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# Peace in a Changing Climate

## Caring and Knowing the Climate-Gender-Peace Nexus

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# Peace in a Changing Climate

## Caring and Knowing the Climate-Gender-Peace Nexus

Christie Nicoson
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Lund University

How does gendered knowledge shape peace in a changing climate? This PhD thesis studies the entangled intersections of climate change, gender, and peace. The way we experience each of these phenomena is embodied and situated: specific to different people, times, and places. Yet, they are not separate issues.

I show that care connects climate, gender, and peace as a nexus, and that what we do with that knowledge – in care labor, values, affection, or politics – impacts how we imagine and create peace amidst the ever-growing challenges of climate change. Based on field research with community groups in Puerto Rico, I demonstrate that the tools of knowledge we use direct us toward different peace(s) and different utopian futures thereof.

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# Peace in a Changing Climate

## Caring and Knowing the Climate-Gender-Peace Nexus

Christie Nicoson

LUND UNIVERSITY

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**Abstract:**

Scholars and practitioners argue that climate change poses particular challenges for peace. In order to understand what these challenges are and how they work, not least in order to tackle them, we need attention to gender, since experiences and processes of peace are gendered, as are experiences and drivers of climate change. For instance, women and men may experience conditions after a ceasefire differently, or climate hazards may impact transgender people differently than others. Rather than biological differences, these disparities are shaped by factors like labor norms, access to political power, or socioeconomic conditions. Thus, an agenda for peace will always be changing and depend on how people see the world and perceive problems from their different social locations.

From this starting point, I question how gender constructs bodies of knowledge, taking it as an analytical tool or way of signifying relations of power. Gendered structures about what kind of knowing and whose knowledge is valuable have shaped how we think about and respond to climate change, with implications for possibilities of peace. For example, we know what climate change is and will be through local and global measurements and data-driven scenarios. This knowledge is critical; it uncovers what environmental change is taking place and how. Yet, knowing in this way relies on logic that draws divides between women and men, emotion and reason, nature and society. How can we expect solutions derived from such violent logics and its technologies to not only ‘fix’ the problem of climate change, but to be peaceful?

I show that care connects climate, gender, and peace as a nexus, and that what we do with that knowledge – in care labor, values, affection, or politics – impacts how we imagine and create peace amidst the ever-growing challenges of climate change. Based on field research with community groups in Puerto Rico, this thesis demonstrates not only that it matters what knowledge is used to understand climate change, but also what this knowledge does. I find that care-based knowledge allows study of the nexus as experiential relations of different beings with specific histories and values. It allows study of how affect works reciprocally – how emotions affect people back-and-forth as part of experiencing climate change.

**Key words:** peace, climate change, intersectional feminism, ethics of care, phenomenology, Puerto Rico

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# Peace in a Changing Climate

## Caring and Knowing the Climate-Gender-Peace Nexus

Christie Nicoson

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I owe a great deal of thanks to these friends, creatives, and intellectuals from whom I have learned so much. Thank you all for helping me continue in the challenging field of climate change research and action, and for teaching me to keep dreaming and working for utopias.

# Popular Summaries

## English

*Peace in a Changing Climate: Caring and Knowing the Climate-Gender-Peace Nexus*

Scholars and practitioners argue that climate change poses particular challenges for peace. In order to understand what these challenges are and how to tackle them necessitates attention to gender, since experiences and processes of peace are gendered, as are experiences and drivers of climate change. For instance, women and men may experience conditions after a ceasefire differently, or climate hazards may impact transgender people differently than others. Rather than biological differences, these disparities are shaped by factors like labor norms, access to political power, or socioeconomic conditions. An agenda for peace is always changing and depends on how people experience the world and perceive problems from different positions.

However, it is not only the impacts of climate change that are gendered, but also the way that we know what climate change is in the first place. The problem of climate change is something we each may experience in our day-to-day life: a particularly hot day in the middle of a cold season, wildfires that seem to come more and more frequently, or rains that used to reliably fall at the same time but now feel erratic. Climate science aggregates data and runs scenarios that allow us to look past the distinct times and locations of these events to see long-term changes, and to understand the global processes driving this change. Yet the tools and tricks that help us make sense of the problem of climate change rely on logic that divides women and men, emotion and reason, nature and society. How can we expect solutions derived from violent logics and its technologies to not only ‘fix’ the problem of climate change, but to create peaceful solutions?

I show that climate, gender, and peace are connected in a nexus by care, and that what we do with that knowledge – in care labor, values, affection, or politics – impacts how we imagine and create peace amidst the ever-growing challenges of climate change. Based on field research with community groups in Puerto Rico, this thesis demonstrates not only that it matters what knowledge

is used to understand climate change, but also what this knowledge does. I find that care-based knowledge (knowing informed by caring values and practices) allows study of the nexus as experiential relations of different beings with specific histories and values. It allows study of how affect works reciprocally – how emotions affect people back-and-forth as part of experiencing climate change. This thesis identifies values, practices, and hopes of peace – not a goal or blueprint for some 'right' or 'best' peace, but rather, what kind of situated knowledge and judgements people use to strive for both ecological and social well-being in different contexts of climate change.

## Español

*Paz en un clima cambiante: cuidando y conociendo el nexo clima-género-paz*

Dentro y fuera de la academia hay quienes plantean que el cambio climático presenta retos particulares para la paz. Para entender cuáles son estos retos y cómo abordarlos es necesario un enfoque de género, ya que tanto la experiencia de los procesos de paz como del cambio climático están condicionados por el género. Por ejemplo, las mujeres y los hombres pueden experimentar un cese al fuego de forma diferente, o los eventos climáticos pueden afectar a las personas transgénero de forma diferente a las demás. Factores como las normas laborales, el acceso al poder político o las condiciones socioeconómicas determinan estas disparidades más que las simples diferencias biológicas. Las agendas de paz están en constante cambio y dependen de cómo las personas experimentan el mundo y perciben los problemas desde distintas posiciones.

Ahora bien, el enfoque de género es relevante más allá del análisis de las repercusiones del cambio climático, pues este enfoque también permite analizar la forma en que sabemos qué es el cambio climático en primer lugar. El problema del cambio climático es algo que cada una de nosotras puede experimentar en su vida cotidiana: un día especialmente caluroso en medio de una temporada fría, incendios forestales que parecen ocurrir cada vez con más frecuencia, o lluvias cuyos patrones solían ser fiables pero que ahora parecen erráticos. Las ciencias climáticas agregan datos y elaboran escenarios que nos permiten ver los cambios a largo plazo más allá de los momentos y lugares concretos de estos fenómenos, y comprender los procesos globales que impulsan este cambio. Sin embargo, las herramientas y métodos que nos ayudan a dar sentido al problema del cambio climático se basan en una lógica que divide a mujeres y hombres, emoción y razón, naturaleza y sociedad. ¿Cómo podemos esperar que las soluciones derivadas de lógicas violentas y

sus tecnologías no sólo ‘arreglen’ el problema del cambio climático, sino que creen soluciones pacíficas?

Mi investigación muestra que clima, género y paz conectan como un nexo a través del cuidado, y que el uso de ese conocimiento - en trabajo de cuidado, valores, afecto o política - impacta en cómo imaginamos y construimos paz en medio de los crecientes desafíos del cambio climático. Basada en una investigación de campo con grupos comunitarios en Puerto Rico, esta tesis demuestra lo importante qué es interrogar el conocimiento que se utiliza para entender el cambio climático, y lo que se hace con él. Encuentro que el conocimiento basado en el cuidado permite estudiar este nexo como un conjunto de relaciones y experiencias de diferentes seres con historias y valores específicos. Además, permite estudiar el afecto como un fenómeno recíproco en el que las emociones afectan a las personas en un vaivén que forma parte de las experiencias del cambio climático. Esta tesis identifica valores, prácticas y esperanzas de paz, no como un objetivo o un plan para una paz ‘correcta’ o ‘mejor,’ sino que identifica qué tipo de conocimientos y juicios situados utiliza la gente para luchar por el bienestar ecológico y social en diferentes contextos de cambio climático.

## Svenska

*Fred i ett föränderligt klimat: Omsorg och kunskap i kopplingen mellan klimat, kön och fred*

Enligt forskare och praktiker innebär klimatförändringarna särskilda utmaningar för freden. För att förstå vilka dessa utmaningar är och hur man ska hantera dem måste man ta hänsyn till kön, eftersom både erfarenheter av och processer för fred, samt drivkrafter bakom klimatförändringar är könsbundna. Exempelvis kan kvinnor och män uppleva förhållandena efter en vapenvila på olika sätt, eller så kan klimatrisker påverka transpersoner annorlunda än andra. Dessa skillnader formas av faktorer som arbetsvillkor, tillgång till politisk makt eller socioekonomiska förhållanden, snarare än biologiska skillnader. En agenda för fred är alltid föränderlig och beror på hur människor upplever världen, eller uppfattar problem från olika positioner.

Men det är inte bara klimatförändringarnas effekter som är könsrelaterade, utan också hur vi får kunskap om vad klimatförändringar är över huvud taget. Problemen med klimatförändringar är något vi alla kan uppleva i vårt dagliga liv: en särskilt varm dag mitt i en kall årstid, skogsbränder som verkar komma allt oftare eller regn som brukade falla vid samma tidpunkt men som nu känns

oberäkneliga. Klimatvetenskapen samlar in data och skapar scenarier som gör att vi kan se bortom de olika tidpunkterna och platserna för sådana händelser, vilket synliggör långsiktiga förändringar och bidrar till förståelse för de globala processer som driver denna förändring. Samtidigt bygger de verktyg som hjälper oss att förstå problemet med klimatförändringarna på en logik som gör skillnad på kvinnor och män, känslor och förnuft, natur och samhälle. Hur kan vi förvänta oss att åtgärder som grundas i vissa våldslogiker och dess teknologier inte bara ska 'lösa' problemet med klimatförändringarna, utan också skapa fredliga lösningar?

Jag visar att omsorg utgör en knytpunkt som kopplar samman klimat, kön och fred och att det vi gör med den kunskapen - i omsorgsarbete, värderingar, kärlek eller politik - påverkar hur vi föreställer oss och skapar fred i de ständigt växande utmaningarna med klimatförändringarna. Baserat på fältarbete med grupper verksamma inom civilsamhället i Puerto Rico, visar denna avhandling inte bara betydelsen av vilken kunskap som används för att förstå klimatförändringarna, utan också vad denna kunskap gör. Jag menar att omsorgsbaserad kunskap gör det möjligt att studera kopplingen mellan klimat, kön och fred som något som utgörs av erfarenhetsmässiga relationer mellan olika varelser med specifika historier och värderingar. Den möjliggör studier av hur vi påverkas ömsesidigt - hur känslor påverkar människor fram och tillbaka som en del av upplevelsen av klimatförändringar. Denna avhandling identifierar värderingar, praktiker och förhoppningar om fred – inte som någon övergripande plan för den 'rätta' eller 'bästa' freden, utan snarare utgörs fred av vilken typ av kunskap och bedömningar människor använder för att sträva efter både ekologiskt och socialt välbefinnande i olika sammanhang av klimatförändringar.

# List of Papers

*Paper 1* Towards Climate Resilient Peace: An Intersectional and Degrowth Approach.

Christie Nicoson. 2021. *Sustainability Science* 16: 1147-1158. https://doi.org/10.1007/s11625-021-00906-1.

*Paper 2* Climate transformation through feminist ethics of care.

Christie Nicoson. Under review in *Environmental Science and Policy*.

*Paper 3* Imagining peace and enacting utopias in Puerto Rico.

Christie Nicoson. Unpublished manuscript.

# 1 Introduction

It is a hot day in June, 2022 when I meet with Sharon ‘Chachi’ González Colón and Rysa Raquel Rodríguez García, leaders of the feminist art collective, Colectivo Moriviví, in San Juan, Puerto Rico.[1] I interview them about their mural-making as peace activism. Through community art projects, they bring people together in processes of dialogue and expression; they reclaim and care for otherwise overlooked public spaces; they depict and give new value to things as intangible as culture or joy. Of course, they tell me, climate change impacts this work. Heat waves, rain, storms, and intense sun make the long days of painting outside challenging and damage their murals. As they face these challenges, they see Puerto Ricans struggling “just to survive” (González Colón and Rodríguez García 2022).

They explain that these conditions make them more aware of how their work as artists and activists is to “create other ways to see” – to see connections between seemingly disparate processes or phenomena, to see possibilities for worlds otherwise. With a rush of excitement, they describe one of their early murals, conveying a man’s body as an island, sinking while a woman holds his head and gives him life with a breath of butterflies.[2]

> Raysa: We portray a scene of Mother Tierra [Mother Earth] just like, giving a breath to this, deathly body of a man, which has a –
>
> Sharon: - a necktie, like with a city on it. They represented like capitalism and society and -
>
> Raysa: Yes! And he [in the mural] was surrounded by water ‘cause the word ‘salary,’ this genealogy is from salt, because in the past they exchanged salt

[1] Puerto Rico is an archipelago in the Caribbean Sea, marked as a colony first of Spain (1492–1898), and subsequently of the United States (US) (1898 – present). Today, Puerto Rico is officially recognized as an unincorporated and organized US territory.

[2] Featured as the cover art for this thesis, *Soplo de Vida* mural was created by members of Colectivo Moriviví as part of the 5th festival “Santurce es Ley”, San Juan, 2014. https://www.colectivomorivivi.com/sel-5.

> with things, as a type of trading. And he had the map of La Milla de Oro [the Golden Mile, in downtown San Juan], which is the street that is surrounded by all the principal banks.
>
> (González Colón and Rodríguez García 2022)

They describe this imagery, reflecting upon the assumption that labors of caring and nurturing are women's work, and that the values that come with these tasks are taken for granted as characteristics of women and mothers. Sharon goes on to tell me that, with this mural, they question gender ideals and demonstrate "intricate knowledge" in acts of care; they wanted to depict how shifting gender ideals can "make the world that we want" (González Colón and Rodríguez García 2022).

This PhD thesis examines these "ways to see" and how to "make the world we want". It studies the entangled intersections of climate change, gender, and peace. The way we experience each of these phenomena is embodied and situated: specific to different people, times, and places. Yet, they are not separate issues. By studying climate-gender-peace as a nexus, I demonstrate that the tools of knowledge we use direct us toward different peace(s) and different utopian futures thereof.

The overarching problem that this thesis examines is one of knowledge – how we know peace and climate change through intersectional structures of gender that shape our daily lives and society. Gendered structures about what kind of knowing and whose knowledge is valuable have shaped how we think about and respond to climate change, with implications for possibilities of peace. For example, we know what climate change is and will be through local and global measurements and data-driven scenarios (e.g., IPCC 2023). This knowledge is critical; it uncovers what environmental change is taking place and how. Yet, knowing in this way relies on logic that draws divides between women and men, emotion and reason, nature and society. How can we expect solutions derived from such violent logics and its technologies to not only 'fix' the problem of climate change, but to create peaceful solutions? I show that care connects climate, gender, and peace and that what we do with that knowledge – in care labor, values, affection, or politics – impacts how we imagine and create peace amidst the ever-growing challenges of climate change.

## 1.1 Research puzzle and question

Scholars and practitioners argue that climate change poses particular challenges for peace. In order to understand what these challenges are and how they work, not least in order to tackle them, necessitates attention to gender. Experiences and processes of peace are gendered, as are experiences and drivers of climate change. For instance, women and men may experience conditions after a ceasefire differently, or climate hazards may impact transgender people differently than others. Rather than biological differences, these disparities are shaped by factors like labor norms, access to political power, or socioeconomic status (Djoudi et al. 2016; Rao et al. 2019). Thus, an agenda for peace will always be changing and depend on how people see the world and perceive problems from their different social positions. This starting point turns my attention from a gender studies question, which might focus on gender differences as descriptive categories, to an interpretivist feminist approach that questions how gender constructs bodies of knowledge, taking it as an analytical tool or way of signifying relations of power (e.g., Sjoberg and Tickner 2012; Cohn 2013).

Tools and tricks of aggregating data and running scenarios help us make sense of the situated and embodied phenomena we experience in our daily lives – a particularly hot day in the middle of a cold season, of wildfires that seem to come more and more frequently, of rains that used to reliably fall at the same time but now feel erratic. Climate science allows us to look past the individual temporalities and locations of these events to see long-term changes, and to understand the global processes driving this change.

Yet, this poses a problem for peace. Climate science rests on underlying andro- and anthropocentric logics that keep human societies separate from a natural environment; it emerges through liaisons between industry and science, powerful government and military research projects, and constructions from international bodies of elite networks (Carson 2000 [1962]; MacGregor 2009; O'Lear 2016; Tuana 2016). Scholars point to military technologies that make possible the abstracted, global scale, aggregate data with which we map environmental change and create logics and tools for managing this change (Seager 2017; Mahony and Hulme 2018).

The way we define phenomena shapes how we understand and problematize them, which yields particular sets of responses (e.g., Baskin 2015). In order to build peace, additional ways of knowing climate change are necessary for grappling with the politics driving climate change and our responses to it

(Nightingale et al. 2019). So far, research has tried to answer questions of how to build peace by better conceptualizing peace through disaggregated measurements or more local input, for instance, calculating how new climate patterns affect human well-being through negative impacts on food and health or tracking how climate hazards might aggravate ongoing armed conflicts (e.g., Oswald Spring 2009; Watts, et al. 2021; Peters, Kelman, and Shannon 2022). However, these research approaches and their presentation of practical techniques are often piecemeal and, instead of lessening harm, efforts to remedy violence or peacefully adapt to climate change often reinforce existing situations of vulnerability and inequality (Eriksen, Nightingale, and Eakin 2015; Kaijser and Kronsell 2014; Jerneck 2018a). The problem is to understand how to rethink peacebuilding in ways that tackle the multiple and intersectional violences of climate change, without falling into ontological and epistemological traps offered by current pathways.

I unpack this puzzle with research focused on ways of knowing. I argue that knowledge is both a tool for building peace (e.g., as capacity or skills) and a means by which we can orient this peace (e.g., what it is, who it is for). I take peace for utopian potential – for something we can actively struggle toward, and question what kind of utopias we are building or could build for living with climate change. In order to study this more deeply, I critique gendered structures impacting both peace and climate change through an interpretivist feminist approach. Hence, the overarching research question guiding this PhD thesis is the following:

> How does gendered knowledge shape peace in a changing climate?

## 1.2 Research aims

To answer this question, the main objective of this thesis is to understand how care and knowledge are co-constructed through structures and experiences of gender, and the role this plays for peace in a changing climate. Viewing knowledge as situated, I consider it gendered: it originates in embodied, relational experiences functioning through different hierarchies of gender (Haraway 1988; hooks 2015). Gendered knowledge, to this end, constitutes a structure (systems of power such as identities, social arrangements, and symbolic meanings) and experience.

My main conceptual aim is to understand climate, gender, and peace as a nexus. Existing evidence shows that these phenomena shape each other, yet

concepts of peace often approach them in a piecemeal manner. For example, existing studies on the three issues might propose that gender norms prevent women from accessing resources needed to provide for well-being in the event of extreme storms (e.g., Alston 2014; Nguyen and Rydstrom 2018; Oswald Spring 2018). Keeping the three separate misses key aspects of the relationship because, in this example, climate change is conceived of as a threat multiplier that increases risk of gender discrimination or oppression.

I understand each phenomenon through a lens of intersectionality with the concept of *climate resilient peace* (paper 1), conceptualizing climate, gender, and peace as intimately intertwined. This opens new pathways for studying entanglements of climate, gender, and peace that produce its own dynamics. In order to study the nexus, this thesis examines what constitutes care, knowledge, and peace in specific cases in Puerto Rico (papers 2 and 3). I use a conceptualization of *care-based knowledge* to study how ways of knowing are gendered. Paper 3 studies people's experiences and imaginations of utopia in order to find what the nexus looks and feels like – conceptualizing not only 'pictures' of utopia but the active imagining of them, too.

My theoretical aim is to explain how knowledge engages people in imagining possible peace(s) as utopias. An analysis through care reveals the structures of gender that shape and are shaped by our ways of knowing: how the gendered norms and materialities of care values and practices shape knowledge. In paper 2, I present a new theoretical framework of *climate transformation* that enables studying how knowledge makes peace possible (by e.g., privileging or suppressing) for certain bodies, at particular times, and in specific places. By analyzing the relationship between care and knowledge, this enables study of the ethics and politics of knowledge that underlie the climate-gender-peace nexus. Further, this theoretical ambition builds on my understanding of climate, gender, and peace as connected so as to study what knowledge *does*. This aims to enhance understanding of how ways of knowing through care make it possible to imagine and construct utopias (paper 3).

I advance these conceptual and theoretical aims through empirical objectives, as well. This motivates me to unpack and analyze different examples of peace that are already being practiced and imagined. In order to provide clarity of what climate resilient peace entails, I study examples from degrowth practices and policies in different Global North contexts (paper 1).[3] Paper 2 presents new

[3] In this thesis, I largely use 'Global North' and 'Global South' as dialectic categorizations, "not only as a geographic and economic space constrained by structural and material realities but also as a geopolitical site of domination and resistance" (Magalhães Teixeira 2024, 3-4).

empirics of what counts as knowledge and care based on local-level experiences in contexts that otherwise might lie beyond a 'traditional' scope of peace research. Empirical study of utopia (paper 3), further makes peace 'observable' in its own right, distinct from 'simply' an absence of war. This also provides for studying knowledge in peace research through embodied, cognitive, and affective experience.

