent of the “Biosphere 2,” the Earth system science research facility in Oracle, Arizona.

Good4Trust is a social enterprise working with the principles of the prosumer economy. It is a socially and environmentally just bazaar and community. We intentionally do not refer to it as a marketplace, but a bazaar like the Grand Bazaar in Istanbul, that is governed by the shop owners and is based on solidarity instead of competition. It is founded on the principles of the prosumer economy, as listed above, and practices them. The Bazaar is a total economy that includes retail, wholesale, goods and services. Even its complementary currency called “trust.” Trust enables system loyalty, increases circularity, and reduces leakage. Currently, there are more than 25,000 prosumers, that is, buyers and 770 producers, namely sellers, including Micro, Small, and Medium Enterprises, NGOs, Social Enterprises, and Cooperatives. The system has been operating functionally for more than seven years, while also expanding and bringing other creative initiatives into the network, such as Qaori.coop.

CONCLUSION

The Fulbright experience has transformed my thinking and allowed me to see the world as a whole. Bringing so many nationalities together to inspire each other necessarily allows us to see the world from different perspectives – not just from a national perspective but from a planetary perspective. The experience exposed me to so many different disciplines, both in sciences and humanities, that I realized that we need to be in a post-humanist state. The process that led me to the “prosumer economy” was highly influenced by the Fulbright scholarship in my early years of formation.

In this polycrisis period, our survival on this planet is dependent on peace. Senator Fulbright said, “...the common bond of human dignity is recognized as the essential bond for a peaceful world.” Today, where we have transgressed planetary boundaries, human dignity also involves treating all beings on the Planet with dignity and respect. To create a symbiotic relationship and peace on this planet, for a dignified existence, we need to structure our economy into a prosumer economy.

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BIOGRAPHY

Uygar Özesmi is an Ashoka Senior Fellow. He completed an MSc in Environmental Science at Ohio State University with a Fulbright Scholarship (1993-94). He continued to finish a PhD in Conservation Biology with a minor in Development and Social Change at the University of Minnesota with a MacArthur Scholarship. He founded the Environmental Engineering Department at Erciyes University and is currently Adj. Asst. Professor at Kadir Has University teaching Sustainable Energy and Ecological Economics. He has over 100 scientific publications, three books, and a daily radio program. He has led and served on many national and international NGOs like TEMA and Greenpeace Mediterranean. He also founded many NGOs like Nature Society and social enterprises such as Kusbank.org, Change.org Turkey, and Good4Trust.org. He can be reached at uygar@good4trust.org

CONFLICT, LEARNING AND SUSTAINABLE PEACEBUILDING: CASE STUDIES FOR FINDING A BETTER WAY FORWARD

WILLIAM M. TIMPSON

ABSTRACT

There is much to know about conflict and how to survive its pressures and threats, both real and imagined, and how we can find a better way forward. There is much here to teach others. Sparked by my Fulbright Awards to Northern Ireland, Burundi (East Africa) and South Korea, I could see both the challenges and rich promises of a commitment to sustainable peacebuilding, that is, the interconnected health of people, their economies, and the environment.

Keywords: peacebuilding • sustainability • learning



There is much to know about conflict and how to survive its pressures and threats, both real and imagined, and most importantly, how we can find a better way forward. There is much to study, much to practice and much to teach others. What we must all learn about dealing with conflict is also what all of us can—and should—do differently. Too often we only think of conflict in interpersonal, regional, national and/or international contexts. However, in my work, I follow the traditional definitions of “sustainability,” the interconnected health of people, their economies, and the environment.

For example, there is much to know about the research on cooperation, what is required to build effective teamwork, and foster the mutual interdependence that keeps team members engaged and invested in finding solutions that work for everyone and that also work for the health of the environment. What educators understand about learning can be shared widely.

There is also much to know about our social-emotional makeup, especially when conflicts erupt into violence. There is the critical and creative thinking that defines how we approach these conflicts and how we find innovative ways forward, how we can see through to new possibilities. We can also study the values that underlie conflicts at a deeper level, the moral development that often impacts how people of different ages and backgrounds will respond.

My three international experiences with Fulbright pushed me past traditional academically based theories about conflict and directly into diverse communities that had been consumed by struggles to move past hatreds and prejudices, threats, and violence. I saw first-hand how different people and cultures responded to conflicts, how they were able to explore

new ways forward as they moved toward sustainable peacebuilding. I could see how they had shifted from the theoretical to the real, from one perspective to an appreciation for the value of different perspectives, from a strictly human impact to inclusion of environmental implications as well.

I saw first-hand how different people and cultures responded to conflicts, how they were able to explore new ways forward as they moved toward sustainable peacebuilding

Case studies are commonly used in professional schools of business and law, while engineering curricula will often have an upper division focus on collaborative projects as students prepare to transition to the work world. In a parallel fashion, a few medical schools have also shifted to problem-based learning. All these efforts are a reflection of the desire by faculty to better challenge students with more accurate representation of the complexities of these fields, content that defied simplistic, dichotomous answers of right or wrong, true or false. My three Fulbright awards allowed me to resist the academic pressure for reductionist assessments and thinking about definitive answers only about human conditions, and, instead, look for larger connections and insights.

All of these insights into practical examples have also come together in a forthcoming book by the same title as this article, *Conflict, Learning and Sustainable Peacebuilding: Case Studies for Finding a Better Way Forward*.

NORTHERN IRELAND

On my own journey of discovery, I was fortunate to have been awarded a Fulbright Specialist Award in 2006 for a six-week experience in Northern Ireland with community members from across that horrific 800-year divide that the British empire had imposed on the native population. Defying all those who insisted that a peace accord was forever doomed by the scars of the supposedly intractable nature of this history, peace activists from both sides of the Protestant / Catholic divide, primarily women at first, began pressing for a new, united way forward out of the daily cauldron of violence. Eventually, even the paramilitary soldiers on both sides joined the effort that produced the 1998 Good Friday Agreement. They eliminated all guns from the streets where deadly retaliatory reprisals had created a climate of fear, anger, and despair.

Everyone could ask what is the price security and who provides it? Who can be trusted? As the descendents of the colonial power, British soldiers were usually aligned with the Protestant loyalists. The British military compounds were large and formidable, whether in Belfast or elsewhere, a constant reminder of power.

A focus on sustainable peacebuilding meant reinvesting the money once used for weapons into collaborative grassroots projects that could be tried and developed as constructive and inclusive ways forward. These efforts built on the talents, commitment and imaginations of the citizens suddenly freed from the fears of the past. Victims and former prisoners met on weekends to better understand each other. Teachers joined the challenge of developing new perspectives on history in the newly created integrated schools that would shift understanding away from blaming to a more honest, nuanced understanding of a complex and violent history.

BURUNDI

For my 2011 Fulbright Specialist award on sustainable peacebuilding at the University of Ngozi in Burundi, East Africa, I worked with young people who could see real value in forging teams across tribal lines that had exploded into a long and bloody civil war after the German and Belgian colonists left in 1962 and gave way to a newly independent nation. Our focus on education allowed a reexamination of conflicts sparked by the colonial overlords motivated primarily by exploitation, profit, and power, sparking conflicts that persisted after the overlords left.

When Nelson Mandela arrived in the late 1990s to mediate a peace process, he brought with him his hard-earned experiences as a rebel leader, a prisoner, and later as the elected leader of South Africa. South Africa had just emerged peacefully from the state-sanctioned oppression of apartheid, where the minority white population held power over the majority black population. While academics formulated and debated various theories about the way forward in Burundi, Mandela argued from first-hand experiences how tribal animosities could be replaced with shared perspectives and teamwork, which he helped to implement.

Beyond this change and something that few in the global north could imagine, Mandela also pushed for the full integration of women into every agency of government, including the police and military. The validity of this recommendation proved itself as the civil war ended, as former combatants put down their weapons and joined with citizens on both sides to create a sustainable and peaceful way forward. The incorporation of a Truth and Reconciliation Commission in South Africa was headed by Bishop Tutu. His gift to everyone was his book, *No Future Without Forgiveness*.

Another academic and theoretical understanding of these historical events can be found in the work of Lawrence Kohlberg, who described a theory of moral development. Using this model, teachers could reference a hierarchy of thinking and values that moved from obedience at the lowest level to universal ethical principles at the highest level. As a variation of this work, one of his colleagues, Carol Gilligan, then published her analysis, *In a Different Voice*, and described how the responses of females were often quite different

to what makes offered, emphasizing the centrality of relationships to their thinking about moral dilemmas. As an example, surviving 27 years in prison in South Africa seemed to give Mandela the time and space to see new ways through entrenched conflicts in his own nation and then offer new insights for the peace process in Burundi.

Importantly, I was also able to go beyond the time and resource limitations of that one Fulbright Specialist Award and work with the Rotary Foundation's Global Grants Program to build and expand our work in Burundi. In truth, I have found that it is important for developing our Global Grant to have had that six-week experience with the Fulbright Award and be able to build relationships on the ground. In this way these two international awards for sustainable peacebuilding serve as near perfect companion efforts.

Back home in US I wanted to build on the good will from our focus on peacebuilding. Our Rotary Club in Fort Collins, Colorado, offered numerous examples of successful overseas projects. In time, I developed a proposal for a Global Grant. A Rotary Club in Ngozi, Burundi was formed that embraced our commitment to "service in action" in order to help a poor mountain community improve their water system and health.

SOUTH KOREA

In Spring 2014 I was also fortunate to have been awarded a Fulbright Scholar's Award to teach a course in peacemaking in South Korea at the Graduate Institute of Peace (GIP) Studies, a campus of Kyung Hee University. It is interesting that at a time when headlines in the US were ablaze with reports about the threat from North Korea as it tested its missiles, many of our students—some of whom were active-duty South Korean army officers—wanted to discuss what had happened in Germany to promote reunification after the Berlin Wall had come down.

The Graduate Institute of Peace Studies was established in 1984 by a philanthropist who fled the North and wanted to educate future leaders with a new vision. In 1993 GIP was awarded the UNESCO Prize for Peace Education for its contribution to international peace efforts. All classes are in English and many of the students receive scholarships.

There is much in this history to inspire sustainable peacebuilding everywhere. Korea was devastated by the war in the 1950s and much of the South lay in ruins. Yet the people of South Korea sparked an economic recovery that proved to be the fastest rise out of poverty that the world would see in the twentieth century. Notably, education was at the center of this turnaround as technological advances were married with talent.

UNDERSTANDING CONFLICT

Central to my thesis here is that educators, in particular, can play a key role in understanding and sharing positive examples of sustainable peacebuilding, unpacking the dynamics that allowed people to emerge out of conflict and violence with new and hopeful ideas. As Elise Boulding described in her groundbreaking book, *Cultures of Peace*, the media in most nations has always focused overwhelmingly on conflict and violence. As the old newspaper truism goes, “if it bleeds, it leads.” As a sociologist and a Quaker, Boulding was pointedly critical of the fields of journalism, history, political science, and other academic fields that neglected the study of peaceful change, a topic rich with complexities needing to be untangled and then taught, studied and practiced.

CASE STUDIES OF SUSTAINABLE PEACEBUILDING

In this work, I also embraced the cognitive development challenges that William Perry noted for his studies of the college years. When I heard the range of ideas that emerged from different experiences and perspectives on conflict in other cultures, I could open up to the varying shades of gray in these cases. As Perry noted, I could begin to see the multiplicity of perspectives that were possible. Bringing this broader perspective to life and sorting through a range of responses required me to step back, reflect and analyze, what psychologists refer to as metacognition or thinking about thinking, which I described in my 1999 book, *Metateaching and the Instructional Map*.

Hmelo-Silver and Barnes, Christensen, and Hansen have described their use of case studies. I knew from my own experiences that such work allowed for the application of Bloom’s taxonomy in the cognitive domain where students would have the chance to apply their knowledge with real world examples, to deepen their understanding through analysis, synthesis, and evaluation. Educators could also pick up the developmentalist mantle championed by researchers such as Kohlberg, who has argued for the use of dilemmas where conflicts would engage students in deeper discussions about underlying moral choices.