Finally, and across these studies, I aim to identify and discuss which values, practices, or hopes are desirable or impermissible. The goal is not to generate a normative position; I do not seek to prescribe the 'right way to care' in order to build the 'best' peace. Instead, I intend to make value judgements visible. Across fields such as peace and conflict studies or international relations, peace is already a normative endeavor; scholars commit to peace as a universal pursuit for something 'good' beyond the absence of violence (Cruz and Fontan 2014; Davenport, Melander, and Regan 2018; Paul 2021). However, what constitutes as 'good' or 'peaceful' varies widely. Although peace research shares broad interests or motivations, different strands carry their own normative theories and commitments. I follow a current (in research and practice) that commits to forward-looking gender justice beyond oppression and violences, and resists universal conformity or abstraction (Cockburn 2004; Aggestam and Bergman Rosamond 2021; Väyrynen et al. 2021).

# 2 Contributions of the thesis

> [We see the] physical manifestation of what can happen when seeds of hope are carefully planted and cultivated in a sustained and thoughtful fashion. The fruits are impressive: not a top-down utopia imagined for some time in the far-off future, but a living, breathing, bottom-up, and ever-evolving sustainable community on our planet today.
>
> - Alexis Andrés Massol González (2022a, xii)

In the above epigraph, one of the co-founders of the community organization Casa Pueblo reflects on the group's work toward self-governance in Puerto Rico. He refers to seeing university students develop and build solar technologies, coalitions that form across Puerto Rico to protect beaches and forests, and activist networks running community kitchens or education programs as manifestations of "seeds of hope". During an interview with Alexis, he tells me that peace is about respecting men and women, about personal happiness. But it is also a fight, he says, for renewable energy, to live comfortably, to speak your mother language freely. He says that we have peace when we abandon charity for a process of justice, when we see the fight for gender equality together with a fight for environmental sustainability. We have peace only while we keep "dreaming of utopia"; not only singing of it but also working for it. He says, "it has to be constructed, like a foundation" for decolonization, for gender equality, for climate justice (Massol González 2022b).

If peace is something we seek, what do we do with that desire against a seemingly bleak future of climate change? What role is there for "dreaming of utopia"? The contributions of this thesis speak to these questions and engage with Alexis's reflections. I unpack what peace means in relation to climate change, how peace can foster gender equality together with environmental sustainability, what foundations are necessary for this, and the role of utopian dreaming.

## 2.1 State of the art

Reviewing the state of research on climate, gender, and peace, I build on insights about the linkages between these issues and more broadly about relationships between the environment and dynamics of peace and violence. Although some scholars approach these together, most literature related to climate, gender, and peace remains disjointed. For instance, literature about the gendered nature of peace is rarely brought into conversation with peace research on climate change; research on the gendered nature of climate change and experiences of it, as well as on gendered aspects of knowledge production rarely speak with peace research. Further, despite increasing gender analysis (e.g., differences between men, women, or trans people's experience of harm related to climate events), deeper engagement with feminist theory remains limited and marginal (e.g., gendered value judgements that some harms are worse than others). Reading across fields of literature, I point to existing contributions that influence my research approach and draw connections between them. I identify conceptual and empirical limitations and openings in theorizing, and highlight the contributions I make in addressing these gaps.

### On climate and peace research

Research related to peace and the environment and climate change shape the phenomenon of interest in my thesis, the climate-gender-peace nexus. Studies on climate change in relation to peace have come from fields of not only peace research but also environmental security studies, critical human geography, political ecology, and sustainability transformation literature. Existing research has generated important insights, contributing to deeper understanding of links between the environment and various dynamics of violence. However, existing foci and remaining gaps have resulted in a narrow scope of understanding on both the harms and opportunities for change. This state of the field limits understanding of the relationship to peace by rendering the violence of climate change itself invisible, subsequently influencing purported solutions and constraining visions of possible futures.

Firstly, literature largely explores the nexus causally and focuses on impacts of climate change, rather than drivers. A focus on impacts and responses to climate change prioritizes study of the benefits or harms of cultivating 'resilience' for reducing vulnerabilities, resisting harms, and developing systems for meeting human needs in just and healthy ecosystems (Krampe 2014; Amster 2018). However, peace research and security studies have

seldom addressed "broader processes of global and social change" (Selby and Hoffmann 2014, 749). For example, one of the main pathways by which climate change is understood to be connected to issues of peace or security is through negative effects on livelihoods, particularly those dependent on agriculture and fisheries (Koubi 2019; Mach et al. 2019). In connection, economic recovery is a prominent area of focus in environmental peacebuilding research. Market value of natural resources have become central to many initiatives in post-conflict and conflict-affected areas with the aim to create livelihoods and boost economic growth to benefit peace (Dresse et al. 2019). This focus is at best partial; as other studies have demonstrated, a focus on economic growth as a tool for peacebuilding may actually aggravate violent conflict and degrade human and more-than-human well-being, not least through potentially further contributing to climate change (Gudynas 2018; Paarlberg-Kvam 2021; Scheidel et al. 2023; Magalhães Teixeira 2024). When drivers or causes of climate change are discussed in peace and conflict literature, they are often acknowledged as anthropogenic, resulting from human influence, but with little problematization or discussion past this (Bliesemann de Guevara, Budny, and Kostić 2023)

Literature draws connections between climate change and peace through impacts to food, health, and mobility as well as by amplifying drivers of armed conflict and shaping contexts of peacebuilding work (Mach et al. 2019; Cohn and Duncanson 2020; Ide, Bruch, et al. 2021). As yet, however, much research focuses on violences, rather than possibilities of peace (Sharifi, Simangan, and Kaneko 2020). Despite arguments that climate change constitutes a form of structural violence (Soron 2007; Bonds 2016), research largely centers on measurements of how biophysical climate events impact war or conflict between states and groups, protests and riots, violent interpersonal acts, or political repression (Koubi 2019). Within peace studies more broadly, such a focus on armed conflict or physical violence has been critiqued for failing to capture both experiences and drivers of violence or peace in a holistic way (True 2020). This gap has been widely noted and a lively literature exists exploring broader concepts and structural dynamics of peace and security, but this has yet to be integrated more fully on studies of climate change (Tirrell, Cordero, and Crane 2021).

The trend to explain the relationship between peace and climate change causally moreover tends to be solution-oriented. Adaptation strategies have been highlighted for potential peacebuilding benefits through contributions to community resilience and helping people better cope with the impacts of climate change (Matthew 2018). Though this literature is in early stages, critics

point to gaps in the logic of these arguments and pose such mechanisms as ‘apolitical’ (Eriksen, Nightingale, and Eakin 2015). Technological tricks have enabled continuation of familiar patterns of production and consumption with more efficient energy use (e.g., ‘green economic growth’), and innovative ways of managing nature promise to remove the wastes of over-production to offset negative impacts of climate change (e.g., geoengineering).

However, many of these plans at best are partial and temporary fixes (Hickel and Kallis 2020). A recent assessment of green growth strategies found that out of 36 high-income countries, only 11 have achieved decoupling to continue economic growth while reducing CO2 emissions, and that in order to meet commitments for limiting global warming to 1.5°C, these countries would need on average to increase decoupling rates tenfold by 2025 (Vogel and Hickel 2023). Related to causal research, frameworks for solutions primarily take managerial, depoliticized, technoscientific approaches that prioritize particular kinds of peace. For instance, a green growth answer to climate harms might promise stability (or stable peace) by avoiding major economic disruptions, but perpetuate violence through failure to tackle climate change.

In relation to these conceptual and theoretical currents, empirical study faces spotlight and hotspot biases. Climate phenomena related to peace have been analyzed mainly in terms of the impacts of short-term weather patterns and extreme weather events (Koubi 2019). Other types of climate change, including slower onset phenomena, are largely left out. These studies also focus on a relatively small number of cases, largely in Africa and South Asia (Adams et al. 2018), and on conditions or responsibilities of actors in situations of vulnerability, rather than for instance on the actors driving climate change (Hardt and Scheffran 2019; Bliesemann de Guevara, Budny, and Kostić 2023). In addition to potential social and political changes that remain unknown and other limitations of historical analogies, existing approaches also remain limited by unanticipated accelerated ecological breakdowns that may exceed projections (IPCC 2023). Yet, the predominance of causality claims as well as relative limitations of existing tools and data influence research to primarily propose explanations based on past occurrences (Mach et al. 2019; Busby 2023; Ide et al. 2023).

This state of existing research highlights the empirical biases and theoretical limitations stemming from the predominance of causal explanations in peace and climate literature and a focus on short term, physical impacts of climate change as well as physical episodes of violence in select case contexts, toward solution-oriented study.

## On gender and feminist theory

Various kinds of feminist and gender-based approaches have been used to study relations between climate change and peace.[4] Although I cannot do justice to these rich debates here, I review key overlaps between various currents of gender analyses and feminist theories, which reveal gaps and opportunities for further research. From this overview, I conclude that although gender increasingly enters debates on peace and climate, feminist perspectives beyond empirical studies and at deeper ontological and epistemological levels are few and do not garner much attention (MacGregor 2009; Fröhlich and Gioli 2015; Kronsell 2019; Yoshida 2019). Herein, the interpretivist ecofeminist and intersectional fields highlighted below point to a promising potential of deeper engagement.

Different strands of feminism question and investigate climate and peace linkages through gender analysis, sharing a perspective that gender is an essential aspect in understanding these relations (Ide, Ensor, et al. 2021; Detraz and Sapra 2021). I focus on post-positivist, social constructivist approaches broadly defined, and make a general distinction between studies that take gender as a category for analysis (e.g., material consequences of identity differences, norms, or structures of power) and feminist theorizing that takes gender on epistemologically and ontologically (e.g., co-constituting the societies in which gendered experiences of climate and peace play out, as well as the knowledge with which these experiences are known).

Much feminist theorizing on environmental and climate politics and change stems from social movements that generate practical and scholarly insights into connections between gender, climate, and peace. For instance, the still-thriving Women's International League for Peace and Freedom aims to promote peace through tackling both gender discrimination and environmental degradation; Wangari Maathai's leadership of the Green Belt Movement in Kenya organized and empowered women to address deforestation, for which she was recognized with the 2004 Nobel Peace Prize (Salleh 1997).

From such movements, varieties of ecofeminist thought have emerged. For instance, some essentialist approaches present women as a homogenous group, as inherently natural mothers and environmental caregivers; materialist

[4] Relevant literature is broad, covering aspects of vulnerability, adaptation, responsibility, and social movements from critical, normative, and analytical perspectives spanning international relations, feminist science studies, feminist political ecology and economy, ecological feminisms, and development studies among others (e.g., Agarwal 1992; Alston 2014; Harcourt 2016; MacGregor 2017; Pearse 2017).

feminist perspectives do not see these links based on inherent characteristics, but rather as produced by a logic of domination that perpetuates oppression of women and of nature (Mies 1986; Warren 2000; Gaard 2011). This literature, found in social constructivist and some poststructuralist readings, rests on an understanding that a logic of domination divides humans and nature and, in connection, separates and denotes value to men over women and rationality over emotions (Merchant 1983; Salleh 1997; Mies and Shiva 2014 [1993]). Applying this to the study of climate change, scholars demonstrate that the same patriarchal and colonial power structures that drive climate change also define the problem itself, rooted in logics of (hu)man domination over nature (Tuana 2016; Gonda 2017). From this point of view, the 'securitization' of climate change can be understood to go hand in hand with the way it has been 'scientized' or presented as a scientific problem (MacGregor 2009, 127).

These feminist theories have, thus far, principally been used to guide gendered analyses for explaining vulnerability, adaptive capacity, governance and decision-making, or norms and behaviors contributing to climate change. Research at the intersection of climate, gender, and peace, then, often studies how social and environmental vulnerabilities impact people's different experiences of violence or well-being (e.g., Oswald Spring 2009). Herein, gender is used as a category for analysis to examine discursive power relations between people and constructions of masculinities and femininities (MacGregor 2009). For instance, feminists have studied normative dimensions and material consequences of gender that shape people's capacities to cope with environmental change (Alston 2014; George 2019).

At a critical intersection within international relations, a small but growing body of scholars bring ethics of care into conversation with security, violence, and peace. They point to ethics of care for centering justice in how we practice and value care (Robinson 2011, 2018) and for differently understanding responsibilities and relationships of interdependence that disrupt Western-centrism (Whyte and Cuomo 2016). Studies show how memory, for instance of *al Nakba* in Palestine, might build care for others (Fierke 2013); how everyday care-work helps build personal, structural, and cultural peace in conflict-affected communities and amidst crises (Donahoe 2017; Hobart and Kneese 2020; Ibnouf 2020). These scholars primarily work within security literature, using care 'thinking' to analyze violence and warfare or to counter security logics of militarism (Robinson 2011, 2018, 1999; Sjoberg 2013; R.D. Clark 2019). Others pose ethics of care as a practical tool for critiquing how political decisions create disasters around natural hazards such as droughts or

floods so as to "reclaim security away from its focus on apocalyptic conflicts over dwindling resources" (Harrington 2021, 223). Where care does enter peace research, the literature thus far largely studies care empirically (as a practice) and as labor or in some cases as affection (Donahoe 2017; Berman-Arévalo and Ojeda 2020; Ibnouf 2020; Petterson 2021; Krystalli and Schulz 2022).

Research in these fields related to peace and connected to the environment has shifted away from single-axis or narrow interpretations of gender as synonymous with 'women' and essentialist claims that women are closer to nature[5] – claims which have been used to position women as particularly well-suited as environmental heroes as well as to maintain discourse of women as victims of environmental harm (Arora-Jonsson 2011; Jerneck 2018b). Within this turn, intersectionality has been highlighted for teasing apart differences within and between gender groups – for instance, the experiences of different women based on other factors and axes of power such as race or class (Kaijser and Kronsell 2014). Using such a lens, scholars emphasize gender inequality in environmental impacts as a result of different social and regional contexts (Arora-Jonsson 2014; Detraz and Sapra 2021).

Despite limited engagement with climate change on a more theoretical level as would be facilitated by a critical or intersectional ecofeminist approach, the importance of gender analysis in climate and peace research cannot be understated. To this end, vulnerability has been understood to be linked to gender, with empirical studies showing greater negative impacts of climate change for groups with less social, economic, or political power (Cuomo 2011; Sultana 2014; Whyte 2014; Djoudi et al. 2016; Rao et al. 2019). For example, women are found to face increased risk of domestic violence, insecurity, and morbidity following natural disasters and climate variability, while men are at higher risk of suffering poor mental health and being displaced from their homes following a climate-driven event (Jayawardhan 2017; Parkinson 2017; Pearse 2017).

[5] This shift is often associated with a distancing from ecofeminism, based on claims that ecofeminist theory essentializes connections between women and nature. This view lacks nuance to the fact that several early ecofeminist texts and related work in critical animal studies, environmental feminism, and posthumanism themselves resist such essentializations (MacGregor 2009; Gaard 2011). In observing a shift away from 'essentialist claims,' I do not wish to reinforce discrediting of ecofeminism. Rather, I note a trend in scholarship that moves from studying women (as a homogenous group) to studying gender intersectionally, and from studying simple to more nuanced connections between gender and nature.

Gendered norms and socio-material inequalities also shape privileges or vulnerabilities for people of different genders to access economic, political, and social resources necessary for adaptation (Oswald Spring 2019). For instance, gendered distribution of labor creates different experiences of tasks associated with coping with climate change, and asymmetries in social power leave some out of policy-making or financial decision-making about what factors to address and how to adapt to climate change (Edvardsson Björnberg and Hansson 2013; Tatlonghari and Paris 2013; Jerneck 2018a; Ylipaa, Gabrielsson, and Jerneck 2019).

Beyond situations of vulnerability, studies also show gender disparities in contributing emissions that drive climate change. For instance, meat-based diets, a major contributor of greenhouse gas emissions (Watts et al. 2021), are motivated by and sustained as a symbol of so-called hegemonic masculinity (Rothgerber 2013). This research illustrates the role of gender norms and structures intersecting with race and class privileges in driving climate change and situations of vulnerability to such change (Pease 2016; Daggett 2018).

In sum, gender and feminist research on climate change and peace have tended to take both phenomena as empirical categories, such that analyses focus on adding different ingredients to better understand how particular aspects of gender, climate, or peace impact the others. In addition to the scarcity of deeper engagement with gender or feminism on ontological and epistemological levels, early emphasis on the interlinkages between peace, environment, and gender have been sidelined to avoid accusations of essentialism.

## On knowledge production

Strands of literature within critical peace research that contribute to deeper understanding of knowledge production in relation to peace shape how I study the nexus as a matter of ways of knowing. Across several related strands of critical research, the matter of knowledge production is connected to risks of universalizing 'peace.' Peace research often differentiates from conflict or security research with a specific focus on a 'positive' peace, a negation of cultural, structural, and physical violence as well as a quality, process, or state of some 'better' society (Galtung 1969; Anglin 1998; Addams, Carroll, and Fink 2007 [1906]; Davenport, Melander, and Regan 2018). Amidst this focus on peace in its own right, there remains a risk of casting a positive peace that is general and abstract without acknowledging particular times and places of logic (Parrado Pardo 2020; Neufeldt 2022).

Pushing back against an essentialization of peace as either a universal good or a state of solely being free from violent conflict, critical scholars engage diverse epistemologies both in terms of different ways of knowing peace (methodologies and concepts) and ways of theorizing knowledge (epistemologies) in peacebuilding. For instance, peace researchers within decolonial, feminist, and other critical fields increasingly study phenomena in relation to mundane experiences and underlying structures and materialities that constitute peace or violence (e.g., Cockburn 2004; Rodriguez Iglesias 2019; True 2020). Attention turns to small practices or stances of 'everyday peace' that disrupt violence and violent conflict (Jaime-Salas et al. 2020; Mac Ginty 2021).

These entanglements of 'positive' peace as mundane and situated address peace and peacebuilding, too, as embodied. Specifically, constructivist and poststructuralist feminist studies on peace emphasize situated experiences and processes as gendered, requiring study of the body to understand peace as lived (Rodriguez Iglesias 2018; Mannergren Selimovic 2019; Väyrynen 2019). Within such approaches, scholars turn epistemological and methodological attention to emotions or affect, which helps conceptual understanding of peace and also shapes ones' practices and experience of peace (Rodriguez Iglesias 2018; Anctil Avoine 2022; Pepper 2022; Söderström and Olivius 2022). Corporality and affect hold implications for research, too, as researcher bodies gain and produce knowledge 'in-place' materially and socially (Mannergren Selimovic 2019; Anctil Avoine 2022).

While thus far I have described perhaps an increasingly 'localized' focus down to an individual, research demonstrates that studying peace as mundane and embodied enables deeper understanding and articulation of experiences of peace and violence in relation to global dynamics. By considering how axes of gender, class, and race intersect, for instance, researchers move from seeing experiences as solely individual to seeing them as co-constitutive of systems and structures of power that shape peace and violence (Kappler and Lemay-Hébert 2019; Wibben et al. 2019; Hewitt and True 2021).

As yet, peace research rarely applies such perspectives to studying climate change, and fields that do critically examine knowledge on climate change rarely engage with peace. For instance, environmental and climate justice debates increasingly draw together concerns of coloniality and gender inequality, yet rarely speak to or with peace scholarship; they focus on tackling different forms of violence and inequalities, largely in a principle-based approach to justice (Gonda 2019; Biermann 2021). My reading across related fields, however, yields an understanding that not only are experiences of peace

and climate gendered, but so too are the ways of knowing climate change and policies or practices that address it, such as climate adaptation.

Studies show that colonial nations (as opposed to colonized places) hold capital and other tools for measuring and simulating climate change, and moreover dominate spheres where discursive framing, responsibilities, and purported solutions are imagined and take place (Mahony and Endfield 2017; Pfalzgraf 2021; Perry and Sealey-Huggins 2023). These same countries' militaries (the US as forefront) are also among the largest consumers of fossil fuels and producers of greenhouse gas emissions (Crawford 2019). Though even the 2022 United Nations report on climate change points to colonialism as driving situations of vulnerability, Global North actors and structures continue practices of imperialism and militarism that threaten human life and drive further environmental destruction contributing to climate change (Hynes 2014; Bliesemann de Guevara, Budny, and Kostić 2023; Perry and Sealey-Huggins 2023). For instance, techno-managerial strategies to foster climate resilience may address individual situations of vulnerability but neglect geopolitical conditions driving social and ecological harm (M. Mason 2014; Molinari 2019; Nightingale et al. 2019). Economic 'green growth' strategies of low carbon development pose marginalization and dispossession, and drive violent imaginaries of 'ungoverned spaces,' entrenching binaries between the Global North and South (Mirumachi, Sawas, and Workman 2020). The same patriarchal and colonial power structures that drive climate change also define the problem. Climate science largely emerges within spheres dominated by male actors – from members of international delegations to prominent politicians and spokespeople (MacGregor 2009; Moosa and Tuana 2014).

However, beyond a focus on nations or researchers and policymakers, climate change research and policies themselves carry gendered implications. Climate knowledge has developed in regimes that privilege 'neutral' scientific models and 'value-free' abstractions, which hide underlying power dynamics. For instance, integrated assessment models purport unbiased and objective data, yet carry institutional and individual modelers' values and preferences that in turn shape the science, ethics, and politics of action, for example through determining mitigation possibilities (Beck and Krueger 2016; Rubiano Rivadeneira and Carton 2022). Scenarios and trend detection practices that dominate climate modeling stem from particular political contexts, such that the 'global' knowledge on climate change is shaped by distinct colonial and extractive ways of knowing and doing research (Mahony and Hulme 2018). This way of knowing results for example in aggregate harm analysis and

technological approaches based on logics of (hu)man domination over nature (MacGregor 2009; Kaijser and Kronsell 2014; Tuana 2016; Gonda 2017).

Such ways of knowing dominate what comes to be understood and valued in climate change science and policymaking. Framings of climate decision-making, such as risk and harm thresholds or goals for limiting global warming, come laden with value judgments that may homogenize humanity and obscure some people, ecosystems, and nations (Seager 2009). For instance, much climate policy and action are motivated through discourse that frames climate change as a threat to 'future generations,' which marginalizes crip and queer lives through explicitly tying visions to the Child (Hall 2014; Gaard 2015).

This critique does not call to question climate science. It does, however, remind that ways of knowing and the frames within which we conceive and build problems and their would-be solutions are inherently political. Peace research has developed to demonstrate the importance of mundane and embodied experiences for studying everyday and local peace as well as underlying structures of violence. These developments as-yet are rarely brought into conversation with research on climate change, despite evidence that knowledge production in climate change is politically shaped by colonial and patriarchal power structures.

## On visioning futures

The trends described above and particularly the preference for 'objectivity' and measurable gender inequalities and conditions of peace have led to a widespread shift away from utopianism. Literature exceedingly focuses on possible routes to probable, rather than desired, futures. My review in this section points to the 'direction' of research (toward the matters of transformation and utopia) by demonstrating gaps as well as arguments for grappling with imagination in climate and peace research.

A sidelining of utopianism is symptomatic of 'realistic' traps identified by international relations scholars. That is, conceiving of peace to the extent that it has failed perfection (e.g., a broken ceasefire or the persistence of violent slavery despite its formal abolition) precludes change and constrains 'peace' to projects of reformation, rather than radical transformation (Brincat 2009). Pointing to writings of Karl Popper at the close of World War II and of Francis Fukuyama at the end of the Cold War, Kathi Weeks identifies that the "struggle between reason and passion is the stage upon which this critique [of utopia] is staged," where rationalists linked reason with promoting harmony and claimed

that ‘Utopianist’ appeals to emotion and passion – evoking an ‘hysterical’ element – promote violence (Weeks 2011, 178-179). Similar distaste or distancing from utopianism is found on the (Anglophone) political Right and Left, and with Marxists as well as feminists (Weeks 2011). The trap extends from limiting conceptualization (of peace) to politics that can be considered possible or realistic, for example in foundations of democratic peace theory, where White[6] supremacist ideology purports imperial grounds for ‘perpetual peace’ (Bell 2014).

Broadly, peace, international relations, and political science literatures stem from utopianism but have since seen such roots marginalized. Early peace research and action connected concerns of reproductive rights, children, migrants, and public health with challenges of human-caused environmental degradation (Addams, Carroll, and Fink 2007 [1906]). Peace research evolved from political interest in negating roots of structural violence with segregating values and norms, toward positivist and objectivist trends in social sciences that favored focus on observable physical violence and conflict (Galtung 1969; Bright and Gledhill 2018; Krause 2019; Wibben 2021). Mainstream as well as critical literature on peace is dominated by instrumentalist logics, universalist ontologies, and empiricist-positivist epistemologies (Goertz, Diehl, and Balas 2016; Lottholz 2018).

Given this trend, backward looking or narrow study of data (or back-casting) forecloses particular futures or fundamental critiques of the values against which we might evaluate empirical realities (see e.g., Ling 2014). Much of peace research is backward-looking and furthermore reflective of Western values and ways of knowing enshrined in the Global North institutions where ‘peace studies’ emerged and where much of the ‘peace writing industry’ still sits (Lottholz 2018; Krause 2019). Indeed, reviews of the field reveal neglect of the discursive norms, material consequences, and ongoing reproduction of colonialism in peacebuilding as well as in peace-understanding (Byrne, Clarke, and Rahman 2018; Jaime-Salas et al. 2020).

Not least, the literatures’ preoccupation with large-scale and direct physical violence ignores some possibilities for social struggle by viewing violence as exclusively abhorrent, and potentially perpetuates epistemic violence through delimiting boundaries for political action (Benner et al. 2019). In metaphors of

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[6] I capitalize indicators such as ‘White’, ‘Black’, or ‘Indigenous’ in this thesis so as to speak to systems of power; to hold accountability for the way that race functions socially and politically; and to signify cultural identities and histories (Thúy Nguyễn and Pendleton 2020).

climate wars, for instance, climate change looms as an endpoint of all humanity with no renewal, demanding consensus, reaction, and urgency (Swyngedouw 2010). Metaphors such as the war against climate or visuals and narratives of impending dystopia stem from and also produce ways of knowing climate change phenomena with particular impacts, hindering critique and imaginative thought in attempts to solve problems within a status quo (Nightingale et al. 2019; Hammond 2021). The result not only closes off potential lines of future research, but also discounts space and time for political debate or imagination.

Meanwhile, studies show that engaging different ways of knowing in climate science and action can challenge existing patterns of violence (e.g., of extractivism or patriarchy) so as to mitigate climate change and foster peace that goes beyond the absence of physical harm (Temper et al. 2018; Paarlberg-Kvam 2019; Ide et al. 2023). Examples and potential for alternative climate future imaginaries may instead be grounded in community, accountable to the worlds from which they emerge, or centered around self-determination and relationships of responsibility with land, water, and more-than-human lives (e.g., Engelmann et al. 2022; Thompson and Ban 2022). Activists and 're/sisters' in peace movements exemplify engaging with peace in its own right through imagining and helping to create alternatives. For instance, modern US feminism has roots in Haudenosaunee (Iroquois) culture and other Indigenous movements where 'feminism' flourished not as an alternative to patriarchal violence, but in its own right, centering land rights and environmental issues alongside resistance against patriarchal colonialism (Gilio-Whitaker 2019, 113).

Drawing these different fields together, I have shown how the sidelining of utopianism reinforces a logic of domination, connected to epistemic reproductions of violence and disclosing possibilities for political debate or imagination on peace in a changing climate. Examples from social movements, practices, and studies that do engage in material and symbolic utopianism not only contest existing systems of violence but also create space for transformative change, often drawing together intersectional struggles and challenges of environmental degradation or climate change with social well-being and peace.

## 2.2 Contributions

### Conceptualizing peace and climate through intersectionality, knowledge, and care

Based on the above state of the art, particular gaps emerge in *critical peace studies*' engagements with climate change. The literature focuses on physical violence and physical impacts of rapid onset or extreme climate events, and has studied the relationship between climate and peace in limited geographies and contexts. This is more than an empirical problem; it leads to conceptual sticking points and theoretical limitations. Research approaches climate and peace primarily with questions of causality, which may miss root challenges related to climate change, privilege managerial approaches, and rely on back-casting to 'solve' challenges.

Contributing to these ongoing debates, I develop the concept of climate resilient peace (paper 1) and bring utopia into conversation with peace literature (paper 3). 'Climate resilient peace' and similar concepts can be found in existing (academic and grey) literature (Vivekananda, Schilling, and Smith 2014; Tänzler, Rüttinger, and Scherer 2018; Barnett 2019), but a definition or foundation for understanding the concept remains largely absent. By developing this concept based on positive peace and intersectionality, I enable understanding of differentiated experiences of positive peace beyond the absence of physical violence and account for different types of climate hazards, including slow on-set events. In addition, despite utopic aspiration characterizing early peace studies and underlying much of the normative basis of current literature, peace research lags behind other fields in engaging seriously with the concept. Centering paper 3 on utopia, I contribute concept and method for new ways to study peace and to research visions of the future.

Empirically, the papers identify examples of peace beyond the absence of violence, an important step in advancing understanding of peace in its own right. Dialogue with degrowth (paper 1) gives concrete examples of practices such as urban gardens, basic income, and wealth caps that can foster justice and well-being within ecological limits, demonstrating new empirical realms for peace research. This moves the state of the field beyond lock-ins of economic growth-centered peacebuilding, shown to reproduce violence rather than build peace (Bliesemann de Guevara, Budny, and Kostić 2023). The focus on women in paper 3 adds to gendered research in critical peace and climate literature through a focus not on gendered analysis *per se* (e.g., of the different

experiences of men or women), but through phenomenological study that provides examples of what counts as knowledge (e.g., not only cognitive knowing but also embodied and affective) and what counts as care in peace and climate studies (e.g., affect, politics, practices, and values).

The empirical focus of Puerto Rico (papers 2 and 3) further contributes to peace studies through analysis of climate and peace phenomena beyond the field's current focus on contexts in Africa and South Asia (Adams et al. 2018). Although rapidly gaining attention amongst international studies related to environmental justice, Puerto Rico is underrepresented in social climate studies and peace literature. Existing peace scholarship largely comes from the education department at the University of Puerto Rico or focuses on anti-military activism in Vieques (Baver 2006; Méndez 2014; Yudkin Suliveres and Pascual Morán 2020). My research in Puerto Rico offers new context-based theorizing on (positive) peace and peacebuilding related to climate change.

## Theorizing ethics of care for knowledge production

I build on findings and respond to gaps identified by scholars of care writing in relation to peace or security, by theorizing ethics of care in studying peace alongside (but not as the antithesis to) violence in a site of ongoing colonial occupation. In doing so, I add to studies that unpack the conditions and dynamics of peace actions that strive to build more utopian futures, importantly addressing persistent questions of envisioning politics and societies beyond the absence of war (Ruddick 1989; Kriesberg 2022). This gives new entry points for studying different scales of peace and climate change. For instance, paper 1 grapples with local 'everyday' positive peace (a community's access to food or provision for household income) alongside global scales of peace (distribution of material resources within a country or interrupting harmful power hierarchies in international chains of care). As scholars point out, an ethic of care can help understand formation and expression of identities for peaceful relations, and bring peace, justice, and security debates beyond distributive theory (Robinson 2013; Confortini and Ruane 2014). I contribute to this literature using care theoretically and empirically as well as methodologically to show how an ethic of care enables the construction of utopian futures, holds transformative power to recenter economies away from endless growth, and benefits peace research processes.

I moreover contribute to *ethics of care literature* itself by taking an intersectional approach to ethics of care, speaking to and with critiques demanding conceptual inclusiveness and attention to difference in care ethics

as well as to dynamics of power (Hankivsky 2014). For instance, the argument for reprioritization of care in paper 1 does not argue for how care should be done, but rather interrogates how care-oriented policies and economies negate harmful hierarchies (e.g., unequal household power or divides between care-givers and -receivers within a society).

I also contribute to literature on the dialect between knowledge and care. Paper 2 analyzes practices and values of care based on interdependencies for survival with attention to intersecting colonial and gendered power. This draws attention to care's disruptive or transformational potential. In emphasizing how care functions in resistance or in one's experience of affective relations (paper 3), I engage with empirical examples and theoretical explanations of situated mind-body connections of listening, questioning, learning, and growing (Dalmiya 2016; Hamington 2020). In doing so, I contribute to theorizing gendered knowledge as affective, embodied, and cognitive knowing co-constitutively produced with values and practices are care.

## Studying peace through care-based knowledge

Theoretically, this thesis contributes to peace research strands on *knowledge production* and *transformation*. Papers 2 and 3 study the role of affect as well as imagination in building alternative futures. Through the framework on climate transformation (paper 2), I add theorizing about links between peace and climate change beyond causal claims. My use of utopia goes further, contributing to theorizing prefiguration in peace studies (Confortini 2017; Wibben et al. 2019). I add to conflict transformation literature by posing a way of knowing based on a feminist ethics of care that enables tackling root causes of climate-related violences and processes of change to go beyond back-casting that reproduces the status quo.

Beyond peace research, the thesis speaks to other fields such as *critical social studies on climate change* through deeper interrogation and engagement with feminist theories on knowledge production. Emerging research on transformative adaptation, stemming from human geography and political ecology, focuses on accommodating change while challenging underlying structures of inequality (O'Brien 2012; Pelling, O'Brien, and Matyas 2015; Blythe et al. 2018). I contribute to these debates through politicization and pluralization about what constitutes transformative change, how it works as normative action and in different settings, or trajectories of such change. The papers in this thesis separately and together take steps toward doing so by demonstrating examples of transformation (e.g., the case studies presented in

paper 2), analyzing processes through newly applied epistemological approaches, and investigating orientations of change processes.

The thesis also holds insights for *degrowth literature*. Although justice arguments run central to much of degrowth scholarship, peace is relatively under-considered.[7] The transitions proposed and enacted under degrowth, such as wealth and income caps (see paper 1), do and will likely continue to instigate conflict as they disrupt the status quo. As others note, degrowth and allies to a certain extent have remained constrained by what is 'plausible' or what can be or is already achieved within a largely capitalist and growth-oriented political economy (Chertkovskaya 2022). Through engaging degrowth and peace studies, I add to (re)capturing and using the power of potential to make concrete visions of worlds otherwise. For example, paper 3 demonstrates actions already taking place alongside visions of yet-unknown futures. This adds to degrowth literature through emphasizing the role of imagination in politics and providing methodological and conceptual means for studying this.

These separate contributions of each paper culminate in conceptualizing peace in relation to gender and climate change based on a broader understanding of the phenomena. This is furthered, too, through the methodology and conceptualizations applied to empirical study of peace in concrete and localized contexts in Puerto Rico. Focusing two of the papers on Puerto Rico addresses the aforementioned 'street-light' and 'hotspot' biases with a new geographical focus, and by centering root causes of climate harm and violences rather than reproducing narratives of those most impacted by climate change as vulnerable, passive victims (Arora-Jonsson 2011; Adams et al. 2018; Hardt and Scheffran 2019; Bliesemann de Guevara, Budny, and Kostić 2023).

[7] A recent exception that presents substantial engagement between peace and degrowth is Bock 2021.

# 3 Theoretical framework on the climate-gender-peace nexus

> The master’s tools will never dismantle the master’s house.
>
> - Audre Lorde (2007 [1984])

This quote has long been employed to push for systemic and radical change. Audre Lorde (2007 [1984]) critiqued mainstream feminism for its failure to embrace differences of race, sexuality, class, and age, saying,

> What does it mean when the tools of a racist patriarchy are used to examine the fruits of that same patriarchy? It means that only the most narrow parameters of change are possible and allowable. […] For the master’s tools will never dismantle the master’s house. They may allow us temporarily to beat him at his own game, but they will never enable us to bring about genuine change. And this fact is only threatening to those women who still define the master’s house as their only source of support.

Her words stand forefront to me in motivating and guiding my study on peace in a changing climate. I see the “master’s tools” vividly as the predominant way of knowing with which we approach questions of peace and climate change: existing research applies tools or ways of knowing entangled with logics that themselves have contributed to climate change, and we cannot find our way out of the current climate crisis with these alone.

To this end, I present a theoretical framework for studying the climate-gender-peace nexus through intersectional relations between knowledge and care. As discussed in the state of the art, research points to gender, climate change, and peace as impacting each other. I go a step beyond this, from seeing three separate phenomena that affect each other, to studying the ‘nexus’: an entanglement of climate, gender, and peace that produces its own dynamic. This approach shifts our understanding from one of processes of externalized threats to that of an intrinsic condition (Chandler, Rothe, and Müller 2022).

I lay out the framework in three steps. First, I conceptualize climate, gender, and peace as intersectional: how each are shaped by different intersections of power. Second, I introduce my main theoretical concept, care-based knowledge. I present concepts of care and knowledge, and clarify how they are intertwined. Third, I theorize this care-based knowledge in relation to the nexus. I show how these intersectional phenomena are connected by care and how I study care-based knowledge with the help of two specific theoretical conceptualizations of peace – transformation and utopia.

## 3.1 Intersectionality

I study the climate-gender-peace nexus through a lens of intersectionality. *Intersectionality* has been defined in critical race theory as intersecting domains of power where oppressions and privileges stem from entanglements of gender, race, class, and so on (Crenshaw 1991; Hill Collins and Bilge 2016). Studying phenomena intersectionally, rather than through separate categories of power, reveals relationships in specific historical contexts and situations (Yuval-Davis 2006). This turns attention to how colonial processes form race and gender inseparably through a logic of racialized procreation and labor (Lugones 2008; Rodrigues 2022). For instance, during the 1930s until well into the 1970s in Puerto Rico, sterilization was used as part of a national poverty-alleviation campaign (Garcia 1982; Lloréns 2021). Considering this solely through a gender lens, or classed or racialized alone, would be to ignore grave disparities: particularly affected were poor women of color (Womack 2020).

I take an 'intracategorical' approach to intersectionality, which neither rejects categories of difference nor adopts them strategically; it accepts certain existing constitutions of social groups rather than challenging them, and undertakes to study relationships between them or challenge foundations on which they rest (McCall 2005). With this understanding, I pose climate, gender, and peace as socially constructed. Agents and structures of these phenomena are co-constructed, such that people are influenced by structures, but individual agents hold power[8] to change these structures. My theoretical framework sees individuals as relationally embedded in structures – political, economic, and social apparatuses with particular historical contexts of inequality (Ackerly and True 2020). Structures, meanwhile, I understand as

[8] The concept of *power* is specified more specifically in paper 1 as "an actor's discursive influence to realize their intentions."

encompassing identities, social arrangements, and symbolic meanings (Cohn 2013): systems of power and the social and political processes that operate through them.

Firstly, I understand *climate change* as intersectionally co-constructed with society. Scholars point to the impact of climate change as a "dynamic historical agent with the potential to dramatically shape humanity's future on a planetary scale" (Taylor 2014, 1). That is, we shape climate change, and climate change shapes us. As discussed in paper 1, climate change is not only a physical or geographic phenomena, but a social and political one. Human activities driving climate change are not produced by a universal humanity, but primarily by particular groups holding access to power and resources (the richest individuals and most over-industrialized countries), acting within structures that reproduce violence (e.g., Gaard 2015; Sultana 2022; Vogel and Hickel 2023). Histories of imperialism as well as inequitable access to power and resources yield intersectional gendered, classed, and racialized differentiations in experiences of and responses to climate change (Arora-Jonsson 2011; Cuomo 2011; Whyte 2014; Sealey-Huggins 2017; Jerneck 2018a).

Second, *gender* is understood as fluid and relational, rather than fixed in connection with biological traits: "however much is biologically given, societies construct a much greater set of differences [… and these in turn] legitimate a social order based on the domination of men over women, and some men over other men" (Cohn 2013, 7). Gender is an organization of power; it shapes how people see themselves and others as well as their material and cultural access to resources. Identity and access to resources, however, is not shaped by gender alone, but by other characteristics and structures of power. We each experience and perform gender differently as it intersects with other characteristics and broader symbolic and material contexts in which our lives take place (Crenshaw 1991; Hill Collins and Bilge 2016).

Finally, *peace* is understood intersectionally as a 'positive' phenomenon and on a continuum. I develop this conceptualization in paper 1, entailing that I consider how different people experience peace differently (e.g., depending on gender, class, and race intersections), and how different types of peace (or violence) reproduce each other. So-called positive peace necessitates an absence of physical violence, and more so entails the presence of some 'good' in society. As shown in the state of the art, critical scholars following this positive approach to peace furthermore conceptualize peace and violence not as static nor singular; they are dynamic, co-exist, and occur at different levels.

I join critical feminist scholars in considering a violence-peace continuum, which entails epistemic or cultural, structural, and personal or physical types of peace and violence constitute and enable each other through gender (Cockburn 2004; Senigaglia 2010; True 2020). For example, violence may be necessary to bring about revolutionary change for peace (Davis 2019 [1981]); violence also may be complicit in securing 'stable' peace (Berman-Arévalo and Ojeda 2020). Physical sexual violence happens during and outside of war-times and may take place through circumstances of gendered inequality (structural violence) and norms of domination (cultural violence). This means that physical as well as structural and epistemic violences and peace(s) are produced through (and reproduce) gendered power relations (Kappler and Lemay-Hébert 2019; Väyrynen et al. 2021). Thus, cultural, structural, and physical peace or violence existing on a continuum reinforce each other, doing so through intersections of gender, class, race, and other categories of power and difference.

## 3.2 Conceptualizing care-based knowledge

I understand climate, gender, and peace to be intersectionally constructed and connected through care, where knowledge is a critical aspect of how each (re)produces the other. In this section, I show a dialectic relationship between knowledge and care in order to conceptualize care-based knowledge, with which I study gendered knowledge specified in the research question.

Following feminist conceptualization, *care*

> includes everything that we do to maintain, continue, and repair our 'world' so that we can live in it as well as possible. That world includes our bodies, our selves, and our environment, all of which we seek to interweave in a complex, life-sustaining web (Tronto 1993, 103).

This conceptualization of care supports an *ethic of care,* which holds care as both a value – of reducing harm, addressing vulnerabilities, and restoring relationships, as well as a practice – local work and standards for sustaining life (Held 2005; Petterson 2021). Values and practices of care entail a commitment to condemning harm and exploitation and enabling human flourishing (Petterson 2011, 54).

A feminist ethic of care necessitates more than well-intended caring *about* or caring *for;* it insists that actors be attentive to contextual responsibilities and

relationships, and commit to addressing moral problems of relational structures (Tronto 1993; Robinson 2011; Aggestam, Bergman Rosamond, and Kronsell 2019). This involves processes of:

1. *Caring about*: Someone/thing identifies and assesses how to meet care needs.
2. *Taking care of:* Someone/thing takes responsibility for recognising and meeting needs.
3. *Care-giving*: Someone/thing directly meets needs.
4. *Care-receiving*: Someone/thing responds as to whether needs are fulfilled by care received.
5. *Caring with*: Relations between care providers and receivers that meet needs uphold democratic commitments to justice, equality, and freedom for all (Tronto 1993, 106-8; 2013, 23).

Decision-making, and duties that arise therein, come from concrete, complex relationships (Gilligan 1982; Vosman 2020). Individual care-givers and -receivers do not act in a neutral environment or vacuum; how one exercises an ethic of care is met with certain structural restraints and obstacles.