In my own work with Sue Doe, we pushed for greater engagement in the classroom, the development of problem-solving abilities, and an appreciation for the benefits of engagement, discovery, and relevance that come with problem- and case-based learning. In two books of case studies, Kaye Holman and I featured the work of students in my classes that illustrate these dynamics in diverse disciplinary settings.

In all this work, we emphasized models for consensus and processes for resolving issues that often arise in groups when they do not devolve into either aggressive or submissive responses. For example, knowing how to ascribe the roles of Transactional Analysis—the Parent, Adult, and Child ego states—offers people of all ages an accessible and effective framework for analyzing past interactions and planning for the future.

DISCUSSION AND CONCLUSION

Sparked by my Fulbright Specialist Award to Northern Ireland, I could see how the shift of funding from weaponry to support of grassroots peacebuilding proved to be decisive in reframing a core tenant that defines many nations, i.e., that they must have a collective commitment to defending tier borders, themselves and the health of their lands. The growth of integrated schools, for example, opens the door to rethink traditional school curricula and include topics too often neglected, topics that will require an inclusive perspective of voices historically segregated. The door for addressing deeper historical and environmental issues will now open a bit more.

The small start-up business T.R.E.E.—Timber Recycling Eco Enterprises—was inspired by two carpenters who wanted to promote green jobs and skills that could equip the youth with new employment potential. So many of the young men, in particular, had been easy recruits for the partner. They wanted to confront the wasteful practice of sending so much of the wood from construction sites to the land-fill, i.e., making peace with paramilitaries because they were uneducated and unemployable. And most importantly, the managers of T.R.E.E. insisted that Catholic and Protestant youth work side by side, what we know from Allport's work, is the most powerful way to deconstruct prejudice and build teamwork.

Years later, David and Roger Johnson studied the dynamics of teamwork in education, what promoted cooperation, how learning could deepen and creativity flourish from positive interdependence. The value for me from Fulbright is that it allowed me to walk the streets in Northern Ireland, South Korea and Burundi, each with their own rich histories of conflicts and creative, healthy, more sustainable responses.

Finally, these kinds of experiences that were funded by Fulbright provided me with many examples of inspired change. It was in Northern Ireland that I was fortunate to meet with Mairead Maguire who was honored with the 1976 Nobel Peace Prize for leading others, primarily women, in facing angry mobs protecting the “sanctity” of their ethnic neighborhoods. When I asked her how she herself remained inspired, she showed me a wall that was adorned with photographs of these activists who were out on the streets, week after week, promoting peace and turning centuries of conflict and violence upside down and inside out.

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BIOGRAPHY

Dr William M. Timpson is a retired professor in the School of Education at Colorado State University. Along with numerous articles, chapters and grants, he has written or co-authored nineteen books including several that address issues of peace and reconciliation, sustainability and diversity. In 2006, he served as a Fulbright Specialist in peace and reconciliation studies at the University of Ulster's UNESCO Centre in Northern Ireland, and again in 2011 at the University of Ngozi in Burundi, East Africa, where he continues to work with Rotary International Global Grants to infuse sustainable peace studies into the academic programs of the University of Ngozi, the area schools, and church communities. In Spring 2014, he served as a Fulbright Teaching Scholar at Kyung Hee's Graduate Institute of Peace Studies in South Korea.

ON BOTH SIDES OF THE CAMERA LENS: AUSTRALIAN FISHERS USE PHOTOS TO EXPRESS CONCERNS ABOUT THE FUTURE OF FISHING SUSTAINABILITY AND BEING FILMED AT WORK

LEKELIA D. JENKINS

ABSTRACT

As a Fulbright Scholar in Australia, I explored the Queensland's fishing industry's views on sustainability, especially the proposed use of video cameras to monitor fishing activity and catches. Using PhotoVoice, fishers took photos representing their concerns and discussed these images in a focus group. I collaborated with artists to transform these photos into impactful artworks. My Fulbright created new partnerships, opened a new geographic area for research, and highlighted the value of art for communication.

Keywords: fisheries • sustainability • PhotoVoice • science • art • electronic monitoring • onboard cameras



As a marine sustainability scientist, I grapple with troubling issues like endangered species survival, ocean degradation, and the livelihoods of those dependent on the seas. Seeking a more uplifting topic for my sabbatical, I focused on growing my secondary research area of environmental science art. Connecting with Australian scholar Adjunct Associate Professor Lisa Chandler led me to the University of the Sunshine Coast (USC), a marine environmental science art hub with experts like Chandler and Professor Claudia Baldwin who use art for marine and fisheries outreach. The Fulbright Scholar Award from the Regional Universities Network (RUN) of Australia facilitated collaboration with USC's experts and Steve Eayrs, an Extension Officer with the Fisheries Research and Development Corporation (FRDC) who explore change management and cinematic documentaries for fisher safety.

The newly launched Fulbright RUN Award perfectly matched my background and interests. Geared to encourage scholars to work at rural universities like USC in Queensland, one of the award's foci is "Crops and Foods for the Future." This focus includes fisheries sciences, education, and

extension, which align seamlessly with my expertise in sustainable fisheries and environmental science art for science education, extension, and social change. My collaborators and I developed my Fulbright project to explore the ways in which art can be used to communicate fisheries sustainability.

THE PROBLEM

Many Australians acknowledge that it is vital to have a fishing industry that can supply locally caught fresh seafood while at the same time having policies and practices that protect the marine environment and enable a safe and sustainable fishery. Sustainable seafood is essential to human health, especially for food security and as a source of protein and other nutrients. Governments recommend that people eat more fish, and demand is expected to increase in the coming decades. To meet this demand and human health needs, we need sustainable fisheries. Yet, the seafood supply is threatened. Overfishing, bycatch (i.e., the incidental capture of non-target species), and habitat destruction have significantly reduced global fish stocks.

Conventional methods to encourage sustainable fishing practices lack effectiveness. A recent Australian study revealed communication, education, and outreach shortcomings, with fishers often unaware of research outcomes. The study identified a strong link between fishers' resistance to voluntary bycatch reduction and their lack of readiness for change and disinterest or apathy toward additional bycatch reduction efforts.