Since care practices and needs are not universal, it takes contextual knowledge to care and care puts beings into relation in a way that generates relational knowledge (Parker 2010; Puig de la Bellacasa 2017). I understand *knowledge* to be gendered, as a product of situated and embodied structures and relationships (Haraway 1988; hooks 2015). As such, it is shaped, defined, and limited by positional and situated individuals and their relationships to others – humans, more-than-humans, and non-sentient environments (Haraway 1988; Lugones 2008; hooks 2015). This knowledge is produced and put into practice through concrete and complex caring, shaping possible worlds in context rather than universalized abstraction (Puig de la Bellacasa 2012). Herein, knowledge originates in relational experiences, self-reflection, and judgements that account for contextual differences and disentangle oppressive conditions concerned with oneself as well as others (Petterson 2011). Caring processes emerge through different gendered hierarchies of race and class (Hankivsky 2014; Hamington 2015; Williams 2018), functioning through intersectional competence and skills needed for care, recognition of what care entails, who performs and receives it, constitutive emotions, and material manifestations (Raghuram, 2019).

## 3.3 Theorizing care-based knowledge

This third dimension of the theoretical frame constitutes a phenomenology of the nexus, addressing the basis for understanding and embodiment of gender, climate change, and peace. In this section, I first introduce care as producing climate, gender, and peace, before then presenting care-based knowledge as a tool with which transformative change takes place – transforming violent experiences of climate change to utopian peace processes.

My feminist care-based approach to knowledge ties gender, climate, and peace together through practices and values of care that are situated historically and socially, with knowledge as experiential and relational. Figure 1 illustrates this theoretical frame with its co-constitutive relations: the inner, solid circle connects the phenomena of interest that makes up the nexus of peace, gender, and climate change. Around the perimeter, multidirectional arrows show each phenomenon connected by and as products of care. Bold arrows crossing the nexus circle indicate that care produces knowledge and vice versa.

**Figure 1: Metatheoretical frame**

Intersectionality frames my understanding of gender, peace, and climate change – connected in figure 1 by the solid line; the three phenomena of study are produced by and (re)produce intersectional dominations of privilege and oppression. Care explains the connections between the intersectional phenomena; it produces gender, peace, and climate as connected to each other. Knowledge lies at the center of the figure. It can be read as over- or underlying the model, so that knowledge is both an input and output of care processes shaping gender, climate change, and peace, as described next. Through my approach to ethics of care, knowledge produces care and care in turn shapes knowledge. This knowledge then orients the nexus in a process of change – knowledge and care inform each other about how policies and practices turn (for instance, toward or away from whose peace, what gender, or which climate change). The following sections unpack and illustrate these relations.

## Care produces the nexus

I define the links between gender, peace, and climate change through studying care. Care (re)produces peace at intersections making and remaking gender and climate change. Examples of care constituting gender might call to mind, for instance, practices to express one's identity, raise children within particular frames of what it means to be a boy or girl, or performing work in care facilities, schools, and households that upholds or disrupts gender norms. Constituting climate change, care shapes what 'counts' as climate change harm through for instance value-based science and decision-making about targets for limiting temperature rise as well as through the material and symbolic care that uphold climate-driving capitalist economies (Mies 1986; Seager 2009; Hankivsky 2014; Sealey-Huggins 2017).

The necessity of care to sustain life places it central to processes and experiences of peace as well as violence. For instance, educating children, tending to sick or wounded persons, nurturing families in displacement camps, or harnessing and sustaining cooperation in communities that shape peace agreements contribute to peacebuilding and build societal healing (Donahoe 2017; Rai, True, and Tanyag 2019; Ibnouf 2020; Martin de Almagro 2022). Care work such as social organizing to boost trust, providing income, running households, or producing food enable communities to respond to financial crises or severe storms (Vaittinen et al. 2019; Lloréns 2021; Mulligan and Garriga-López 2021; Marrero, Nicoson, and Mattei 2023). Similarly, care such as food preparation and cleaning sustain paramilitary and extractive violence (Berman-Arévalo and Ojeda 2020). Care can also translate into racist and sexist projects, for example under ecofascist agendas of German Nazism and the neo-Nazi Nordic Resistance Movement, where care has been extended selectively to keep nature and people 'pure' (Darwish 2021). Caring practiced in residential care facilities may perpetuate slow violences, or in other instances disrupt violence and build 'everyday' peace (Wibben et al. 2019; Confortini and Vaittinen 2020). Therefore, care is not inherently 'good' nor 'peaceful'; considering normativity or assumptions orienting care is critical.

## Care-based knowledge orients the nexus

I argue that not only does care necessitate a critical orientation, it also generates one. The care-based knowledge lens can be turned toward or away from certain objects, bodies, or events when held or used by different people in their own spatial and temporal places. The peaceful potential of transformation processes and utopia(nism)s lies in an active orienting of care (rather than, for instance,

‘orientation’ as a thing or descriptor). This means that as care shapes possible worlds (Puig de la Bellacasa 2012), care-based knowledge shapes (knowing, building, or imagining) possibilities of peace. Consideration of the *who*, *what*, and *how* of care values and practices turns attention toward specific peace(s) passed, present, or yet-to-come. Herein lay connections to transformation and utopianism of peace developed in papers 2 and 3: care-based knowing becomes a lens or epistemic tool, through which the orientation of the nexus can be known critically in terms of *what*, *for whom*, *how,* and so on.

As Vrinda Dalmiya (2016, 29) writes, care necessitates “an orientation to knowing the world that regulates enquiry to make it responsive to injustices in the practice of science.” That is, particular caring values and practices are not, in themselves, inherently more or less peaceful. Drawing on intersectionality and with inspiration from strands of constructivist ecofeminism, I explain how control over women, colonies, or nature become mutually re-enforcing for rationalized and objective models of knowing and ruling.

We do not know ‘climate change’ based on individual weather hazards or time- and place-specific conditions. Rather, climate change is constructed *as* a phenomenon through sensing and modeling technologies that allow scientists to measure long-term changes at regional and global scales. Thus, neither the physical impacts of climate change nor the understanding of it are ‘natural’; both are produced through eco-social environments, relations, and processes that in turn shape our societies (Hulme et al. 2009; Swyngedouw 2010; Taylor 2014; Tuana 2016). These logics and ways of knowing favor ‘rationalism’ through separating nature and materiality from their histories (Salleh 1997), and are inextricably linked with coloniality’s modernity, heterosexuality, Christianity, Eurocentric patriarchy, and capitalist modes of production (Lugones 2008).

These separations that uphold claims to superiority of a value-free, impartial search for the truth are based upon productions of knowledge through violence (Merchant 1983; Harding 1986). So-called pure science is identified as militaristic, political, and economic exercises of power based on subordination of nature, logic that separates mind and body, and the (White European) Man’s destruction of witches and violent domination and plundering of South American and Caribbean peoples and lands (Merchant 1983; Mies and Shiva 2014 [1993]). That is, norms and manifestations of andro- and anthropocentrism privilege men and society over women and nature. These violent ruptures are identified as a logic of domination (Warren 2000; Kings 2017). These divisions maintain science as objective authority through separating knowledge production and producers (scientists) from their

subjects, knowledge's social uses, and feelings of consequence (Harding 1986). As Sandra Harding puts it, "gender politics has provided resources for the advancement of science, and science has provided resources for the advancement of masculine domination" (1986, 112).

In order for care-holders to tackle injustices, care needs to address and critically respond to specific contexts. Knowledge co-constitutes how people *care about* specific needs (caring phase 1, listed in section 3.2), particular people *take responsibility* and *give* specified care to particular others (phases 2 and 3), specific people's needs are fulfilled (or not) through *receiving* and *responding* to the care provided (phase 4), and *relations* of care uphold justice and equality (phase 5).

## Transformation and utopia

I study care-based knowledge with transformation and utopia, different concepts that carry similar theoretical bases for describing a process of moving toward some 'better' future through tackling inequalities and violences. Transformation refers to a process or goal of fundamental social change (see paper 2). It refers to a change beyond some current capacity, concerning structural causes of violence or inequality toward some desirable future, though the concept remains ambiguous as to what constitutes such change or to what end it aims (Pelling, O'Brien, and Matyas 2015; Blythe et al. 2018).

Climate transformation (paper 2) proposes a process of positive peace based on three phases (see figure 2). First, caring *in* current relations and experience – for instance, people identify climate change through how they are/not able to access electricity based on dependencies of care through solar energy systems. Second, caring *through* change processes affectively and reciprocally – emotional connections with others generate energy that sustains their community work. Thirdly, caring *for* a vision of the future through prefigurative and historicized imagination – community members draw on memories to imagine utopian futures.

Paper 2 draws insights about care-based knowledge through experience of groups in Puerto Rico. The experiences are only possible and knowable based on individual recognition and expression. However, the focus remains at a higher level; the dynamics of caring and knowing become known through analyzing across experiences, not to collapse them into one monolithic experience, but to observe and interpret knowledge and the nexus as a collective experience.

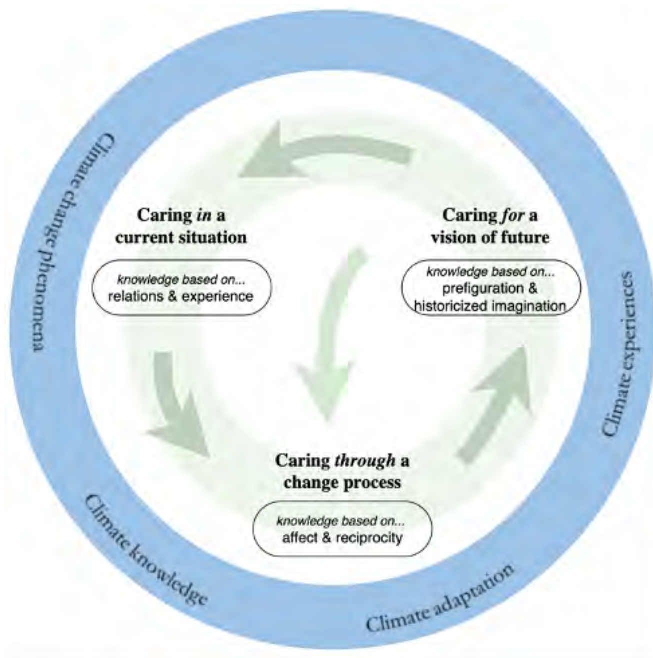


**Figure 2: Climate transformation process through a feminist ethic of care (paper 2)**

Meanwhile, in paper 3, the care-based knowledge lens enables analysis of what imagination *does* in a peacebuilding process through the concept of utopia. As feminist scholars Olkowski and Fielding (2017, xxv-xxvi) write,

> we cannot commit to a future we feel passionately about if we do not think there is a possibility of its becoming. Similarly, if we forget our passions and cynically support the future we think is inevitable, we are complicit with its eventuality.

To this end, I draw on a concept of utopia (see paper 3) stemming from Ernst Bloch as well as later work of Moylan, Bhaskar, and others as "the expression of the desire for a better way of being or of living" (Levitas 2013, xii). Herein, utopia is not a 'no-place', as we often read in Greek origins of the word, nor a projection of rational construction, but rather some possibility yet-to-be realized through a process of social change; at once critical of a particular present and creative about a future (e.g., Bloch 1986; Weeks 2011; Muñoz 2009; Levitas 2013; Tipton 2020). Utopia takes on tasks of describing knowledge of and action toward a future we feel passionate about ('we' refers

to some collective): thinking and desiring for alternatives and the concrete actions, thoughts, and emotions that we use to take steps toward this.

This connects visioning and building utopian alternatives to place-based caring, which implies scaling down. For instance, women in a Culebrense community organization (paper 3) work to shift from a food system reliant on imports to one the depends on local people and spaces. They envision and create this utopia through longing for health and cultural connection – using local recipes to plan meals, and through a sense of place-based belonging – social ties bring people together to grow and prepare food in their local garden and kitchen spaces. The utopia concept, then, is more closely connected to care-based knowledge about the nexus through individual conditions.

Peace actions localized at an individual or group level become scaled (vertically) through for instance formalization, or (horizontally) through informal word of mouth (J.P. Lederach 1997; Mac Ginty 2021). In this view, so-called grassroots peace actions have a cumulative, ripple effect of disrupting physical violence as well as violent logics and norms, thus serving as a precursor for other processes such as conflict resolution or transformation. Such an approach understands agency wherein bodies are objects as well as subjects of peacebuilding (Mannergren Selimovic 2022; Björkdahl 2023). In the Culebra example referred to above, the agency of women in building an alternative food system impacts the local level but also 'scales up' horizontally. Sharing recipes and food products ripples out through and beyond the local, national, and potentially (international) diaspora communities. It may also scale vertically as these processes are formalized. For example, the group of women in Culebra turn such activities into funded programming that require staff, make connections off-island, and draw interest beyond a national context.

# 4 Research design

> Another world is necessary; another world is possible; another world is happening.
>
> - Grace Lee Boggs

I design the research guided by commitments captured in the above epigraph. Grace Lee Boggs was a prominent activist and philosopher in the mid-1900s, leaving a particularly notable legacy of political action in Detroit, Michigan – one of the illustrative cases to which I point in paper 1. The phrase "another world is possible" arose, according to Boggs, in connection with the 2001 World Social Forum in Porto Alegre, Brazil and through her involvement with community organizing in Detroit as a response to deindustrialization: they created new a new kind of society and infrastructures through growing their own food, helping each other, and thinking about how neighbors depend on one another (Boggs 2010). The phrase has come to be an inspiration and rallying call for many social justice advocates. Learning from Boggs during my research, I structure my study process and outcomes around a frame that echoes her words:

> Another world is necessary: understanding a situation (critique);
>
> another world is possible: imagining possibilities (visioning);
>
> another world is happening: enacting transformation (change processes).

I interpret the philosophy of Boggs with an abductive and phenomenological research design. To do so, I follow an interpretivist feminism to question how gender (as an analytical tool for signifying power relations) constructs knowledge (e.g., Sjoberg and Tickner 2012; Cohn 2013). My feminist approach includes designing elements to enable studying power structures of gender intersectionally and "start off research from women's lives" (Harding 2008, 225); emphasize that research changes the world it studies, including

through collaborative knowledge production, reflexivity, and critical researcher self-positioning; and incorporate care ethics in the research practice.

As part of this design, my theory and practice work in conversation. For instance, in following a feminist ethic of care as my theory of knowledge, I also apply this to the research design and incorporate care into my research practice. Afterall, care theorists point out that, "political change alone, no matter how relational the narrative, must be accompanied by personal transformation and connection to be actualized through experience" (Hamington 2020, 129). A care-based approach deliberately includes emotions, contested relations, and moral considerations as value-laden in the production of knowledge. As a theory of knowledge, ethics of care points to interdependence, listening, and responsiveness (Neufeldt 2022). These aspects are reflected in the different parts of research design presented below.[9]

## 4.1 Interpretive feminist approach

### Orienting and sensitizing concepts

My design's feminist approach means that concept formation and analysis is a political and normative act (Ackerly 2018, 143). Keeping with this, I apply abduction such that concepts become researchable through an iterative theory-empiric inference, and I develop concepts in relation to one another rather than in isolation. My practice of forming and studying concepts ('operationalization'), then, includes ideas 'suggested' by the empirics (sensitizing) as well as 'preconceived' through previous study (orienting) (Layder 2018). I orient concepts in order to give direction to how I engage with the empirics in terms of vocabulary, categories, and frames available to me. The step of sensitizing my concepts involves bringing preconceived ideas into conversation with novel empirics to refine concepts. A feminist approach to this concept formation and analysis emphasizes attention to power and relations, accounting for my own situated limitations and biases.

Key concepts defined in the theoretical framework include: the climate-gender-peace nexus, care-based knowledge, transformation, and utopia. This section explains choice of methods and data sources for how I identify and

[9] Supporting material for fieldwork, including on informed consent and questionaries for participants, are provided in the Appendix (7.1).

observe these – my processes of orienting and sensitizing concepts. The methods and data themselves are presented in greater detail in section 4.2.

Firstly, because I conceptualize the climate-gender-peace nexus intersectionally, it demands attention to categories of difference at the interface of actors and structures. In paper 1, this is studied through the concept of climate resilient peace, which takes each aspect (climate change, resilience, and positive peace) as intersectional. Herein, I study the nexus by looking for active processes where people's collective struggles for social and ecological well-being account for present and yet-to-come climate change through practices that resist further contributing to climate change.

The focus here remains on agents acting within structures, which I achieve with a desk study that identifies and describes degrowth processes. The degrowth focus is selected because the term acts as an umbrella or slogan for movements in the Global North that take social and political action for downscaling production and consumption, accounting for both social and ecological well-being. Thus, to study the nexus through the concept of climate resilient peace, I identify and describe examples of degrowth policies and practices (grassroots urban gardening, provisions for basic income, and wealth cap policies). Data sources that facilitate the conceptualizing and theorizing in this paper include academic case studies, grey literature (policy documents, nongovernmental guidance, and research institute or intergovernmental reports), and news content.

The climate resilient peace concept serves as a basis for studying climate transformation in paper 2. I study the process of transformation through a focus on care-based knowledge. Because I see actors as discrete with value-laden knowledge entangled in historical, contextual relations and see caring as a situated and relational process, I conduct fieldwork to ground the research in specific contexts and recognize collective knowledge (Maruska 2017; Ackerly and True 2020). I select methods that allow me to capture conscious expressions of knowledge by participants and myself as researcher; I aim to capture data about who cares for whom and how, what axes of power are observable or not, and how these aspects necessitate and also produce situated knowledges. Further, because I conceptualize knowledge as relational, partial, and situated (Haraway 1988; hooks 2015), the method of studying this needs to capture actors' conscious choices, behaviors, and feelings about care at different points in time. I conduct informal meetings and semi-structured interviews as well as participant observation to identify caring practices, and listen to stories of caring values to understand how climate change is known and what this knowledge does in processes of change.

In order to study transformation, following the definition in section 3.3, I work back-and-forth between initial theorizing and empirics generated by fieldwork. The referent of study in paper 2 is participant-identified peace work and climate action in Puerto Rico. My conceptualization and theorization of climate transformation demands study of how people care for themselves and others in a current situation, a change process, and a vision of the future. I talk with participants about how they identify in relation to their neighbors and environment; I observe what group relations do (for instance, collective organizing among neighbors) and what groups work with or in spite of others (e.g., community-led energy alternatives within existing monopolies of state-led fossil fuel systems).

In paper 3, the care-based knowledge concept is studied through three ways of knowing: embodied, affective, and cognitive, which structures my means for identifying utopia. In order to capture these different ways of knowing, I add to the informal meetings, semi-structured interviews, and participant observation with joint participation in illustrating stories. Together, these tools facilitate data generation and collection beyond the scope of reflections that might be more readily accessible. The processes of creating art, laboring side-by-side, and reflecting on imagination between myself and other research participants generate data on emotions, bodily experiences, and cognitive thinking for studying care-based knowledge. Together, these methods yield data including interview transcripts, researcher fieldnotes, photographs, audio files, videos, reports, maps, and art.

I study the nexus using utopia as a means to orient knowing and imagining (paper 3). Feminist phenomenology as method allows me to observe and analyze how care-based knowledge contributes to imagining and enacting of peaceful visions of the future. Following the conceptualization of utopia in section 3.3, I collect data about informed critique and active struggle. Identifying these components of utopia is achieved through the methods and data in paper 3's approach to studying care-based knowledge.

## Abduction and feminist phenomenology

I use abductive theorizing and feminist phenomenology as means of analysis. From these, stem my methods – the techniques I use in the case study fieldwork to gather evidence (see section 4.2). First, I use *abduction* to study knowledge claims and meaning-making, as a means of non-linear theory-seeking that aims to "understand and interpret a given phenomenon using conceptual tools developed while reflecting *on the phenomenon* in question" (existing emphasis

Ackerly and True 2020, 77). Abduction entails iterative rounds of writing, puzzling through data, and repeatedly revisiting concepts, theories, and evidence between literature and fieldwork (Blaikie 2010; Timmermans and Tavory 2012; Sætre and Van de Ven 2021). I guide these processes with attention to silences, power, and relationships in the research question, data, and analysis, as well as in regards to my situatedness as researcher and collaborative knowledge production. Doing so, I strive to avoid epistemological biases or potential omissions (Ackerly and True 2020)

My abductive process consists of various stages and feedback loops (figure 3). Based on reviews of existing literature and empirical evidence combined with original reflection and reasoning, I present a framework in paper 1 that offers concepts and a basis for theorizing that I then use in development of paper 2. For paper 2, fieldwork generates and collects data that I use to reformulate the research question, analytical frame, and design. For instance, paper 2 originally planned multiple case studies. However, after initial fieldwork, I decided to interview broadly and conduct one in-place study (with Casa Pueblo in Adjuntas) as a means for deeper experiential understanding and to better facilitate joint knowledge production. My findings result from iterative rounds of revisiting concepts and theories through my researcher's lived experience, reading, writing, and analyzing data. Paper 3 takes theoretical conclusions of paper 2 as the starting point for empirical study. I arrived in the field with ideas from paper 2 and the unfolding fieldwork experience shaped the design of my in-place case study (with Mujeres de Islas in Culebra); and working with the data while generating and collecting it, I refined use of concepts and theory. Analysis took back-and-forth thinking between literature and empirics, and findings generate questions that open the research as a project of ongoing study.