My Fulbright research in Australia focused on gauging the perspectives of Queensland's commercial fishing industry on sustainability. Specifically, I explored fishers' opinions on the Queensland Department of Agriculture and Fisheries' (QDAF) initiative to use onboard cameras to monitor fishing activities and record interactions with protected species. Industry resistance stemmed from concerns about personal and data privacy, potential access to footage by third parties leading to negative media campaigns and worries about the compatibility of camera equipment with efficient and safe fishing operations.

THE PROJECT AS PLANNED

Some fisheries professionals are exploring change theories to support the move toward sustainability, including the concept of change readiness, which involves the willingness and capacity to alter behavior. This readiness is based on cognitive (knowledge and beliefs) and affective (emotions, values, motivations, attitudes) elements. However, many extension efforts in areas like fisheries focus solely on transferring information to improve cognitive readiness for change. Theories of affective readiness suggests visual and auditory communication, such as art with pictures and music, can enhance affective readiness by evoking emotional responses and motivation.

Photovoice originated as a community development technique and is also a qualitative visual research method and art form. It offers a unique approach to enhancing affective readiness. In this process, individuals use photos or videos to depict and discuss their environment and experiences, aiming to catalyze change. The captioned photos can be shared with the public and policymakers, providing insights into the photographers' lives. Photovoice involves individual and group reflection, making it suitable for emotion-laden issues to express values and interests. It fosters mutual understanding, offers rich insights into complex topics, emotionally engages participants and viewers, enhances local control and autonomy, and conveys local expertise to policymakers.

The project focused on the research question, "How can photovoice enhance fisheries sustainability education?" Fishing industry members captured photos reflecting their values and concerns, particularly regarding sustainability and onboard cameras. Subsequently, they participated in a focus group to discuss their photos and explore improved communication strategies for conveying industry values.

THE PROJECT IN PRACTICE

Despite extensive contingency planning in my Fulbright proposal, on-ground conditions required adaptability, patience, and trust-building. The Fulbright mandated a four-month duration, starting in January, which coincided with the fishing season, so fishers had little time to participate in the project. The controversies around onboard cameras and fishing sustainability intensified, especially with government fisheries ban announced during my Fulbright. Amid this tense environment, I dedicated the initial two months to relationship-building within the fishing industry, attending meetings, and engaging with industry leaders. This time-consuming but crucial step paved the way for partnerships with the Moreton Bay Seafood Industry Association and the Women in Seafood Association, facilitating participant recruitment for the study.

Despite a one-month delay awaiting ethics approval, I conducted a focused group with three participants in the final week of my Fulbright. Interest from other fishers was substantial, but fishing conditions limited participation. Recognizing the insufficient data for analysis, I adjusted the study's focus to serve as a proof of concept for evolving the Photovoice method to create more impactful visuals. I recruited two artists, Associate Lecturer Phyllis Araneo and Associate Lecturer Lyris Snowden, faculty at USC. They partnered with two fishers to create artworks that further express the fishers' ideas and the artists' responses to them. This was a meaningful evolution of PhotoVoice because all the fishers said they were concerned that they did not have the skills to produce good photos. They also stated that onboard cameras were so controversial that it was risky for them to voice particular views for fear of repercussions from other fishers.

IMPACT OF MY FULBRIGHT PROJECT

This project aligns with the mission and 5-year plan of the FRDC, a key funder of fisheries research in Australia. As their 2020-2025 plan outlines, the FRDC focuses on capacity building, shaping culture, building relationships, and establishing shared principles and values. The plan aims to improve community trust, respect, and value through effective communication, including storytelling about seafood. Photovoice and this project are well-suited to contribute to this outcome by exploring how photos and narratives can serve as fisheries extension tools, telling compelling stories that foster affective readiness for change.

My Fulbright created new partnerships and opened a new geographic area for research. I am now on a trajectory to conduct more fisheries sustainability research in Australia. Notably, during my Fulbright, QDAF struggled to recruit participants for a field trial of various onboard camera systems because the fishing industry had continued concerns about data privacy and accessibility. After the conclusion of my Fulbright, Steve Eayrs and I proposed and successfully convinced QDAF to fund a workshop to reframe the issue of onboard cameras, reset discussions around this issue, foster collaborative problem-solving between government and the fishing industry, and develop an action plan. I co-facilitated the workshop using foresight (a method from future studies). I featured the artworks from my Fulbright in the workshop space to serve as conversation starters and allow anonymous expression of views.

The workshop was successful. Participants created a draft action plan that all parties believed was acceptable for presenting and discussing with their constituents. The workshop evaluation showed that participants viewed the artwork favorably. Fisheries leaders even requested an exhibition of the artwork at a subsequent industry meeting. Additionally, one fisher adopted the PhotoVoice technique to create a narrative photo essay expressing his concerns to QDAF leadership, using a photo of a large hole in his treadless shoe to symbolize and communicate that he felt worn down and lacked the time, energy, and resources to replace his shoes let alone buy new camera equipment for his boat. His email yielded an atypically quick and positive response from QDAF that mentioned the artwork. This evidence supports the proof-of-concept that photovoice and photovoice-inspired artwork can evoke richer insight into complex issues, increase access to power by conveying local knowledge to policymakers, and emotionally engage participants and viewers in a way that could influence affective readiness for change.

Photovoice-inspired artwork can evoke richer insight into complex issues, increase access to power by conveying local knowledge to policymakers, and emotionally engage participants and viewers in a way that could influence affective readiness for change

PERSONAL IMPACT OF THE FULBRIGHT EXPERIENCE

My Fulbright was transformative in that it affirmed my ability to create meaningful relationships and find community and my capacity to travel and explore despite my invisible disability. (I have Ehlers-Danlos Syndrome, a connective tissue disorder that affects my mobility and often leaves me in pain, and a related condition that can make me dizzy and weak from prolonged standing or sitting.) My Fulbright also provided rich learning experiences of Australia's people groups and cultures that have deepened my knowledge and provided a new framework for understanding sustainable practices.