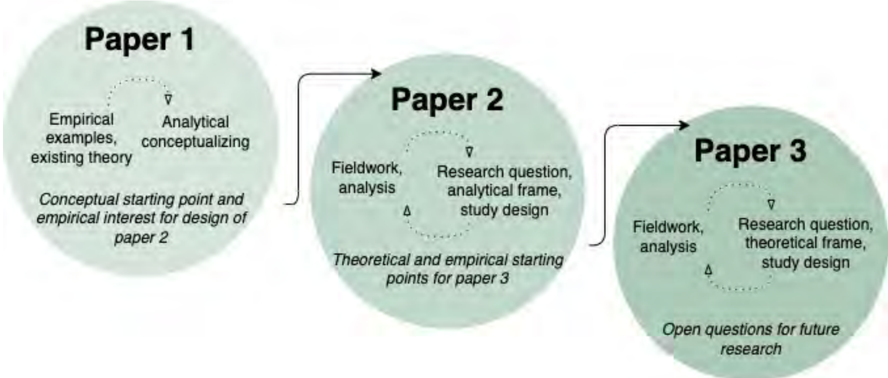


**Figure 3: Abductive process**

Second, I use *phenomenology* to study knowledge. Specifically, I take a feminist approach, which troubles more traditional phenomenology's idea that experiences have a 'true essence' or that I can bracket myself as researcher to capture some 'objective' phenomenon, because knowledge is seen as connected to and stemming from sensing bodies that themselves also have meaning (Zahavi 2008; Stoller 2017; Bentz et al. 2022). By considering the orientation of bodies and power relations between them and in their encounters, feminist phenomenology integrates intersectional selves in the data (Eberle 2013; Ortega 2016). Herein, since knowledge is emphasized as relational and situated, interpretations necessitate attribution and visibility for the role of the researcher (Simonsen 2011; Kinkaid 2020; Cadaval Narezo 2022). Moreover, my feminist phenomenology also brings the ethic of care into methodology, for instance in paper 1, through theorizing based on my own positionality within the Global North, or in paper 2 by centering my own and participants' knowledge in particular values and practices of care. Paper 3 takes feminist phenomenology as method. It does not attempt to list particular utopias people envision, but instead studies how people embody the act of imagining and how their practices and thinking shape ways of being.

Joint knowledge production and reflexivity both characterize the abduction and phenomenology. Both aspects include active engagement with the means by which and impacts of how I relate to others and my environment and others to me. These relations shape the research, as a condition of my design holds the researcher as part of the social and political worlds they study (Scott 1992; Ortega 2016; Ackerly and True 2020), and moreover shape collaboration and research engagement beyond academia, as the feminist approach emphasizes that research changes the world it studies (Harding 2008). Since the design emphasizes partial and situated knowledges, a co-productive approach not only reveals and questions power hierarchies in the research process, but also enables data to include experiences of difference (Wibben et al. 2019; Björkdahl and Mannergren Selimovic 2021).

The abductive process itself constitutes *joint knowledge production*, as described with iterative rounds between independent and collaborative thinking and doing (illustrated in figure 3). For instance, collaborative projects took shape throughout the fieldwork and carried into ongoing relations after I left Puerto Rico and processed research in Sweden (e.g., images 8 and 9 discussed below). This allows the research methods to take on new dimensions, makes my theoretical research more publicly accessible, and connects with ongoing climate action in Puerto Rico.

*Reflexivity* involved actively engaging with and challenging my perspective and position (in relation to those of others) in fieldwork and the scholarly field on questions of ontology, representations of knowledge, the puzzle and subject of concern, and purpose and meaningfulness of the research (Kohl and McCutcheon 2015; Faria and Mollett 2016; J. Mason 2018). For instance, these questions shaped the scope of study explained in paper 1 and how arguments are presented in paper 3. Further examples of how this shaped the research include, for instance, the creative method process and outcomes of illustrating stories and selection of sites to study (each detailed below).

## Case study and fieldwork

I use feminist case study and fieldwork as methods of 'being-in-place', for closely observing and experiencing peace, knowledge production, and gender dynamics (Björkdahl and Mannergren Selimovic 2021). Case study method facilitates my data gathering, interpretation, and analysis. Grounding the research in-place, I employ a nominal case study approach, which "emphasizes how various ways of conceptualizing it [a case] can generate different kinds of knowledge," wherein casing is an ongoing process that observing phenomena through intellectual and political activities (Soss 2021, 88-90).

Motivation and selection for case study research sites stems from two key components. Firstly, gaps in existing research prompted me to study peace and violence beyond armed conflict-affected contexts, and expand theories and empirical understanding of peace closer to home (see section 2). Secondly, personal motivation to (re)engage with anti-imperialist climate action prompted me to conduct research in my home nation, the US.

In paper 1, I study degrowth initiatives in three Global North countries, including a site in Detroit. Sites in the US present prime examples of islands of violence coexisting amid peace: there is not considered to be an ongoing war in the country, yet the US is a major actor in global environmental and human (in)security. Different militaristic arms of the state deny migrants basic dignity, target Indigenous peoples and Black communities with violence, and wage armed conflict abroad. This same military state is one of the largest emitters of greenhouse gasses and contributors to climate change (Dunlap and Fairhead 2014; Hynes 2014; Crawford 2019).

In papers 2 and 3, I turn attention to Puerto Rico as a site of "broader temporal and spatial processes in the modern/colonial/capitalist world-system" (Grosfoguel 2003). As further detailed in papers 2 and 3, the archipelago has

been held up at once as both a hotspot for climate vulnerability and as uniquely resilient to climate harm. For instance, Puerto Rico experiences changes in frequency and intensity of storms and hurricanes, rising sea levels, increasing surface and water temperatures, changes in precipitation, and acidification of sea water (Runkle et al. 2022). Socio-political conditions such as an extractivist economy, including foreign investments and tourism, import-based food systems, and unpayable debt further aggravate situations of climate vulnerability (Cabán 2002; Valentin-Mari and Alameda-Lozada 2012; César Hernández et al. 2017; Crandall 2019; Morales 2019; Bonilla 2020; Nicoson forthcoming). I expand further upon these characteristics and dynamics in papers 2 and 3, and crucially also present evidence of resistance against imperialism and examples of community-based climate action. A further motivation for siting the research in Puerto Rico relates to the ongoing currents of thought and work that intersect with my own research approach, as detailed in the case description below.

Moreover, I employ the method as Harding says, to "start off research from women's lives" (Harding 2008, 225). Doing fieldwork in Culebra for paper 3, I meet participants in ordinary exchanges over coffee or lunch, or carrying out special activities through mundane tasks like cleaning used glass bottles for constructing gardens. Our sharing of emotions and interests guide other interactions; for instance, we talk while resting in the shade or to pass time while we travel via ferry.

Fieldwork comprised a total eight months spent living and working in Puerto Rico, taking place May-July 2022 and February-June 2023. During these visits, I split time between open movement based in the capital city of San Juan, and site-based work where I stayed in accommodations at the campuses of two community organizations: with Casa Pueblo in Adjuntas, situated amidst the mountainous region of the big island, and with Mujeres de Islas in Culebra, a smaller island in the northeast of the archipelago.

## Climate-gender-peace in Puerto Rico

Today an unincorporated territory of the US, the Caribbean archipelago of Puerto Rico has seen centuries of political imagination and future-making. Igneris people and their successors the Taino (circa 2000 B.C.), developed rich cultures, agricultural skills, and political organization based on ties of ancestry and reciprocity (Rouse 1992; Fundación de Culebra 2008). The Taino suffered invasion and genocide upon the arrival of the Spanish in 1492. Spain enslaved Indigenous and kidnapped peoples from Africa, and established a colonial

economy around sugar plantations (Feliciano Encarnación 2009; Cruz-Martínez 2019), before ceding Puerto Rico to the US under the Treaty of Paris in 1898.

Since then, the archipelago has been a canvas on which the US conceives and experiments with future-making projects – from chemical weapons to contraceptives (Garcia 1982; Dickerson 2015); from economic machinery of business-friendly tax havens to idyllic tourist destinations. Over these 500 years of colonization, Puerto Rico has been a site of resource extraction and industrialization that ultimately contributes to climate change and production of military-might as a training and testing ground (Cabán 2018; Crandall 2019; Bonilla 2020; Cruz Soto 2020). The ongoing colonial occupation incubates inequalities as legacies of genocide, slavery, classed and racialized economic models (Santana 1998; Cabán 2002; Baver 2012; Cruz-Martínez 2019; Womack 2020), and increasing neoliberalization erodes public goods, environmental habitats, and social and cultural well-being (Carro-Figueroa 2002; Cabán 2018; Brusi and Godreau 2019; Morales 2019; Ora Bannon 2019; Ginzburg 2022).

Amidst these continuous epistemic, structural, and physical violences, local resistance led an abolition of slavery, dispelled the US Navy from two of the outlying islands, and continue to build alternatives through reclaiming space, protecting beaches, combatting environmental contamination and degradation, and fostering care-full well-being (see image 1) (Baver 2012; García López 2020; Lloréns 2021; Nicoson forthcoming).

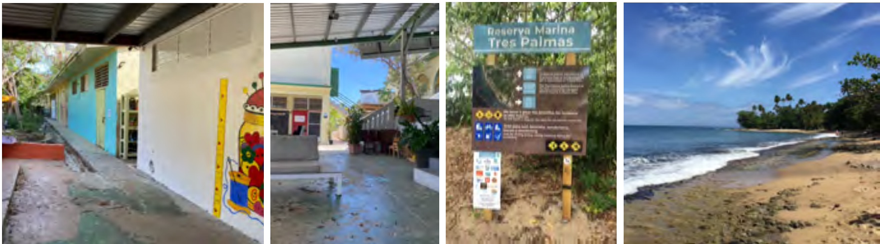


**Image 1: Puerto Ricans reclaiming spaces and fostering well-being**
**(Left 2)** Workshop spaces at Mujeres de Islas serve the community in Culebra, making use of a restored school. (**Right 2)** A community-managed marine reserve protects the ecosystem in Rincon (photographs by Christie Nicoson 2022, 2023).

For instance, activists work to tackle erosion of beaches and degradation of marine ecosystems with beach-cleaning brigades and sea turtle protection programs, as well as by protesting privatization of public land and invasion of speculative developers that displace Puerto Ricans and cater to outside interests (see image 2). Community members involved in these efforts describe that they are not waiting for a different future, but rather lovingly create utopias of "peaceful, just, and harmonious societ[ies]" (Massol González 2022a, 116).

Actors in Puerto Rico refer to peace through such intersectional work, referencing social movements to protect the environment, produce healthy food, or tackle violence against queer people and women (see image 3). These examples illustrate understandings of peace that not only weave together human and more-than-human well-being, but also that complicate would-be dichotomies of violence and peace.

Furthermore, scholars and activists alike emphasize that links between gender and ecology exceed epistemological oppressions of androcentrism and patriarchy. The feminist art group Colectivo Moriviví works with communities to create murals for connection, protest, and activism. According to the artists, the mural *Trenzando legados* represents relationships of care and ancestral knowledge being passed down through braiding, to cultivate Puerto Rican heritage; *Tocando tierra*, illustrates love, play, and beauty in connected work of growing food and caring for nature, agricultural systems, and community (see image 4).

**Image 2: Intersections of peace and climate work**
Activists at 'Campamento Carey' protest a condominium development encroaching on a public beach. Since 2021, activists face clashes with police and security forces; they supply food for protestors, educate beach visitors, and create art about the people's right to beaches, enshrined in Puerto Rican law. One sign reads, *"Las playas son de todos"* (the beaches are for everyone) (left photograph by Christie Nicoson 2022; right 2 by Maritza Maymí Hernández 2021 via https://www.momentocritico.org).

**Image 3: Depictions of peace in Puerto Rico**
**(Left)** The mural *Paz para la mujer* (peace for the woman) by Colectivo Moriviví depicts names of femicide victims and monarch butterflies. (**Right 2):** Posters for *paz* (peace) and *solidaridad* (solidarity) show community members and mangrove trees, outside Taller Comunidad La Goyco, operating in a restored school (photographs by Christie Nicoson 2022).

**Image 4: Intersectional ecofeminist knowledge and care in Puerto Rico**
**(Left)** The mural *Trenzando legados: Homenaje a nuestras mujeres* by Colectivo Moriviví honors community leaders of Tocones, Loíza. In the mural, women braid flowers into the hair of a younger generation. (**Right)** *Tocando tierra* by Colectivo Moriviví depicts agroecology, with themes of adults and children caring for their environment and cultivating food while enjoying the land (photographs via https://www.colectivomoriviví.com).

## 4.2 Methods and data

I documented occurrences, dialogue, and reflections through fieldnotes, photos, videos, and audio recordings. These data contribute a large part of the abductive work, allowing me to both observe and experience theoretical and conceptual ideas based in a particular field site. To generate and collect these, I used the tool of *participant observation*: as researcher, I engaged in ongoing activities and daily life in my research sites (Gillespie and Michelson 2011). Through observing and joining in activities, taking part in daily life with the community organizations, and co-producing materials and spaces for

expression, I collect novel empirics about how people relate to and care for one another and their environment, and how they experience dependencies with one another and within the colony. My participation and observations of others' participation captures experience through historicized positions; my reflections and experiences are also included as data to help reveal positioning of the observations (Scott 1992; Ackerly and True 2020).

Participant observation included taking part in special events and daily operations with Casa Pueblo in Adjuntas and Mujeres de Islas in Culebra during temporary stays at each location. For instance, I helped arrange logistics for visitors, plan or facilitate educational activities, tend gardens, or prepare project materials. It also extended to practices of everyday life, including visiting public places like beaches, joining in environmental work such as turtle watches, or participating in demonstrations such as for International Women's Day (see image 5).

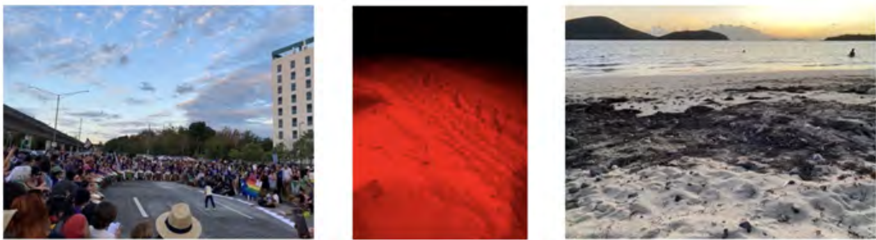

**Image 5: Participant observation**
(**Left**) An event marking International Women's Day in San Juan; attendees sang, chanted, and performed to raise awareness for environmental justice in front of a governmental office building for the natural resource department. (**Center)** A 'turtle watch' in Culebra, involving an overnight patrol on a beach to mark new nests and record turtle sightings; red lights are used to avoid bothering wildlife; tracks in the sand are left by turtles moving up and down the beach. (**Right)** A marked turtle nest on a beach in Culebra (photos by Christie Nicoson 2023).

I also use *semi-structured interviews* to capture participants' conscious contributions, centering agency in processes of structural change. I built a network based on preliminary research and on-site exploration, and used initial purposive sampling followed by snowball sampling to identify key actors (J. Mason 2018; Ackerly and True 2020). This produced a long list of actors across the archipelago who work in climate change or social transformation efforts with community-groups, organizations, or semi-governmental agencies. After initial scoping meetings and informal interviews, a I invited participants who are active and centrally-embedded in or leading such efforts.

For paper 2, I interviewed twelve individuals, either in-person or via phone or video in various locations throughout Puerto Rico. For paper 3, I interviewed ten individuals based in Culebra.

We spoke either English or Spanish, sometimes both. During these narrative-based and semi-structured interviews, I loosely guided conversations with questions about a participant's relationship to or role in the community, personal knowledge with climate change events, and hopes for change. These interviews informed participants of my research interest and captured the narrator's account of thoughts, emotions, or behaviors. The semi-structured design of interviews gave space for participants to shape content and direct discussion. Interviews lasted anywhere from half an hour to three hours and took different forms such as sitting or visiting meaningful places, and walking or driving tours (see image 6).

**Image 6: Semi-structured interviews**
**(Left)** During an interview with Proyecto ENLACE del Caño Martín Peña, the participant showed me the water channel and brought me through different parts of the neighborhood. (**Center)** During interviews with Casa Pueblo in Adjuntas, we visited a *Bosque Escuela (*forest school) and **(right)** a nearby town, Lares. A participant and I shared stories about Gabriela Mistral, an important ally of Puerto Rico's early independence movement. We conduct an interview while visiting a tree that honors her contribution (photographs by Christie Nicoson 2023).

Interviews and participant observation also acted as a means for *collaborative knowledge production* (Ackerly and True 2020, 159). During stays in Adjuntas and Culebra, my extended and more deeply engaged time in each site meant that I could play a more active role in events and daily activities with the two host organizations. Participant observation then became more of a two-way relationship (see image 7). The interviews, meanwhile, followed a guiding set of questions, but the progression of the interview depended on what participants chose to discuss and how I engaged with them (see examples in image 6). In practice, co-producing knowledge meant that I not only followed

participant's lead in interviews, but also took part in the conversation. For example, during interviews in Culebra (paper 3), when a participant struggled to express themselves, I offered my own perspective on the question at hand (e.g., sense of self or identity) or answered when participants asked direct questions (e.g., regarding utopias, or what I like about life in Culebra). Sharing personal interests and experiences also helped build connection and rapport with participants, which helped to ground the research in lived experiences and open it to ongoing collaboration (Ackerly and True 2020; Hedström and Mar Phyo 2020; Anctil Avoine 2022).

**Image 7: Collaborative knowledge production**
**(Left)** I volunteered with Casa Pueblo at a celebration of solar energy, *La Marcha del Sol* (march of the sun), Adjuntas. (**Right 3)** I joined Mujeres de Islas volunteers tending garden beds, hauling soil to fill beds in a shade house, and mapping impact and vision at a group meeting (photographs from left by Nicolás Fuenzalida-Uribe 2023; Marissa Otero 2023; and (2) Christie Nicoson 2023).

Finally, I used creative methods to uncover and understand stories that otherwise were inaccessible. Participant observation was mainly limited to already-happening activities, and interviews to the frame of the conversation. I developed and used the method of *illustrating stories* to go beyond this (Gillespie and Michelson 2011; J. Mason 2018). Creative methods elicit participants (including the researcher) to engage in and with memories beyond oral communication, actively engage with the research process and ideas (J. Mason 2018; de Nooijer and Sol Cueva 2022), practice and expand speculation and imagination (Engelmann et al. 2022), and explore the partiality of differently situated knowledges (Haraway 1988; Kwakye 2011).

My specific method evolved through the collaborative nature of the research (e.g., working alongside groups to facilitate participant observation), from ongoing discussions with partners in each field site. It drew from participant observation and interviews, and articulated and wove together stories from the field experience in unexpected ways, based on back-and-forth between participants and myself. This served as both an intellectual, embodied, and affective as well as material point of connection between us and with a wider community (e.g., beyond research participants). The method served to

facilitate communication of participant and researcher stories, share research process and findings, and contribute to action ongoing in field sites (see images 8 and 9). I used the method both in-place and after leaving a physical field site. The data generated from this include but are not limited to the output; data also include researcher experience from the process of illustrating stories.

**Image 8: Creative research methods in Adjuntas**
*Cuenta* produced with Casa Pueblo, telling the story of Gabriela Mistral in Puerto Rico.

**Image 9: Creative research methods in Culebra**
*Cuenta* produced with Mujeres de Islas, telling the story of the *umbráculo* (image from paper 3).

## 4.3 Researcher positionality

Based on the epistemological starting point of the thesis and methodological approach, my own situatedness plays an active role in how the research develops. My positionality, situated knowledge, and personal ethics factor into what I study and how, and where as well as the outcomes or insights (Haraway 1988; hooks 2015).

An abductive process of working back and forth between theory and empirics, and reflexive engagement with my positionality motivated the topic of study as well as siting in Puerto Rico (Ackerly and True 2020). The project began from a comfortable Global North, both in terms of place and perspective: from the privilege of conducting doctoral research in a Swedish university office, background in US higher education, and upbringing in middle-class US-America. This pushed me to engage with degrowth literature (paper 1) and orient studying the gender-climate-peace nexus toward peace and utopias of climate change, rather than for instance starting with experiences of violence in and of themselves (Krystalli and Schulz 2022). From this point of departure, I sought not only to find, contest, and demonstrate limitations in existing English and Global North-centric scholarship, but to bring them into constructive conversation with knowledge particularly from Latin America.

These positionings and how I navigate them yield particular privileges and limitations of the research presented here. For instance, my fieldwork research benefited from status. In Puerto Rico, I was often introduced (by myself and by others) as a doctoral researcher; I could feel that this shifted relations, sometimes prompting a different kind of respect or heightened interest from others. This introduction often also accompanied stating my Swedish affiliation. I sensed that this factored into how my person and research were perceived, as well (by myself included), distancing me somewhat from US colonial power, despite being a white woman from the US. I noted a pride in some partners, that my position in Sweden evidenced a certain global reach and importance of their work, which perhaps opened doors that otherwise might have been more difficult to access.

Moreover, my personal status made life relatively easy. Funding from Swedish research bodies sustained research in Sweden as my primary task (rather than for instance, needing secondary employment). In Puerto Rico, I could easily find housing in tight situations and on short notice as I moved around the island and could rent a car when transportation would otherwise be difficult or impossible. This not only made the research feasible, but also afforded me

opportunities to take space and time when I needed to recharge or recover from poor health.

At the same time, my positionality poses particular blind spots or limitations. For instance, I avoided doing research in certain places where tourism in Puerto Rico has particularly acute violent impacts on the community; I enter spaces – whether meeting rooms, markets, or street demonstrations – with attention to whether and how my presence distracts or negatively influences others. I speak English in certain contexts and not others, and it is clear from my imperfect Spanish and non-Puerto Rican accent that I am a newcomer to Puerto Rico. Although English is prevalent, it lingers as a reminder of US oppression and holds one apart from an otherwise Spanish-speaking public.