In a post-pandemic world, where my network of friends and customary social gatherings had radically changed, I felt socially disconnected and concerned that it would be hard to build new social connections in my current life and career phase. So, I was relieved at how quickly I established a community of people I cared about, and who cared for me in exchange. For instance, I regularly had meals, took outings, and shared a laugh with my colleague and his wife, who also happened to be my neighbors. It was a joy to deepen our professional relationship into a friendship, which created a solid foundation and desire for future collaboration. I was an adoptive grandmother for the day when my pastor's daughter asked me to attend Grandparent's Day at her school because her grandparents lived far away in Sydney. My church community treated me like family, inviting me to their homes and showing care and concern when I was sick. I never felt alone during my stay. By the end of my Fulbright, I felt very comfortable in the life and relationships I had developed on the Sunshine Coast, and I often thought to myself, "I could live here."

I sought out and built these connections in various ways. My Fulbright host held an introductory dinner party, where I met several people, who I subsequently followed up with to plan a coffee date. I often scanned the "What's On" page of the local council and attended community events for Harmony Week, Reconciliation Week, Agricultural Shows, arts events, and weekend markets. I would invite someone I had met in the community to join me whenever possible. I also attended a local church and a weekly bible study at the pastor's home. In addition, I joined a local gym. In these ways, I could start conversations with folks from many walks of life, from the neighbors in my apartment building to women in my Pilates class and vendors at markets. My American accent often made it easy to spark a conversation. There are several people who I got to know by meeting with them weekly. I treasured the opportunity to discuss current events, politics, cultural comparisons between the US and Australia, religious views, impressions of the area, travels

throughout Australia, and, of course, my Fulbright project. I was struck by how open, frank, and straightforward Australians were. No topic was too taboo to discuss. Even when we had differing views, there seemed to be a sincere interest in hearing each other's perspectives.

Travel was another highlight of my experience. My goal was to see every state and territory in Australia, but I was concerned that my disability would prevent this. Since my diagnosis, I had not attempted any significant solo travel, and certainly not the type of walking and hiking tours best for appreciating the vast Australian landscape. Thankfully, my hosts recommended skilled medical providers. I discovered that Australian airports are part of the Hidden Disabilities network, so even while traveling alone, I had aid and understanding of my conditions. With this support, I nearly reached my goal of touring the major cities in every state and territory (Western Australia was the exception) and saw the natural treasure of Australia's wilderness. I walked in the Outback, along Tasmania's shores, and saw a wild platypus and kangaroos. The experience so emboldened my exploratory spirit and confidence in traveling with a disability that I did a Fulbright Specialist project in Malawi and applied for the Fulbright-Hayes Seminar Abroad shortly after.

Wherever I traveled, I sought out cultural experiences, and I especially wanted to learn about and from the First Nations peoples of Australia. I learned about the history and culture of the traditional owners, the Gubbi Gubbi people, of the Sunshine Coast area where I lived during my stay. I learned to identify and eat local bush tucker and wove baskets with traditional techniques and materials. I passed on this knowledge to my mother and her friend when they visited, and they both returned home weaving baskets on the flight.

Two experiences struck me profoundly. I will remember them forever. I happened to be in Sydney for the last days of World Pride. I attended the Black & Deadly Gala at the Sydney Opera House, where I heard and saw a concert for the ages. I was unfamiliar with the artists, most of whom were from First Nations, but the spectacle sent chills up my spine and told me I was in the presence of world-class greatness. Deborah Cheetham sang an operatic indigenous welcome to country. William Barton gave a powerful digeridoo performance backed by the Sydney Symphony Orchestra. I later learned that they are living legends, and the line-up of talent was indeed a once-in-a-lifetime opportunity.

Also, while in Sydney, I went on an Aboriginal walking tour focusing on the Aboriginal saltwater people, their fishing practices, and their relationship to coastal species and habitats. I learned about their practice of environmental stewardship. In their culture, relatives note which plants are blooming or animals birthing at the time that a person is born. When that person reaches

adulthood, they become responsible for the sustainable management and use of those plants and animals. This person cannot consume these species themselves but has the authority to permit or prohibit other people's use of them. This traditional form of environmental stewardship ensures the species and the Aboriginal people who depend on them will continue to flourish. I have found this tradition so powerful that I have shared it with colleagues in the United States and elsewhere as a principle of personal responsibility and community stewardship that could inform and improve sustainable fishing efforts. In sum, my Fulbright was a phenomenal tour of Australian art, culture, and nature in my project and travels.

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Lekelia Jenkins with Fulbright host, Claudia Baldwin, and a Queensland commercial fisher discussing photos the fisher took as part of the photovoice process



Artwork: Cameras trawl and see (2023); acrylic on polystyrene buoy, 316 stainless steel, nylon net, plywood, dowel; Artist: Lyris Snowden



Artwork: Systems fishing; mixed media on watercolor paper; Artist: Phyllis Araneo

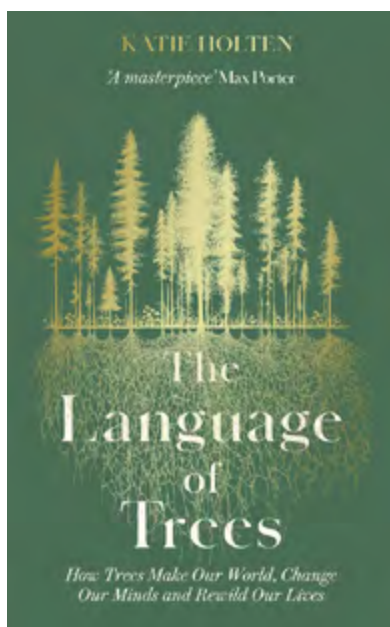
BIOGRAPHY

Lekelia Jenkins is an Associate Professor and marine sustainability scientist at Arizona State University in Tempe, Arizona. She received a Fulbright Scholars Award to Australia in 2023. This project was conducted in collaboration with Steve Eayrs, an Extension Officer at the Fisheries Research and Development Corporation, and Claudia Baldwin, Lisa Chandler, Phyllis Araneo, and Lyris Snowden, faculty members at The University of the Sunshine Coast. Lekelia can be reached at Lekelia.Jenkins@asu.edu

REVIEWS

A VISUALLY UNIQUE LOOK AT TREES

PAVEL MEZEI



The Language of Trees: The Rewilding of Literature and Landscapes by Katie Holten, Fulbright Scholar to Cornell in 2004.