Beyond language barriers, there is much I still do not understand about the places, histories, and politics that underly the subject and sites of this research. *Gringo go home* painted on buildings and along roadways constantly reminded me that my status (white, visitor, English-speaking, from the US) is close to those wealthy gentrifiers who push Puerto Ricans further and further out from their own land and culture. My own political commitments and anti-imperial climate activism also positions me with a strong favorable bias toward the participants with whom I collaborate. Each paper highlights particularly 'successful' examples and cases; the vignettes and in-depth abductive analyses center 'positive' voices and manifestations. Although fieldwork enabled contradictory or dissatisfied perceptions to emerge, each paper upholds certain utopian and critical ideals and arguments. I made close friends around Puerto Rico; we share stories of our personal lives that weave in and out of research topics. This generated productive theorizing and empirical analysis, as well as biases (of myself and participants) that reflect in my choices of focus and interpretation of the empirics (Anctil Avoine 2022).

## Ethics and normativity

This research encounters complex ethical dilemmas. My data collection and handling fall under the purview of the Swedish Ethics Review Authority,[10] which approved my formal application for ethical procedure in research concerning humans. However, they do not have an official capacity to regulate research that takes place outside of Sweden. Although I took additional training and consideration in line with US codes and standards for conducting

[10] Decision of approval by Ekprövningsmyndigheten on 12 May 2022 (2022-02076-01).

social research, formal approval (through the institutional review board process) was not required for this project.

Beyond these formalities, I also took the decision to conduct research back and forth between Puerto Rico and Sweden. This research was only possible through air, car, and ferry travel – through colonially produced means and infrastructure that rely on extractivism and contribute to climate change. I elected to take these steps as part of a longer-term goal to support Puerto Rico in-place, striving to continue with research and pedagogic work that might support decolonial and self-determination efforts against US imperialism. However, my reliance on climate-contributing practices to conduct research related to the violences of climate change remains a significant ethical limitation of this thesis.

Moreover, feminist peace and concrete utopianism, as I employ them, necessarily center threads of collective agreement – whether about desired lives or needs and orientations for change. While I strive to nuance collectivity and avoid universality, such normative 'doing' carries and even reinforces particular value hierarchies, social exclusions, or epistemic silencing. I grapple with this aspect through a normative commitment about how to do research (rather than striving to lay out normative assumptions or intentions about an 'ideal' world) (Ackerly and True 2020). Normativity, in this thesis, marks an interest in gender and intersectional power structures as a means to advance critique and liberatory research so as to address injustices and create alternative worlds (Väyrynen et al. 2021). My normative commitment relates to arguments that research changes the world it studies (e.g., Harding 2008; hooks 2015). I have strived to explicate normative assumptions and values in each paper in order to examine my own positionality, consider implications of research choices, and enable future research to reflect on power dynamics therein (Staffa, Riechers, and Martín-López 2022).

# 5 Conclusion

This thesis has analyzed the role that gendered, care-based knowledge plays in imagining and enacting peace in a changing climate. By examining the question of how gendered knowledge shapes peace in a changing climate through different conceptual, theoretical, and empirical points of entry, I have demonstrated new approaches to tackle intersectional violences of climate change, without falling into ontological and epistemological traps of existing pathways. Further, contextual study alongside partners in Puerto Rico has deepened existing scholarship through concrete examples and generated localized research, recognized as greatly needed to continue strengthening peace studies (Mac Ginty 2019; Väyrynen et al. 2021; Ide et al. 2023). My research on the climate-gender-peace nexus demonstrates that ways of knowing climate change orient us, that seeing phenomenon differently attunes us to different experiences or possibilities, and that experiences of knowing climate change adjusts past-present-future positions.

## 5.1 Summary of the research findings

In this section, I unpack five key critical and analytical findings: (1) conceptually, an intersectional nexus of climate-gender-peace conceptualizes the different phenomena as intimately intertwined; (2) empirically, a critical intersectional analysis of degrowth processes and structures shows ways that peacebuilding practices can tackle both social and ecological violences of climate change; (3) theoretically, ethics of care as an epistemic tool enables critical study of how knowledge makes peace possible for different bodies in particular times and places; (4) theoretically, analyzing the nexus through care-based knowledge shows how gendered structures of care shape ways of knowing and imagining; and (5) empirically, the analysis of care-based knowledge of climate change in Culebra demonstrates women imagining and enacting utopias based on reciprocity, belonging, and longing. Across these findings, I have identified values, practices, and hopes of peace – not a goal or

blueprint for some 'right' or 'best' peace, but rather, what kind of knowledge and judgements people use to strive for both ecological and social well-being in different contexts of climate change.

First, I find that an intersectional nexus of climate-gender-peace conceptualizes the different phenomena as intimately intertwined. **Paper 1** provides conceptualization for the idea of *climate resilient peace,* which is present but under-developed in existing research. I conceptualize climate resilient peace based on an intersectional understanding of positive peace, highlighting that peace depends on the negation of structural violence experienced at the intersection of political and social identities. With this concept, I argue that a process of peace must address underlying power structures influencing people's experience of climate harms, as well as those driving climate change.

Thus, my concept presents a novel understanding of peace that can be experienced by people in their differently experienced positions within intersectional structures, while conditions of these experiences do not add further to climate change. This paper demonstrates such a process of climate resilient peace through degrowth, wherein economic goals shift away from endless growth. I present a framework for this, showing how degrowth strategies exemplify social and ecological means for disrupting structural violence without further contributing to climate change. In doing so, this paper contributes a new approach to climate resilient peace that addresses challenges of both social and environmental sustainability.

Second, based on a critical intersectional analysis of *degrowth* processes and structures, I find empirical examples of how peacebuilding practices can tackle both social and ecological violences of climate change. The study in **paper 1** shows that redistribution, reprioritized care economies, and global equity foster peace in a changing climate through degrowth. Degrowth links human well-being with environmental limitations. Economies with intentionally lowered production and consumption are shown to hold benefits of decreasing environmental degradation and practices driving emissions that contribute to climate change; economies centered on local governance, conviviality, egalitarian sharing of resources and space, and provision for basic needs address cultural, physical, and structural violences and promote greater well-being.

In reaching this empirical finding, I highlight that grassroots urban gardening initiatives enable redistribution across different levels and types of violence. For instance, such initiatives benefit the local environment, move food systems

away from dependence on fossil fuel, make fresh food more accessible, and facilitate political agency for communities. Basic income provisions disrupt power structures by (re)valuing care work, changing patterns of production and consumption, meeting material needs, and dispersing would-be divides between receivers and givers in households and society. Wealth caps impose a ceiling on individual wealth, which is known to be a key driver of climate change, and create material equity within and between nations.

Third, theorizing ethics of care as a way of knowing enables critical study of how knowledge makes peace possible for different people in different contexts. In **paper 2,** I show the role played by knowledge that centers values and practices of care for conceiving of and building processes of desirable *climate transformation*. I develop a theoretical model for climate transformation that entails material and discursive processes of fundamental change for tackling the historic and intersectional violences of climate change to foster peaceful futures. As presented in the paper and above (figure 2), I theorize transformation through caring *in* a current situation based on relations and experience; caring *through* change processes based on affect and reciprocity; and caring *for* a vision of the future based on prefigurative and historicized imagination.

My findings in paper 2 are specific to the efforts of groups working in peace and climate action in Puerto Rico, but offer a basis more broadly for questioning the ground on which climate action interventions stand and the paths on which they set us. By analyzing ongoing efforts in Puerto Rico, I find that care-based knowledge stems from where and how relations are experienced, and how change processes produce affect and reciprocity in the ways climate impacts are addressed. Visions of the future that direct these change processes and shape current experiences entail historicized imagination and prefiguration. I show that peoples' memories of relations, experiences, and emotions shape what kind of future they imagine or desire.

While the former finding regards knowledge production in peace processes, a fourth finding more specifically points to theorizing *how* or to what end care-based knowledge orients transformation. Across papers 2 and 3, I find that analyzing the climate-gender-peace nexus through *care-based knowledge* shows how the gendered structures of care shape ways of knowing and imagining. **Paper 2** demonstrates that the aspects of relations and experience, affect and reciprocity, and prefiguration and historicized imagination are not peaceful in themselves, but that they turn our attention to what kind of peace or for whom a process turns. Thus, the knowledge that emerges with values

and practices of care (re)orient dependencies and oppressions, activities and engagements so as to turn toward or away from certain situations or people.

**Paper 3,** meanwhile, advances this theoretical contribution by showing that a care-based way of knowing highlights what aspects of life climate change impacts as well as how people would like these to connect. In this paper, I present care-based knowledge as entailing cognitive, affective, and embodied ways of knowing, arguing that this shapes visions and enactments of utopias. These different ways of knowing shape and are shaped by gendered structures – influencing how people work and what they do, or values and judgements that direct people's attention differently. This finding helps scholars and practitioners critically question gendered constructions of knowledge in order to analyze *what* peace and *for whom* peacebuilding works. This opens new ways of studying peace as a process that holds materiality of experiences alongside emotional and intellectual speculation for alternative societies.

Fifth, I find that women working at the intersection of peace and sustainability in Culebra know of, think about, relate to, or experience climate change in the present and imagine futures through orienting dependencies toward reciprocal care; fostering place-based belonging through collective relations; and envisioning alternatives based on longing that intertwines past, current, and yet-to-come temporalities. I arrive at this empirical finding through the analytical framework of care-based knowledge developed in paper 2.

**Paper 3** questions how ways of knowing through care orient possibilities for peace in a changing climate. Through a feminist phenomenology of utopias in Culebra, my results explain utopias through knowing co-constituted with care values and practices and demonstrate how affective, embodied, and cognitive knowledges (re)produce each other. The women's values and practices of care enable them to know climate change through food systems, livelihood structures, and identity expressions, and to imagine and enact utopias based on reciprocity, belonging, and longing. This study contributes to literature on knowledge production in transformation and peace, and underlines the importance of imagination as part of the politics of knowledge.

Taken together, my findings show not only that it matters *what* knowledge is used to understand climate change, but also what this knowledge *does.* Existing research tends to know would-be problems and solutions through 'neutral' positivist and realist perspectives. Critical scholars, however, tell us that these ways of knowing are created through and in turn uphold violent colonial, patriarchal, and racist systems that discursively and materially shape societies (Grosfoguel 2003). Moreover, if all knowledge comes from somewhere,

carrying with it relative limitations shaped by the contexts from which they stem and in which they reproduce, claims of objectivity must be seen instead for their inherent value judgements and partialities (Haraway 1988).

I demonstrate that care-based knowledge allows study of the nexus as experiential relations of different beings with specific histories and values. It allows study of how affect works reciprocally – how emotions affect people back-and-forth as part of experiencing climate change. Even 'alternative' imaginaries may fall limit to the scope of discourses and materialities in existing research, or be co-opted by dominant actors to uphold a prevailing order (Roux-Rosier, Azambuja, and Islam 2018). The care-based knowledge approach contends with this. Through considering relations, experiences, and emotions, histories and visions of the future become presently lived and felt.

## 5.2 New avenues for research

This thesis and the research processes enabled by it allow for deep engagement with normative critique and contribute theoretical and practical insights for research, policy, and practice. Through my engagement with a number of related yet often-siloed fields of study, I point to opportunities for considering key questions from different perspectives, and highlight promising avenues for further study.

### On climate resilient peace

First, this thesis offers a new opening to analyze and further theorize *climate resilient peace*. Analytical study of the concept within over-industrialized, capitalist economies holds promise for better understanding of the concept's limitations and conditions, as well as for detangling complex global chains of production and consumption. Herein, case study research would enhance understanding of scale and desirability, showing how localized degrowth strategies impact broader structures and processes, or whose interests these strategies serve.

Since publication of paper 1, exciting early engagements by myself and others with the climate resilient peace concept have brought it into different contexts, specifically in critiques of economic growth models that underpin international interventions in conflict-affected countries (Morales-Muñoz et al. 2022; Bliesemann de Guevara, Budny, and Kostić 2023; McCandless and Faus

Onbargi 2023; Simangan 2024; Magalhães Teixeira 2024). The concept has also been used to explore anti-extractivism as a tool for peacebuilding (Nicoson and Magalhães Teixeira forthcoming) and in practical planning for conflict-sensitive and peace-responsive climate adaptation (Sarzana et al. 2023).

These early efforts to apply the concept in contexts of international peacebuilding interventions highlight one of the avenues opened by paper 1. The framework is based on a Global North conceptualization and specific examples from North America and Europe. Empirically grounded research would help those using the concept to understand possible pitfalls of implementing this framework in other contexts, such as potentially re-enforcing dominance of Western or Eurocentric actors, institutions, and world views through a focus on downscaling consumption and production. Thus, I open for further research to unpack the concept of climate resilient peace through engagement with different discourses and materialities of the Anthropocene or Global North/South divides.

## On care-based knowledge

Second, my findings open further avenues for feminist literature to engage with the gendered politics of knowledge production. As I point to in the state of the art, a rich body of research exists on gender differences in vulnerability or decision-making (e.g., Agarwal 1992; Alston 2014; Pearse 2017) as well as strands on care theorizing that point to inherent differences in knowing and ethical thinking between different genders and along lines of masculine or feminine morals and experiences (e.g., Gilligan 1982; Noddings 2013). Centering gendered structures rather than gender as a characteristic in my studies brings greater attention and emphasis to intersectional power structures in which situated and embodied knowing forms, influences decision-making or judgements, and is used in action. This poses, for example, openings for future research on climate action and policy to include gender perspectives not only as a token of inclusion, but as a basis for evaluating and initiating policy (e.g., Magnusdottir and Kronsell 2021; Staffa, Riechers, and Martín-López 2022). This goes beyond calling for more seats at the table (as perhaps in a gender-inclusive decision-making process) by presenting theoretical and methodological tools for questioning the table itself (e.g., what ‘problem’ is being addressed) or the shape of one’s seat at the table (e.g., are diverse actors coming to the table with the same value judgements, or is there also diversity in ways of knowing and valuing).

My conceptualization and theorization on care-based knowledge prompts further research on the dialect between care and knowledge. This pushes beyond the common emphasis in care literature on ‘repair’, which may entail entrenching relations or returning to a harmful status quo, instead extending emphasis to disruption or transformation. This may provide guidance for research design and potentially policy development. Existing academic and policy approaches at the intersection of care and climate present infrastructure solutions (e.g., equitable health care to support laborers in clean energy jobs) (Palladino and Gunn-Wright 2021; MacGregor, Arora-Jonsson, and Cohen 2022). The frameworks I present are unique from existing care-based efforts in that they allow for both context-specificity and relationality without providing universal or abstract principles.

Specifically, this invites for theorizing and empirical analysis of care-based knowledge in processes of transformation and peacebuilding with a focus on multispecies relations rather than human-only relations (Haraway 2016); plurality of emotions to deepen understanding of affective knowing (del Rio Gabiola 2020); and agencies of more-than-humans in chains of care (Puig de la Bellacasa 2017; Harrington 2021). For instance, engagement with ecological security would focus attention on more-than-human ecosystems, prioritizing the rights and needs of those in the most vulnerable situations, including but also exceeding humans (McDonald 2021). Post-humanist perspectives on ethics of care would re-direct attention to agency of non- or more-than-human care-receivers and -givers including not only natural ecosystems but also technologies (Puig de la Bellacasa 2017). Doing so may help further unpack ‘visions of the future’ that displace human-dominance in projects of climate justice and radical peacebuilding (e.g., Whyte 2017; Tipton 2020; Tschakert et al. 2021; J.N. Clark 2023; A.J. Lederach 2023).

Care-based knowledge as a tool, rather than care as an ingredient, can help nuance potential assumptions of care as inherently ‘good’ or ‘peaceful’. For example, applied to an instance of managing community gardens, care-based knowledge would demand attention to material care needs (who needs food and who gets it) as well as how to provide for these (through what relations is food provided). Rather than simply ‘adding care,’ this would call attention to who or what receives and gives care, how, and which values this promotes or ignores. To this end, a research agenda on care-based knowledge could benefit from heterodox economics (e.g., Gibson-Graham 2008; Bayliss and Fine 2021) to understand impacts of provisioning and the knowledge on which this rests.

## On utopianism for visioning futures

Third, I demonstrate the potential of revitalizing *utopianism* as a method and concept - pushing back against divisive or paralyzing dystopianism - for grounding research on desirable futures in a changing climate. Recently, a new appetite for joy and hope in climate discourse has emerged in popular science and public conversation (e.g., Johnson and Wilkinson 2020; Hayhoe 2021). Introducing the anthology *Not Too Late,* Rebecca Solnit (2023, 5) writes:

> hope is an ax you break down doors with in an emergency. […] Hope is not optimism. Optimism assumes the best, and assumes its inevitability, which leads to passivity, as do the pessimism and cynicism that assume the worst. Hope, like love, means taking risks and being vulnerable to the effects of loss.

Yet, utopias and hope need not be 'good' or 'peaceful'. Literature demonstrates that imaginaries reproduce particular political values and structures in projects of future-building (Yusoff and Gabrys 2011; Moore and Milkoreit 2020; Stripple, Nikoleris, and Hildingsson 2021). Dominant existing climate imaginaries show preoccupation with large-scale and direct physical violence (Levy and Spicer 2013). Moreover, imaginaries may be limited by patterns of existing knowledge, worldviews, experience, or space; imagination may be co-opted by dominant actors to uphold a prevailing order or have limited influence within existing structures, resources, and opportunities for change (Roux-Rosier, Azambuja, and Islam 2018). My findings about care-based knowledge open for deeper theorizing and analysis on the constraints and opportunities of imagination based on gendered structures and experiences.

More specifically, recent scholarship on climate imaginaries further points to the importance of mediating mediums. For instance, Davoudi and Machen demonstrate that while computerized climate scenario models (re)produce human-centric master narratives and assume singular or homogenous climate experiences, climate poetry opens for interspecies agency and collaboration and for radical thought that breaks linear timelines and patterns (2022). My research provides concrete examples and tools for considering care as a medium: knowledge and imagination manifest through practices and values of care, in turn sustaining a relational ethic of care. Thus, this thesis opens new avenues in climate imaginaries literature for studying care as both a product demonstrating an ethic of care and as a vehicle for sustaining this ethic toward an envisioned future.

Climate change is one of the highest ranked issues by scholars in international politics, and research on the environment connected to peace and related

debates such as security continues to be among the most cited in political science (Swain et al. 2023). My conceptual and empirical contributions provide concrete examples and new ways to think about possible peaceful futures. Further research adopting a care-based approach to theorizing and studying utopias could move beyond paralysis or dystopianism when facing the ever-changing eco-social and political landscapes of health crises, international conflict, and ecosystem decline.

My findings call for scholarship to add to the ever-mounting forecasts and scenarios with rigorous empirically-based and theoretically-driven study of hope and projects of utopianism. Specifically, research would benefit from further attention to the aspects of relationality and temporality raised in papers 2 and 3. My approach developed with care-based knowledge and the utopia concept could be useful in analyzing the constructions underlying and yet-to-come in different examples of future-building.

Research building on this approach would enable consideration of critique alongside active struggle, based on critical questioning and analysis of domination, privileges, or oppressions. For instance, how do ‘energy insurrections’ for sustainable self-governance (Massol Deyá 2019; Nicoson forthcoming) rely on and influence interpersonal, community, national, and international relations? How do ‘tech-topia’ havens for cryptocurrency and blockchain taking shape in Puerto Rico (Klein 2018; Crandall 2019) contest temporalities? Care-based analysis of such utopias would strengthen scholarly understanding of *for whom* the future is shaped, what role the past plays, or what is dis/counted in the present, which in turn holds practical insight for climate action and social transformation.

Peace scholar Carol Cohn (1987, 717-18) reminds us of the necessity for both deconstructive and reconstructive projects:

> [We have] a task of creating compelling alternative visions of possible futures, a task of recognizing and developing alternative conceptions of rationality, a task of creating rich and imaginative alternative voices – diverse voices whose conversations with each other will invent those futures.

With cautious optimism, my thesis adds to this current, bolstering potential to reprioritize values and practices of care at different levels and on different scales within and between societies to facilitate climate transformation, build utopias, and foster climate resilient peace.

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# 7 Appendix

## 7.1 Fieldwork material

### Information to participants and informed consent

(versions available in English, Spanish, and Swedish)

| **Information for participants** |
|---|
| Hello,<br><br>My name is Christie Nicoson and I am a doctoral student at Lund University in Sweden. I research experiences of peace in the context of climate change. The aim of my research project is to better understand the relationship between climate change and peace: to understand harmful impacts as well as to explore how different groups adapt or work toward societal transformation to imagine and enact more peaceful, sustainable futures.<br><br>Your work is of great interest to me, and I invite you to join me as a participant in this study. If you agree, I will come to meet with you for an informal interview about your work in the community. The interview is flexible, but usually lasts around one hour. I would like to hear what you find most interesting and relevant to discuss around topics of: your work in the community, climate change adaptation, how community needs are/are not met related to changing climate conditions, and how you would picture an ideal or utopian society in the future. If possible, I would also ask to come visit or participate in special events or daily activities related to your work to learn more about transformative processes happening. I would observe or take part as you see fit, and make notes. I can share these notes at any time with you during the research.<br><br>In addition, I am curious to find the best ways of contributing to your on-going work and the interests of the community here. I am reaching out in hopes of a potential collaboration, in case the research process might benefit your ongoing efforts. You are welcomed to give input or join in the design and implementation of the study. If this is of interest, we can discuss together how this might take shape.<br><br>**Confidentiality and rights:** With your consent, I record the interview to remember the information you share. Recordings will be stored in a safe place in accordance with the General Data Protection Regulation (GDPR) and the Swedish the Data Protection Act. If you prefer not to be recorded, I can take written notes instead. If you agree to participate, we can discuss together how and whether you would like to be identified or kept anonymous. The |

material will be saved at Lund University's archive. You have a right to gain access, request correction or deletion, or limit processing of personal data.