The Language of Trees forces the reader to consider how poetry, short stories, history, and science reflect our relationship to trees and forests. Over 69 scientists, poets, journalists, craftspersons—including novelists Ursula Le Guin and Zadie Smith, US poet Laureate Ada Limón, science writers Elizabeth Kolbert and Robert Macfarlane, the rock band Radiohead, and Plato along with numerous biologists and scientists—have all contributed to this visually unusual book. At the beginning of the book an alphabet consisting solely of trees is presented.

Important, surprising insights appear in every chapter. Biologist Brian Enquist notes that trees have to deal with “taking in as much resources such as light, water and nutrients as possible, while transporting resources within the plant with as little work as possible” (30). The Chilean-Spanish-American author César Hidalgo offers a good approximation of entire tree physiology in just a few sentences: “A tree in New England reacts to the length of the day, running a different program in the summer than in winter” (45). Winona LaDuke, Native American economist and activist, writes how her tribe distinguishes the seasons of the year: “In the Anishinaabe world, and the calendar of our people, there’s nothing about Roman emperors like Julius or Augustus” (3) and she tells us they have months with names like “Freezing Over Moon” for November or “Hard Crusted Snow Moon” for March.

They do not have four seasons, but six. In “They Carry Us With Them,” Chelsea Steinauer-Scudder points out that while trees cannot run from their enemies or outrun danger, they are often able to defend themselves against insects, pathogens, or grazing by what could be called “tree migration” (246), movement by seed dispersal.

We also learn, for example, that the US Constitution was written with an ink made of galls. These are created by insects in the branches and twigs. You will find the recipe for that ink in the book. And there are several other recipes throughout, such as Acorn Bread, Sun Tea, or Conifer Seasoning Salt. We learn that the orange never would have existed if humans hadn’t put together the pomelo from the tropics and the mandarin from the more temperate zone (81).

The Language of Trees acknowledges the pressing issue of climate change, emphasizing its impact on forests and their ecosystems. Some chapters touch on the degradation of forests because of farming or rubber harvesting, and some very technical or physiological details, for example the role of oxygen or carbon dioxide, are described in an understandable way. Tree mortality caused by other living organisms, such as the Dutch elm disease, is mentioned although from a different angle. An elm tree had to be chopped down to make way for a “sidewalk with a short wall” (60), a puzzling case to think about, especially when 40 million elm trees had already been killed by the disease in North America. Despite the challenges, there’s hope. For example, Pulitzer-Prize winning author (and Fulbright Scholar) Elizabeth Kolbert depicts an experiment with nature reserves in the Amazonian region which consists of several preserved patches of intact forests, creating something like an “archipelago of Amazonian islands” (113). We encounter other positive examples from around the world, showcasing efforts to mitigate climate change and protect our green spaces.

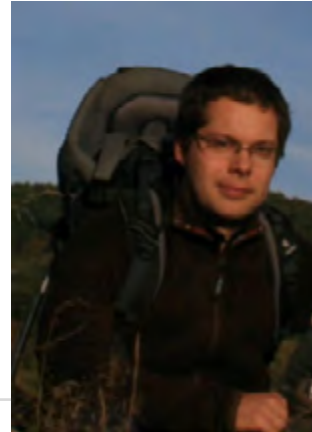
Whether you choose to skip around or read sequentially, you’ll discover a variety of ways to immerse yourself in the world of trees and forests

Whether you choose to skip around or read sequentially, you’ll discover a variety of ways to immerse yourself in the world of trees and forests. Reading this beautiful book was like traveling on a high-speed train—you look out the window and enjoy seeing the passing trees.

Katie Holten, *The Language of Trees. A Rewilding of Literature and Landscapes*. Portland, Oregon: Tin House, 2023, 304 pp, \$39.

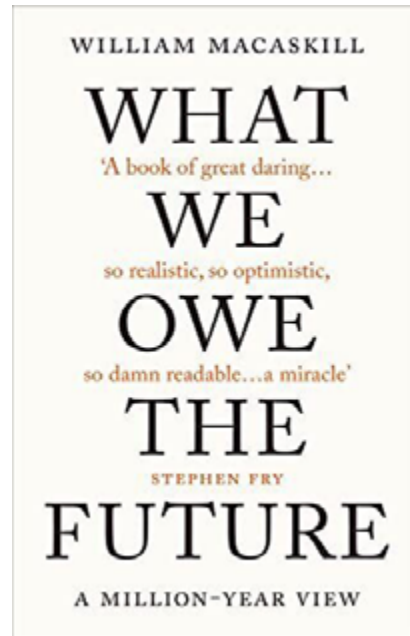
BIOGRAPHY

Pavel Mezei graduated in Forest Ecology at the Faculty of Forestry at the Technical University in Zvolen, Slovakia. He worked in the Muránska Planina National Park and then earned his PhD at the Faculty of Ecology and Environmental Sciences (Technical University at Zvolen) studying the drivers of bark beetle population dynamics in mountain forest ecosystems. He conducted a study stay at the University of Natural Resources and Life Sciences in Vienna, Austria. He was a Visiting Fulbright Scholar at the University of Montana and at the University of Nevada (Reno) where he studied the tree mortality of whitebark pine caused by bark beetles. He is now a researcher at the Institute of Forest Ecology SAS (Slovak Academy of Sciences). He can be reached at mezei@ife.sk



THE VALUE OF THE FUTURE: AN OPEN CONVERSATION

GABRIEL MARTINO



What We Owe the Future: A Million-Year View by William MacAskill, a Visiting Fulbright Scholar to Princeton in 2014.

What We Owe the Future is a compelling and informed advocacy of “longtermism.” Developing the simple premise that future generations matter, the book explores arguments to show the importance of the present moment in relation to the future or, as the author writes in the Preface, “the view that positively impacting the long term is a key moral priority of our time.”