Participation is voluntary and you can refrain from participating or withdraw your participation at any time without giving any reasons. You will have no negative consequences for choosing to withdraw and if you do, you can decide if the data already collected can be used in the study or not. All information collected in the study is confidential and stored so that unauthorized persons do not have access to it. Only participating researchers will handle the material. If you would like to be anonymous, no information will be revealed that can be linked to you as an individual. You have a right to gain access, request correction or deletion, or limit processing of personal data. When the study is completed, you can access the results presented in my forthcoming doctoral dissertation. If you have any questions or requests regarding handling of your personal data, you can contact me or the University's data protection officer: dataskyddsombud@lu.se.

Thank you for your time and consideration!
Sincerely,
Christie Nicoson
*Department of Political Science & Agenda 2030 Graduate School, Lund University*
*WhatsApp* +46 76 779 6923; *Telephone* +1 872 801 1478; *E-mail* christie.nicoson@svet.lu.se

**Consent to participate in research**

I have received oral and / or written information about the study and have had the opportunity to ask questions. I may keep the written information.

- I hereby agree to participate in the project *Peace in a changing climate.*

__________________________ __________________________
Place and date Signature

__________________________
Name written

## Guides for semi-structured interviews

(versions available in English, Spanish, and Swedish)

**Peace in a changing climate (2022, Puerto Rico)**

Thank you for meeting today! My interest in meeting with you today is two-part:

1) I have my own ongoing research that contributes to my PhD dissertation. For this, I was hoping to interview you about your work.
2) I am curious to hear if there are ways you think I might contribute to your on-going work and the interests of the community here.

My suggestion would be that we start with an interview (this is flexible and informal but usually lasts around an hour); and then open up for a subsequent meeting about how the

process might benefit your ongoing efforts. However, I leave how we proceed today up to you, if you’d like to start off with the interview or a more open discussion.

If you agree to participate in an interview, we can proceed following a loosely-structured guide.

Introductory questions

I was particularly interested to talk with you all because of your focus on [visioning or the imaginary as a means of creating change and resistance, and the way you highlight violence and peace – that you are highlighting racism, gender violence, and climate change].

[I have already read quite a bit about you and the group on the website and in media highlights]. But to get started today, is there some way you’d like to introduce yourselves? Maybe telling me about your relationship to your community?

1. Can you tell me about yourself?
2. Can you tell me about your relationship to or role in this community?

Envisioned futures

1. I would like to start our questions about your work by asking you to envision a utopia here. What would it look like?
    a. Let’s say that the work is successful (however you consider that to be); what would that look like?
2. Do you think your work might change in the future? How would you know if this should happen or know what to do?
    a. Do you think climate change might play a role in this?
3. Do you think the direction we/you are heading is the same as where you’d *like* to see this community go?
    a. How does the future you thought about compare to how you would ideally envision a future for your community to look?

Current situation

1. The work that your group does, or maybe that you do more specifically, can you tell me about how the need for this has been identified? How was it decided that this is something to care about?
    a. How do you know what to do and how to do it?
    b. Who assesses the situation/need? Are these the same who are involved in carrying out the work?
    c. What/whose needs are in focus? What about within your group?
    d. When are these kinds of needs assessed or recognized? E.g., in the future, through historical reflection?
2. Can you tell me how weather and climate events have contributed or not to the work you are doing?
    a. Maybe in terms of creating a problem, a window of opportunity, as a factor in your practices, as a distant or looming situation, etc.

Change processes

1. What relationships are part of this work, or needed for this work? How are these relationships identified as needed/formed?
2. How do you know whose/if it fulfills needs in the population you are trying to reach?
3. Have climate change or weather events impacted your work (as it is ongoing)?
    a. How do you know about this (is it physical impacts, changing conditions, though knowledge from reports, etc.)?
    b. Have you had any personal experiences with climate events in your work?

Wrap-up

A few administrative aspects before we finish here today:

1. It is important to me to give credit where it is due, if you'd like to be identified by name or by organization. How would you like to be identified, or would you like to remain anonymous?
2. Would you like me to share outputs – if I write articles or my final dissertation?
3. Would you be open to follow-ups?

As I said at the start, it would be great to explore ways that I might be able to support your work. You can think about this or we can discuss here and now. We can also be in touch as little or as much as you like in the future. I plan to be back later this year and hope to sustain collaborations here, so we can also think a bit more long-term or about different set-ups/constellations. I would love to hear from you about what you think would be useful to your group – if there is something you think I could contribute to your work.

We can be in touch by email, or phone. Thank you for taking the time to speak with me today!

**Envisioning peaceful utopias (2023, Culebra)**

Introductory questions

1. Can you tell me about yourself?
2. Can you tell me about your relationship to or role in this community?

Envisioned futures

1. I would like to ask you to envision a utopia here, in this community. What would it look like?
2. Do you think your work might change in the future?
3. Do you think climate change might play a role in this? How?

Current situation

1. The work that your group does, or maybe that you do more specifically - can you tell me about how the need for this has been identified? How was it decided that this is something to care about?
2. Can you tell me how weather and climate events have contributed or not to the work you are doing?

Change processes

1. What relationships are part of your work, or what relationships are necessary for this work?
2. Have climate change or weather events impacted your work (as it is ongoing)? How do you know about this (is it physical impacts, changing conditions, through knowledge from reports, etc.)?
3. What kind of personal experiences have you had with climate change?

Wrap-up

1. Would you like to be identified either by name or in association with the group, or would you like to remain anonymous?
2. Would you like me to share outputs from this research?

## List of interviews

| | Name | Description | Format, place | Language | Date |
|---|---|---|---|---|---|
| 1. | Alexis Andrés Massol González | Co-founder, Casa Pueblo | In-person, Adjuntas | Spanish | 7 July 2022 |
| 2. | Alexis Andrés Massol González | Co-founder, Casa Pueblo | In-person, Adjuntas | Spanish | 8 July 2022 |
| 3. | Alexis Andrés Massol González | Co-founder, Casa Pueblo | In-person, Adjuntas | Spanish | 25 July 2022 |
| 4. | Alexis Andrés Massol González | Co-founder, Casa Pueblo | Online, Adjuntas/ Chicago | Spanish | 1 August 2022 |
| 5. | Arturo Massol Deyá | Director, Casa Pueblo | In-person, Adjuntas | English | 14 July 2022 |
| 6. | Danny Torres | Resident artist, Casa Pueblo | (Joint) in-person, walking and driving tour, Adjuntas | Spanish and English | 6 June 2023 |
| 7. | Dolores 'Dulce' del Río-Pineda | Co-founder, Mujeres de Islas | Online, Culebra/ Adjuntas | English | 12 July 2022 |
| 8. | Efraín Vázques-Vera | Founder, MAP | Phone, San Juan/ San Juan | English | 6 June 2022 |
| 9. | Estelí Capote Maldonado | Urbanism and infrastructure coordinator, ENLACE | In-person, walking and driving tour, San Juan | English | 10 June 2022 |
| 10. | Federico Cintron Moscoso | Director, El Puente | In-person, San Juan | English | 27 July 2023 |
| 11. | Helena Gifford | Community health worker, Puerto Rico Public Health Trust | In-person, Culebra | English | 24 May 2023 |
| 12. | Iliana Garcia Ayala | Co-founder, Taller Comunidad La Goyco | (Joint) in-person, San Juan | Spanish and English | 18 July 2022 |
| 13. | José Galarza Flores | Direct service coordinator, La Matria | Online, San Juan/ Mukwonago, WI | Spanish | 29 July 2022 |

| | | | | | |
|---|---|---|---|---|---|
| 14. | Liz Garcia | AmeriCorps volunteer, Agroecology facilitator, Mujeres de Islas | In-person, Culebra | Spanish | 17 May 2023 |
| 15. | Lydia ‘Puchi’ Platón Lázaro | Co-founder, Taller Comunidad La Goyco | (Joint) in-person, San Juan | Spanish and English | 18 July 2022 |
| 16. | Maricarmen Carbonell | Co-founder, Mujeres de Islas | Phone, Puerto Rico/ Culebra | Spanish and English | 23 May 2023 |
| 17. | N/A | N/A | In-person | English | June 2022 |
| 18. | N/A | Mujeres de Islas | In-person, Culebra | Spanish and English | May 2023 |
| 19. | Nathania Martínez | Former AmeriCorps volunteer, Mujeres de Islas | In-person, Culebra | English | 21 May 2023 |
| 20. | Rysa Raquel Rodríguez García | Co-founder and director, Colectivo Moriviví | (Joint) online, San Juan/ San Juan | English | 8 June 2022 |
| 21. | Sharon ‘Chachi’ González Colón | Co-founder and director, Colectivo Moriviví | (Joint) online, San Juan/ San Juan | English | 8 June 2022 |
| 22. | Veronica Meléndez | AmeriCorps volunteer, Mujeres de Islas | In-person, Culebra | English | 18 May 2023 |
| 23. | Verónica Aponte Sepúlveda | Resident artist, Casa Pueblo | (Joint) in-person, walking and driving tour, Adjuntas | Spanish and English | 6 June 2023 |

Listed by interviewee; some interviews held jointly (total number of participants: 20; total number of interview meetings: 20).

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# 8 Scientific papers

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*Paper II*

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# Paper 1

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SPECIAL FEATURE: ORIGINAL ARTICLE

The Sustainability–Peace Nexus in the Context of Global Change

# Towards climate resilient peace: an intersectional and degrowth approach

**Christie Nicoson**[1]

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**Abstract**
How can peace be climate resilient? How can peace and environmental sustainability be advanced simultaneously? To address these questions, I develop a new conceptual and theoretical framework for climate resilient peace through degrowth. This paper calls for stronger consideration of positive conceptualizations of peace and of intersectionality and degrowth in pursuit of peace and resilience. Not only does climate change make planetary limitations more salient, but it also highlights rising inequalities. In light of this, peace necessitates transforming societal power structures that are both driving climate change and influencing people's experiences of climate impacts. Addressing imbalanced power structures then is key to understanding and fostering climate resilient peace. This paper conceptualizes climate resilient peace based on an intersectional understanding of positive peace, highlighting that peace depends on the negation of structural violence experienced at the intersection of political and social identities. In relation to this, I argue that a process of climate resilient peace must address underlying power structures influencing people's experience of climate harms, and driving climate change so as to mitigate further damage. This paper demonstrates such a process through degrowth, wherein growth is no longer the central economic goal, exemplifying social and ecological means for disrupting structural violence within climate limitations. I discuss and give examples of three key degrowth processes—redistribution, reprioritized care economies, and global equity—as opportunities to foster peace in a changing climate. This framework, thus, contributes a new approach to climate resilient peace that addresses challenges of both social and environmental sustainability.

**Keywords** Climate change · Degrowth · Intersectionality · Positive peace · Resilience

## Introduction

Climate change poses increasing challenges for society, not least of which include building and sustaining peace. Peace, as the absence of structural violence, exists along dimensions of access to and distribution of power and resources (Galtung 1969; Anglin 1998). Research has highlighted that although it may not be a universal driver of violent conflict (Theisen 2017; Mach et al. 2019), climate change does have social, political, and economic consequences, which may be particularly negative for people in existing situations of vulnerability (Adger et al. 2014). Climate change, thus, impacts peace by affecting people differently through and at the intersection of social and political power structures (Kaijser and Kronsell 2014; Rydstrom and Kinnvall 2019). Power structures, particularly those behind ecologically harmful economic growth, have also driven climate change (e.g., Soron 2007; Pasch 2018; Hickel 2020). Questions of how to foster peace and address challenges of climate change, then, have much in common and present opportunities for addressing these two phenomena simultaneously.

How can peace be climate resilient? How can peace and environmental sustainability align? In seeking to further the debate on how peace and challenges of climate change can be addressed simultaneously, I develop a conceptual and theoretical framework for a degrowth approach to climate resilient peace. I present climate resilient peace as a

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transformative process of addressing imbalanced access to and distribution of power and resources in light of climate change. The concept is based on a positive and intersectional conceptualization of peace as a process of breaking cycles of physical and structural violence. Positive peace encompasses the negation of structural violence through distribution of power and resources, as opposed to negative peace, which implies the absence of (direct or personal) physical violence (Galtung 1969; Anglin 1998). Through intersectionality, there is particular attention to the ways in which power constellations (re)produce privilege, vulnerability, or resilience within and between groups of people along characteristics such as race, gender, or class. This contributes to the theoretical framework, in which peace must be experienced in light of climate change and peace conditions must not further contribute to climate change.

In consideration of power structures, this paper presents a point of departure for peace conceptualization and theory to pay greater attention to the forces behind climate change, namely drivers of economic growth. I suggest that peace is possible through a transition beyond growth to degrowth societies. Degrowth entails transitioning to a society where economic growth is no longer at the center, with downscaling of production and consumption to enhance human and ecological well-being (Kallis et al. 2015). This paper presents a framework highlighting three degrowth processes that contribute to climate resilient peace: redistribution to move beyond structural violence, reprioritized care economies to disrupt harmful power structures, and global equity for decolonizing peace. These pathways present ecologically sound opportunities to disrupt power structures that otherwise (re)produce violence and inequality.

With this framework, I consider climate resilience and climate change concerns for peace beyond violent conflict. Although climate change impacts and peace experiences are certainly a matter of global concern, this paper focuses on the so-called Global North. This focus frames climate resilience in terms of agency, especially in relation to responsibility for climate action. Through this focus, I address crucial aspects of structural violence in relation to experiences of peace and climate change: people face situations of vulnerability linked to power imbalances, Global North countries have overwhelming driven climate change, and degrowth literature and practices target high-consumption and highly industrialized societies.

This paper contributes enhanced understanding of peace and presents how a degrowth approach can foster such peace in light of a changing climate. It draws together peace theory and research on ecological limitations, emphasizing dynamics of power and sharpening our understanding of positive peace through an intersectional lens. Furthering normative goals of peace, the framework emphasizes the need for greater consideration of justice issues in the study and practice of degrowth. Through this paper, I argue that careful degrowth can help address social and economic structural issues to advance intersectional positive peace within climate limitations, ultimately advancing a climate resilient peace.

## Rationale for a new approach

This paper stems from questions raised by overlaps or gaps in the theoretical and empirical findings between research on climate change, violence, peace, and economic growth. For decades, we have heard warnings that climate change will induce scarcity of resources, displace mass populations, and increase the risk of violent conflict (e.g., Homer-Dixon 1994; Gleditsch et al. 2006). However, research has not found such a general effect. Conflicts connected to climate change are not likely to concern large-scale armed conflict, but rather land disputes or social unrest, and climate change may impact dynamics of existing larger-scale conflicts or lower-scale communal conflict (Koubi 2019; Mach et al. 2019). Where climate does impact violence, it is a contributor, while other factors are more likely causal (Theisen 2017; Mach et al. 2019). Notably, this research on climate change has focused on negative peace (Koubi 2019; Sharifi et al. 2020), following a trend in broader peace literature, which has largely focused on the presence or absence of violence and conflict between groups (Gleditsch et al. 2014).

Research also emphasizes that structures of power may facilitate or constrain people's conditions relative to climate change, influencing the extent to which an individual or group faces vulnerability. Social vulnerability stems from factors such as access to resources, political power, or social capital, influenced by characteristics such as age, gender, race, or socioeconomic status (Cutter et al. 2003). Although climate change will impact all people, the magnitude and character of these impacts depend more so on political and economic factors than on physical climate events such as floods, droughts, or sea level rise. That is, the social and political factors influencing vulnerability may affect people's condition in connection to climate change more so than the climate event itself. Climate events may also further compound vulnerability by affecting control over natural resources, educational or employment opportunities, capacity for local organization, as well as increased exposure to unsafe conditions (Adger et al. 2014; Oppenheimer et al. 2014; Mora et al. 2018). These findings motivate a conceptualization of peace that accounts for resources and power.

Many existing political and scholarly frameworks for advancing peace, however, fall short of acknowledging these complex links to climate change. For example, the United Nations' 2030 Agenda seeks to foster peace as part of a holistic approach that advances economic growth

alongside social and environmental development. In academic literature, economic growth has long been seen as essential to raising living standards and reducing poverty, and has been seen by some as key to building and maintaining peace (e.g., Gartzke 2007; Chassang and Padró i Miquel 2009). However, others suggest more complex pathways to peace. For example, claims that sustained economic growth helps reduce the risk of civil conflict recurrence (Collier et al. 2008) have been challenged based on findings that growth might have the opposite result and that effects might instead depend on other conflict dynamics (Dahl and Høyland 2012). Rather than from growth, peace may stem from factors such as democratic institutions, economic interdependence, or people's ability to have decent work, secure capital, or access to services (Hegre 2014; Vernon 2015).

Aside from ambiguity about the impact of growth on (mainly negative) peace, scholars also increasingly note harmful patterns of economic growth in contemporary capitalist societies. Capitalist systems, based on exploitation of women, colonies, and nature as well as the labor of men, pit profits against human and environmental well-being and often hide production costs and social responsibility (Mies 1986; Picchio 2015). These practices of economic growth perpetrate "market violence"—inflicting physical harm, leaving masses in situations of vulnerability, and damaging the environment in market localities and through global supply chains (Fırat 2018, p. 1020). In this context, inequalities not only persist but are rising; almost all countries face rising average inequality (Ravallion 2018). Growth also jeopardizes social cohesion and well-being, and quality of life improves only to a certain growth threshold (Petridis et al. 2015). Moreover, no countries currently achieve high social outcomes for their population within planetary boundaries (O'Neill et al. 2018).

This leads to another challenge of growth: ecological limitations. One aspect of the ecological harms of growth relates to whether it can be maintained. Research suggests that achieving growth without harmful climate impacts may not only be challenging, but potentially impossible. The achievement of economic growth within climate limitations is often proposed possible through green growth. This relies on decoupling—separating—economic growth from resource use and carbon emissions, for example through the use of "green" energy sources. Although decoupling might be possible in the short term for rich nations with strong policies, it is at best a temporary fix; it appears infeasible on a global scale and impossible to maintain in the long term (Ward et al. 2016; Hickel and Kallis 2020). If climate goals are not met, scientists warn that we risk undoing two decades of progress in development work (United Nations 2019).

These examples highlight that understanding peace in light of climate change necessitates looking beyond the absence of physical violence and accounting for diverse experiences of vulnerability based on differing dynamics of power structures. Moreover, existing political and academic approaches to peace present questions of how to address peace priorities alongside climate limitations. While there are some benefits of growth, there are also inherent problems for how to maintain and continue to foster such benefits without growth's harmful impacts for both humans and the planet. In light of the inadequacies and inappropriateness of growth models, I argue it is necessary to find new approaches to peace that engage more meaningfully with environmental challenges.

## Conceptualizing climate resilient peace

Increasingly, challenges of peace and climate change are considered jointly. Steps to address climate vulnerabilities are suggested to advance peace by contributing to community resilience (e.g., Matthew 2018). Ideas about climate resilient peace stem from key insights: factors addressing vulnerability and facilitating climate adaptation help mitigate armed conflict during environmental change; environmental cooperation can ease tensions and build trust between (conflicting) parties; and focusing on resilience rather than security discourses and practices promotes peaceful adaptation (Barnett 2019). Considering both vulnerability and resilience to be politically produced and situated, I take this as a starting point from which to conceptualize climate resilient peace with a focus on power structures.

Before advancing a framework for climate resilient peace, I discuss what such peace entails. Neither resilience nor peace are innocent or neutral terms. This section puts forth power-laden, contextual understandings of both concepts. This paper draws on positive peace as a general concept to study structural inequality, injustice, or oppression that contribute to harm or insecurities for individuals, and aims to strengthen it by incorporating intersectionality. Intersectionality puts the focus on structural disadvantages or privileges for particular parts of society. This allows scholars to emphasize challenges to peace by highlighting where and how structures of power reinforce violence at the intersection of people's social and political identities. Resilience then adds to this by focusing on transformative processes by which these structures are addressed in response to climate change and its impacts.

### Intersectional positive peace

Peace can be conceptualized in different ways. Johan Galtung is often credited with conceptualizing and distinguishing negative peace, entailing the absence of (direct or personal) violence and war, and positive peace, which emphasizes a state beyond this, entailing the negation of

structural violence (Galtung 1969). In this sense, peace still encompasses the absence of violence—not only organized armed conflict, but also crucially that which is organized around social structures. Peace then becomes a matter of overcoming a continuum of social inequality and marginalization that perpetuates systemic violence.

While positive peace incorporates many desirable conditions, it has also drawn criticism. This broad concept has for example been critiqued for lacking an operationalizable and clear definition (Gleditsch et al. 2014; Davenport et al. 2018), for omitting local diversity, or framing peace as a natural condition (Aggestam et al. 2015). Furthermore, Galtung's positive peace lacks analysis of underlying structures of power that (re)produce violence (Confortini 2006; Pasch 2018). Despite these critiques, positive peace is helpful because it provides an opportunity to understand experiences in both war and non-war contexts. Positive peace expands understanding of conditions after a peace agreement or in a society where harms stem not through overt armed conflict, but through structural violence. In this way, it is possible to talk about and understand violence at all levels, to approach peace more holistically.

I expand on positive peace through engaging scholarship that accounts for the social construction of power. It has been demonstrated that power hierarchies affect people differently and shape experiences of peace and war (Alexander 2018; Wibben et al. 2019). Building on this, I understand positive peace through intersectionality, which helps to account for the dynamic ways in which power structures impact people. Intersectionality is based on the idea that people hold multiple identities that interact with structures of power in different ways, demonstrating complex burdens, marginalization, authorities, and privileges (Collins and Bilge 2016).