William MacAskill is the founder of the “Effective Altruism” movement, which searches for the most efficient ways to help others, and currently a Senior Research Associate at the Global Priorities Institute of the University of Oxford. In *What We Owe the Future*, his latest book, he states early on one of his main concerns: “technological development is creating new threats and opportunities for humanity, putting the lives of future generations on the line” (5). And he considers that “we can increase the chance of a wonderful future by improving the values that guide society and by carefully navigating the development of AI” (6). In this first section the author also introduces three metaphors used frequently in the book: humanity as an imprudent teenager, history as a molten glass, and the path towards long-term impact as a risky expedition into uncharted terrain. The metaphor of molten glass is used to explain that the present moment is extremely unusual compared both to the past and to the future, since the values that guide civilization are still malleable and can be changed. In order to assess the new states of affairs that

could be brought about, MacAskill proposes a framework composed by three factors: significance, persistence and contingency. This framework is valuable, says the author, because the product of these factors can help us to evaluate comparatively alternative longterm effects.

The second part of the volume examines ways in which civilization's average value can be affected by a change in its trajectory that improves the quality of life of future people. Another key theme examined in this section is moral values, but the problem that preoccupies the author is the possibility that at a certain point in time global dominant values could get "locked in" by Artificial Intelligence and persist for an extremely long time. MacAskill considers that we are still in a period of plasticity during which moral norms should be improved since, in a few centuries—as cooled down molten glass—AI could take over after incorporating the value system dominant at that time, preventing it from changing. But an interesting lock-in paradox is also suggested by the author, which involves "locking in" institutions and ideas that can prevent a more thoroughgoing lock-in of values.

Part three discusses several, critical doomsday scenarios, such as extinction caused by an asteroid impact, engineered pathogens, a great-power war, or the collapse of civilization. The author also examines the possibility of avoiding technological stagnation as a means of diminishing the risks entailed by these scenarios. The fourth part re-addresses the issues of significance and persistence, concluding that increasing the quality of life by trajectory changes and ensuring survival have to be considered with equal priority.

The last part of the book suggests a series of practical steps to be followed. MacAskill's first step involves the application of the significance, persistence, and contingency framework in order to decide which problem one should work on. The second step entails direct action; MacAskill argues that donating money to nonprofit organizations is one of the best ways to work on vital problematics. But MacAskill believes that the most important decision a person can make in terms of a lifetime impact is the choice of her or his career. The author, in fact, is the co-founder of 80,000 Hours, a nonprofit that provides free research and support to help people use their career to tackle the world's most pressing problems. Doing good collectively is also contemplated in MacAskill's plan, of which its last ingredient is building a movement and spreading the word of longtermism—or "going meta"—as another significant way of caring about future generations. MacAskill writes that his "aim with this book is to stimulate further work in this area and not to be definitive in any conclusions about what we should do. But the future is so important that we've got to at least try to figure out how to steer it in a positive direction" (21-22).

MacAskill believes that the most important decision a person can make in terms of a lifetime impact [on the future] is the choice of her or his career

MacAskill's book is, indeed, a richly creative, heavily informed and enthusiastically persuasive defense of longtermism. It is also a call to action that includes a step-by-step program. I believe that if more readers of the book, and culturally diverse ones, engage in the conversation about what we owe the future, the openness of values could be better guaranteed for the generations to come.

William MacAskill, *What We Owe the Future: A Million-Year View*. New York: Basic Books, 343 pp. \$15.99 pb.

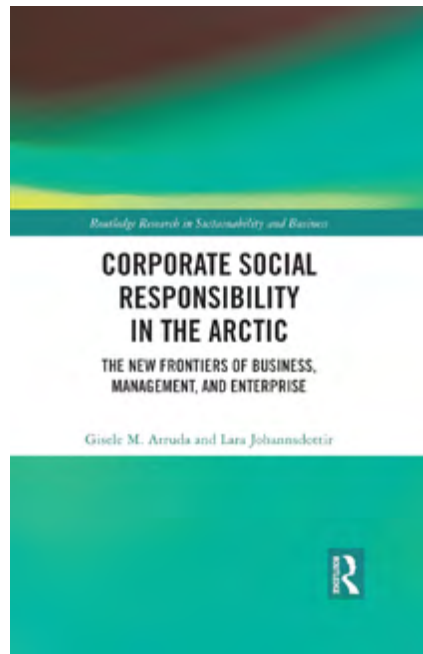
BIOGRAPHY

Gabriel Martino holds a PhD in Philosophy from the University of Buenos Aires and was a Visiting Fulbright Scholar to Rutgers University in 2021 where he researched ancient Indian philosophy. He teaches Sanskrit, Greek, and ancient philosophy at Argentinean universities and is an associate researcher of the CONICET (the government agency that fosters the development of science and technology in Argentina) and of the Institute of Philosophy and Technology of Athens, Greece. He has authored numerous papers and two books on Indian and Greek philosophy. He can be reached at gabriel.filosofia@hotmail.com



MANAGING CHANGING ENVIRONMENTS AND CHANGING ECONOMIES

ANN C. LOGUE



Corporate Social Responsibility in the Arctic: The New Frontiers of Business, Management, and Enterprise by Gisele M. Arruda and Lara Johannsdottir. Laura Johannsdottir was a Fulbright Arctic Initiative Scholar, 2018–19.

As the climate warms, Arctic ice will melt. The warmer environment will destroy some transportation routes and create others. It will ruin traditional subsistence lifestyles and create modern wealth and economic opportunity. Unfortunately, the positive and negative effects won't be spread evenly, especially given current economic and political paradigms. Decisions affecting Arctic life are often made by corporate executives and elected officials located in urban areas thousands of miles away.

Yet economic policies for the Arctic must consider the fragile ecosystems and diverse cultures in the region. Otherwise, we are all in trouble. Gisele M. Arruda and Lara Johannsdottir have written a guide to understanding the issues facing the eight Arctic nations (Canada, Greenland, Iceland, Norway, Sweden, Finland, Russia, and the United States); their mostly Indigenous Arctic populations; and the corporations looking to do business the right way in the region. Many of the corporate and political players understand the language and theories

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of Corporate Social Responsibility (CSR) but not all do. Small business owners, local elected officials, and community leaders haven't needed formal knowledge of CSR in the past, but now a new set of players is coming to the table to take advantage of the new opportunities created by climate change. *Corporate Social Responsibility in the Arctic* offers a way to learn more about how to connect very real local concerns to the interests of investors and executives for the benefit of the planet as a whole.

The authors are both experts on the Arctic—Arruda is a professor of Circumpolar Studies at the University of Aberdeen in Scotland and Johannsdottir is a professor in Environment and Natural Resources at the University of Iceland—and both understand the paradoxes involved. They show ways that decision-makers can use existing CSR frameworks to build processes that address local situations, including case studies of organizations that have found ways to operate within the unique setting of each Arctic nation. In each case, the local people are involved, and their interests considered in creating a program that works for them. This is a challenge, because, “[T]here are relatively few common denominators for the Arctic nations: mainly the vast wilderness area and the importance of the ocean and what it provides in the form of resources” (66).

The Arctic is a shared global resource. Most of the nations in the region are wealthy, industrialized economies that can afford to do the right thing. These nations also have geopolitical concerns that extend across the globe and may prevent them from respecting the Arctic environment and cultures. For example, how does oil extraction in Alaska affect US relations in the Middle East? How will the abundance of fresh water released by melting activity affect relationships with countries that become parched by global warming? How will climate-induced migration affect places that have been remote for millennia? Community advocates and commercial interests will have to find ways to work within a complicated global situation to preserve the best of the Arctic for the people who live there now and for future generations. The authors are clear on this: “The active participation in the design of an innovative and long-term development process seems to be a clear path to address inequalities created by the drivers of change” (135).

These are not simple issues. *Corporate Social Responsibility in the Arctic* offers a way forward, making it suitable for students in a university milieu who want to learn to become effective stewards of the Arctic in their professional lives as well as providing a reference for policymakers or corporate executives who want to better navigate the global implications of local decisions. It allows us to map the complexities for better decision-making in order to protect the people of the Arctic and everyone on Earth.

Gisele M. Arruda and Lara Johannsdottir, *Corporate Social Responsibility in the Arctic: The New Frontiers of Business, Management, and Enterprise*. Oxford: Routledge, 2022. 240 pp. \$52.95 pb. \$170 hb.

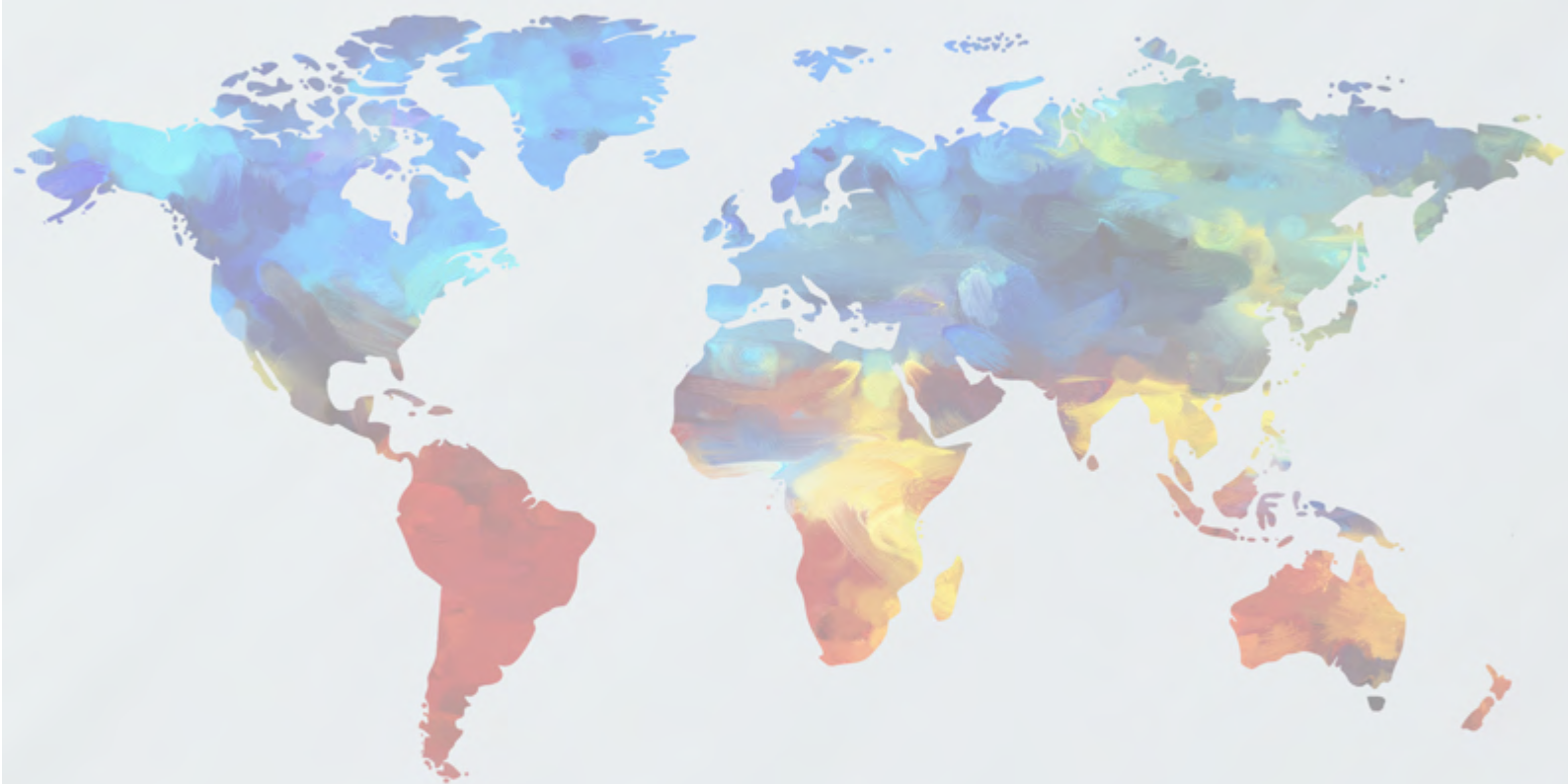
BIOGRAPHY

Ann C. Logue is a writer specializing in business and finance. She is the author of five books on investing and has written for *Barron's*, *Entrepreneur*, and *Alternatives Watch*, among other publications. She lives in Chicago and holds the Chartered Financial Analyst designation. She served as a Fulbright Scholar in Mexico. She can be reached at anniclogue@gmail.com



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