Applying an intersectional lens to positive peace, I consider structural violence. For Galtung, positive peace necessitates the negation of structural violence, which "shows up as unequal power and consequently as unequal life chances" related to uneven distribution of resources and unequal power to decide over distribution of resources (Galtung 1969, p. 171). This paper understands resources as assets and capacity (e.g., wealth, natural resources, food, time, etc.), and power as an actor's discursive influence to realize their intentions (e.g., Svarstad et al. 2018). Structural violence leads to limited emotional or physical well-being, which may expose people to various sorts of harm such as assault or hazards that cause sickness or death (Anglin 1998). Structural violence is not a natural occurrence; it results from direct or indirect human decisions and is preventable (Lee 2016). This violence may be so commonplace that it becomes silent or invisible, but it enacts very real forms of harm both during and outside times of war. Some studies estimate that such violence afflicts tens of millions of casualties annually (Lee 2016).

Structural violence manifests differently based on multiple aspects of a person's identity, which can be understood and analyzed with intersectionality. Through overlapping social factors and power structures, people's experiences do not revolve around only one aspect of their person or situation, but rather are dynamic, changing, and relational. Structural violence then varies contextually and depends on geographically and historically different social factors or axes (Farmer 2005). These factors—including gender, race, ability, sexuality, ethnicity, class, nationality, or age—are seen to legitimize a status quo of exploitation, hierarchies, and inequalities.

In this light, positive peace as the negation of structural violence can be understood in terms of remedying unequal distribution of resources and power. Intersectionality highlights marginalization and privilege as products of structural and intersectional violence and inequality (Rooney 2018; Kappler and Lemay-Hébert 2019). This allows peace scholars to focus on how different groups experience peace based on political and structural inequalities. Through intersectionality, we can engage with these dynamics by considering how different power constellations (re)produce privilege, vulnerability, or resilience within and between groups of people, and to what extent peace permeates society. Positive peace then is not a singular outcome or static achievement; it becomes dynamic and contextual, experienced differently by different people within a society. It necessitates individual agency, which can lead to changes in distribution and access. However, such changes are also always constrained or enabled through existing structures. This means there is no ultimate or universal state of positive peace, and there will be structural constraints with winners and losers in different contexts.

## Climate resilience

Resilience has recently become more prevalent in climate security debates, bringing together diverse actors around a somewhat "messy" concept (Boas and Rothe 2016, pp. 618–9). In part, these debates highlight the importance of resilience in enabling communities to cope with climate change. Climate change then is often cast as a negative phenomenon to which we must adapt. In the context of climate change, David Chandler critiques framing of problems, in this case the Anthropocene, as external shocks from which systems must recover (Chandler 2020). Seeing Anthropogenic change as external may result in problem-solving via short-cuts rather than addressing underlying causes of problems (Chandler 2020). In light of this, I take a different approach to resilience, accounting for a socially constructed and contextual process of adjusting to climate change, integrally tied to power (in)balances. This emphasizes that

inequalities and power dynamics shape people's experiences of climate change.

I follow Bourbeau and other scholars who understand resilience as "a process of patterned adjustments adopted by a society or an individual in the face of endogenous or exogenous shock" (Bourbeau 2013, p. 10). Other conceptualizations of resilience make it dichotomous or equate it with "bouncing back" from a shock. This implies that an external factor, such as a climate-induced harm, is necessarily negative. Departing from this, Bourbeau's broad conceptualization of resilience holds that changes or disturbances are understood and experienced contextually, and that shocks are interpretive. Moreover, it does not assume a return to or maintenance of a social equilibrium. In this conceptualization, resilience is seen as a dynamic and complex process, as varied depending on time and context, and as a response to shocks that are only "disturbing" if interpreted to be so (Bourbeau 2013, 2015).

Building on this and on the foundations in peace literature discussed above, I conceptualize climate resilient peace, starting from an understanding of climate change as internal change. That is, climate change is not a natural or completely external process; rather, it is produced by particular interests and exercises of power that are internal to societal structures. I see climate change impacts serving as a trigger for change, toward a process of responding to climate change so as to address structural violence. This may not necessarily be a response that returns to the status quo, but rather may involve systemic or societal shifts.

Given Bourbeau's definition of resilience and the highly context-driven nature of intersectional positive peace, resilient responses to a change or disturbance vary depending on time or context. Resilience then depends on power structures rather than individual qualities. It follows then that identifying climate change as a "disturbance" depends on the context in which it is experienced—not only when, where, and by whom, but also, for example, in the context of particular knowledge or past experiences collectively or individually. Climate resilient peace, then, can be understood as a transformative process of addressing imbalanced access to and distribution of power and resources, in response to the structures driving climate change and influencing experience of its impacts.

To exemplify resilience processes, this paper highlights degrowth practices and policies. The framework below demonstrates theoretical links between a degrowth approach and climate resilient peace. As a preface, I here briefly conceptualize degrowth in the context of resilience. Degrowth encompasses philosophical ideas as well as social and political action in pursuit of downscaled production and consumption. Degrowth is not economic recession or deprivation; it is a purposeful (re)direction of societies toward an entirely different type of economic model, where a smaller metabolism centers around sharing, simplicity, conviviality, care, and the commons (Kallis et al. 2015).

Degrowth has both social and ecological aspects. The first entails downscaled production and consumption, aiming for declined demand for and use of natural resources, industrial goods, and labor (Petridis et al. 2015; Kallis et al. 2018). With regard to the social aspects, degrowth encourages frugal abundance and redistribution of wealth. It stems from anti-utilitarianism and promotion of a good life and well-being, justice, and direct participatory democracy (Demaria et al. 2013). Addressing basic needs enhances well-being, while fair redistribution of economic, social, and environmental benefits or harms helps to remedy past injustices. Though these ideas stem from critiques of development in the so-called Global South and similar movements can be found in various parts of the world (Martínez-Alier 2012; Kothari et al. 2014), degrowth thus far is largely directed toward high-consumption and highly industrialized societies of the Global North (Latouche 2009).

Although more complex dynamics of feasibility are beyond the scope of this paper, it is notable that degrowth practices are not only possible, but already happening in many places (Kallis et al. 2018; Burkhart et al. 2020), as highlighted by empirical examples in the framework below. Analysis of well-being in many rich countries shows that resource use could be reduced without affecting social outcomes (O'Neill et al. 2018). Furthermore, many societies have survived without growth or with relatively little money (Kallis et al. 2018). Factors constraining the realization of degrowth largely stem from efforts to protect interests of existing power relations; such a transformation is unlikely under current capitalist pathways. Although more research is needed to understand scalability and dynamics of degrowth, this scholarship demonstrates that it already exists in some places and could expand under certain circumstances.

While positive peace and degrowth may overlap, this does not make these agendas redundant. In degrowth literature, well-being points to "the good life", stemming from "more meaning in life" brought about by a change or alternative ways of living (Demaria et al. 2013, p. 197). Though perspectives vary, degrowth generally emphasizes criteria for material living standards, focusing on alternative ways of living that prioritize mental and physical health in connection with community life to meet basic or universal human needs. This does not necessarily equate with nor lead to peace. For instance, urban gardens given as an example below may entrench existing power dynamics through for example restricted access or by marginalizing funding patterns rather than fostering climate resilient peace. Positive peace may be characterized by some as a process towards enhanced well-being, but it also goes beyond this to address root causes of (in)justice, conflict, and violence. The emphasis on peace helps to focus on particular justice-oriented

aspects of degrowth. Moreover, while degrowth literature does account for power and politics, not all degrowth is inherently peaceful, with regard to negating either physical or structural violence. Consideration of peace would necessitate disruption of long-standing structures of power. This can draw out the benefits of degrowth to minimize potential harm and maximize reflection and focus on dismantling violent structures of power.

## Framework for a degrowth approach to climate resilient peace

Building on the above rationale and conceptualizations, I present a theoretical framework posing alternatives for how peace might be fostered in light of climate change without furthering environmental degradation. This section explores the normative theoretical basis for climate resilient peace and presents foundations of the framework: ecological aspects as well as synergies between the concepts of peace and degrowth. Building on this, I demonstrate constitutive pathways from degrowth to peace, presenting new possibilities for climate resilient peace through three degrowth processes – redistribution, reprioritized care economies, and global equity.

This framework toward climate resilient peace considers peace and climate limitations simultaneously. I suggest that the extent to which peace is climate resilient necessitates both that peace does not contribute to climate change and that people can experience peace through a changing climate. As discussed above, peace depends on how societies address the intersectional distribution of power and resources, focusing on how certain groups experience vulnerabilities or privileges. Through these power structures, climate change has diverse impacts, often most negatively affecting those in positions of greater vulnerability. At the same time, structures of power have allowed over-consumption and -industrialization that not only harm humans but drive climate change. Unequal power structures, therefore, both influence people's experience of climate impacts and contribute to climate change. In light of this, peace depends not only on responses to climate shocks, but also on the extent to which societies are able to address problems of social inequality and violent power structures.

Ecological aspects of degrowth form a crucial foundation for this framework. Degrowth proposals heed ecological limitations and prioritize green sectors as a means to achieve environmental sustainability. This entails the downscaling of energy and material throughput in light of natural resource and ecosystem constraints. Findings suggest that environmentally sustainable renewable-energy economies are most likely to be achieved with lower production and consumption (Hueting 2010), and that a sustainable economy is more feasible at lower economic growth rates (D'Alessandro et al. 2010). The throughput limitations suggested under degrowth proposals as well as other aspects of such an approach, for example localized environmental impacts, address environmental sustainability. Thus, potential benefits of degrowth align with climate limitations.

Between peace and degrowth, a local focus and potential for well-being emerge as synergies. The governance and economic aspects of degrowth are localized. Decentralized decision-making facilitates more direct citizen participation in democratic processes while (re)localization of economies re-allocates production and distribution of goods and services at the local level (Mocca 2020), localizing not only priorities of people but also environmental impacts. Such local self-governance envisioned through degrowth prioritizes and addresses the problems and needs of communities as necessitated by intersectional positive peace. Though notedly the discussion of feasibility and practicalities of localization requires more study, the theoretical underpinnings are consistent with the focus of intersectional positive peace. Greater well-being is also promoted by both positive peace and degrowth. The emphasis on egalitarian sharing of resources and space in degrowth speaks to realizing a "good life" through enabling people to meet their basic needs. Positive peace specifies the negation of structural violence, such that people have more equal access to power and resources. These components contribute to fostering greater well-being.

This framework reframes resilience for studying the peace–climate nexus within a particular context; although it may have general theoretical application, this framework is designed in the context of the Global North. Within this context, climate resilient peace and degrowth have been conceptualized primarily at a local level. As a process toward equal access to and distribution of power and resources, the peace concept applies to all people in communities both during and beyond times of armed conflict. Climate change, likewise, will impact all people in all parts of the globe. Meanwhile, degrowth is thus far rarely intended as a universal approach. It rather targets high-consumption and highly industrialized societies of the Global North, although some crucial aspects of degrowth parallel movements and ideas found in other parts of the world (Martínez-Alier 2012; Kothari et al. 2014). While the overarching goals for climate resilient peace presented in this paper may find resonance beyond the Global North, there may be varied pathways in different contexts, for example in emerging economies or in conflict-affected communities. That is, although in theory this framework may have broader relevance, pathways for balancing peace and environmental aspects may vary. Such dynamics present opportunities for further research, including, for example, the impacts localized action would have at international levels.

The sections below build on these foundations to suggest three ways that degrowth may contribute to climate resilient peace. I highlight three key processes of degrowth— redistribution, reprioritized care economies, and global equity—and underline how they address power structures and ecological limitations. For each of these processes, I highlight both peace and environmental benefits and then present a concrete degrowth initiative and explain how it addresses structural harms in light of climate change. A specific empirical example is then given of a case where each initiative has been implemented, along with a discussion of the social and environmental impacts. These are intended to illustrate seeds of change; to demonstrate promising aspects of degrowth practices for peace, thus suggesting ways by which peace on a local level might be possible within planetary boundaries. While these degrowth aspects and the examples given are neither meant to be exhaustive nor mutually exclusive, they represent opportunities to negate structural violence and enhance resilience in light of climate change.

## Redistribution: moving beyond structural violence

Climate resilient peace highlights that power and resource distribution is influenced by structures existing at the intersection of people's social and political identities. This necessitates that people have access to resources as well as the power over use of these resources. The redistributive components of degrowth are suggested to be tools to address privileges and power hierarchies, holding potential to make visible and address existing power structures. A degrowth transition crucially relies on shifting priorities, policies, and practices toward a system wherein political power, wealth, technology, leisure time, and other resources are accessible and shared among people. This is proposed through, for instance, grassroots economic practices and new forms of commons, community currencies, and participatory democracy. Such proposals aim to have less accumulation of wealth in the hands of a few and to distribute power more equally on a local basis. Thus, redistribution not only meets material needs as occurring at the intersection of identity factors, but also alleviates structural inequalities. Redistribution then emerges as a key aspect of tackling structural violence to facilitate peace.

This process can be exemplified through grassroots urban gardening initiatives, localized alternative food systems. Urban gardens are low impact and provide environmental benefits through for example reducing dependence on harmful petroleum-based food production, sequestering carbon, preventing soil erosion, and filtering air and rain water (Anguelovski 2015; Clarke et al. 2019). Urban community gardens have often been used in the context of political or economic crises, for example to boost food security during times of economic recession (Clarke et al. 2019). These gardens not only provide fresh food to communities and health benefits such as relaxation, trauma recovery, and leisure opportunities, but also can strengthen neighborhood relations and help foster sharing of space and responsibilities (Anguelovski 2015).

The city of Detroit in the United States provides one illustration of how this process addresses structural violence. Urban gardening in Detroit spans a long history; today, these activities are largely citizen-led and have become an important component of the city. Urban gardening provides material resources for structural problems that can be understood not least through access to food and health statistics. Neighborhoods with more low-income and Black households have been shown to have less access to supermarkets with healthier food options, and health impacts such as obesity, Type 2 diabetes, and hypertension disproportionately affect Black women (White 2011). Urban gardening in Detroit has improved access to healthy food, including for low-income families, by impacting how food is obtained and distributed (Colasanti et al. 2012; Taylor and Ard 2015). This constitutes redistribution of food as a key resource, with benefits for individual and household food security and health.

Urban gardening in Detroit also facilitates local agency and political engagement through for example improved access to food, community building, empowerment, and cooperative economics (White 2011). This gardening has provided employment opportunities, green spaces, political agency, and impetus for social change among many community members and for whole neighborhoods (Taylor and Ard 2015). These activities present opportunities to reclaim "unutilized" city spaces, organize social change to address structural inequalities, and promote civic agriculture (Colasanti et al. 2012). Thus, with environmental benefits, urban gardening provides material solutions to alleviate the experience of structural violence, and it addresses power structures themselves, redistributing resources and power as necessary for climate resilient peace.

## Reprioritized care: disrupting harmful power structures

Structural violence can be understood as the violent effects of power hierarchies and categories of inequality, through, for example, gendered structures (Anglin 1998; Sjoberg 2013). As pointed out by Ariel Salleh and Nancy Fraser among others, systems of growth are sustained through largely invisible reproductive and care labor (Barca 2019). Care work is understood as "daily action performed by human beings for their welfare and for the welfare of their community", which may include concrete work in caregiving for young or elderly persons and often refers to labor carried out in the private or domestic sphere (D'Alisa et al. 2015, p. 63). The focus here is on the unpaid work on which

the economy rests, noting in particular the gendered nature of this work (Gregoratti and Raphael 2019). In the current growth system, even efforts to increase gender equality tend to reinforce the paid and unpaid labor divide. "Empowering women" has largely meant greater gender equality in paid labor, while women still carry the brunt of care work, creating double burdens for many women (Dengler and Strunk 2018, pp. 166–167).

Peaceful potential of degrowth lies in disrupting such power structures. As part of a transition toward reduced resource and labor throughput, degrowth proposals may help restore services of high social value such as care work to the center of the economy (D'Alisa et al. 2015). Care economies focus on well-being and social cohesion within ecological limits by (re)valuing care for humans and nature, including future generations (Wichterich 2015). Reprioritization of care economies presents the opportunity to disrupt violent hierarchies, so as to expose and address imbalances at the intersection of for example gender, class, age, race, ethnicity, and ability.

Take, for example, basic income, which proposes that all people in a state or given community would receive periodic payment, typically advocated to be guaranteed, unconditional, and universal (Alexander 2015). In addition to other potential benefits such as added self-care or altruism, this contributes to the (re)valuing of care work. It encourages combining roles of worker and caregiver, and guarantees minimal resources for well-being, reducing inequalities of power between and within households (Zelleke 2011; Cantillon and McLean 2016). Environmental benefits stem from changing patterns of production and consumption through reduced status-driven consumption of positional goods, or achieving long-term emissions targets by bringing more people to a modest expenditure level (Howard et al. 2019).

Dauphin, Canada experimented with basic income in the 1970s. In connection with the policy, both men's and women's paid labor participation decreased slightly, though notedly more so for women, who at the time contributed a lower proportion of an average household's income. Engagement in care work was found to be one of the motivations for participants who left work in association with receiving basic income (Calnitsky and Latner 2017). Research showed improved health and social outcomes at the community level (Forget 2011). This exemplifies capacity and material goods as well as structural benefits through re-valuing care work.

Importantly, the peaceful focus here is not on gender equality in paid work but on a re-valuation process to disrupt harmful power structures. Basic income helps meet the material needs of those who take responsibility for care work (Miller et al. 2019), and helps balance household power linked to gender as well as income, education, or ethnicity (Cantillon and McLean 2016). Furthermore, basic income applied universally avoids dividing society between receivers and givers (Bollain et al. 2019). The material benefits of basic income then accompany prospects of economic autonomy, valuation, and control. The reprioritization of care is seen to disrupt harmful power structures, presenting opportunities for more egalitarian structures to foster peace.

## Global equity: decolonizing peace

Degrowth enacts limitations on throughput and redistribution locally; this will also have impacts globally that must be acknowledged and addressed with concern for class, gender, race, and global inequality. This matters for climate resilient peace if we consider the relationship between excessive wealth and emissions contributing to climate change. As of 2015, the richest one percent of people emitted 30 times more than the poorest 50% (Oxfam 2015). While there are extraordinarily wealthy individuals around the globe, the majority of the world's richest 10%, who produce half of the world's emissions, live in rich OECD countries (Chancel and Piketty 2015). High-income countries also overwhelmingly drive climate damages (Hickel 2020) and wealthy countries moreover tend to utilize environmental space and resources with little or no payment and create imbalanced damages (Martinez-Alier 2002). In part, the peace potential of degrowth lies in recognizing and addressing the unequal contribution to drivers of climate change both between and within countries.

Given this, there also lies a decolonial potential of degrowth in acknowledging and addressing inequalities and injustices (Martínez-Alier 2012). This potential is understood in line with Maria Lugones's scholarship as an "opportunity to go beyond the (post-colonial) analysis of racialized, capitalist and gendered structural injustices, i.e., the coloniality of the status quo and to foster decoloniality in theory and practice" (Dengler and Seebacher 2019, p. 247). Take, for example, wealth caps or maximum income policies, which impose a ceiling on individual wealth and earnings through, for instance, progressive taxes or a maximum tied to a minimum (Pizzigati 2004; Alexander 2015). Such measures may benefit the environment by limiting environmentally unsustainable lifestyles (Buch-Hansen and Koch 2019). In addition, these polices address inequalities within nations (Pizzigati 2004).

Although there are few examples of large-scale wealth-limiting policies, there have been proposals, similar efforts, and sector-specific initiatives in several countries including the United States, Great Britain, Switzerland, and Spain (Buch-Hansen and Koch 2019). Since 2015, the Netherlands has had a bonus cap in the financial sector, tied to base salaries; in 2018, the government introduced plans to restrict pay, having financial service providers explain managers' pay levels and limiting selling of shares for short-term gains (Meijer 2018). Such sectoral or other localized schemes

stand to redistribute wealth and balance environmental harm both within and potentially also between countries. This curbs growth linked to drivers of climate change, and interrupts associated structural violence. These policies, if focused on the richest and biggest emitters, hold potential for creating material equity as well as for decolonizing "conceptual space" (Kallis et al. 2015, p. 5) so that countries and communities have the chance to pursue their own trajectories of a good life and peace. This approach holds potential to dismantle hierarchies of exploitation, detangling countries and communities from harmful chains of production and consumption.

## Conclusion

Climate resilient peace poses challenges in light of the current mainstream growth-centric economic systems. This paper offers a first venture into considering degrowth alternatives for climate resilient peace. I have presented a novel framework that first conceptualized climate resilient peace, and second presented a normative and theoretical framework for a degrowth approach to such peace. This paper has outlined that this peace must be understood as positive, entailing the negation of structural violence, and that intersectionality sharpens our understanding of this peace by focusing on how power structures create certain situations of vulnerability or privilege in society. To be climate resilient, people must be able to experience this peace in light of a changing climate and to foster such conditions without further driving climate change. I have presented how this is possible through degrowth processes of redistribution, reprioritized care, and global equity. What stands out is the importance of disrupting underlying power structures, rather than treating only the symptoms of inequality and structural violence.

Such a broad framework for climate resilient peace raises questions about limitations and prompts further investigation. It has been highlighted that degrowth initiatives already take place in a variety of contexts (e.g., Burkhart, Schmelzer, and Treu 2020), and that research increasingly supports the idea that human well-being can be fostered at lower throughput levels (e.g., O'Neill et al. 2018). The primary consideration here is potential limitations of a climate resilient peace framework, including aspects of feasibility, implementation, and implications. This framework largely refers to local level or small-scale initiatives and changes. Whether or how these impact larger-scale issues such as climate change or systemic structural inequalities depends on how such processes can or do aggregate to systemic change. Additionally, the examples given of climate resilient peace processes are instances of specific degrowth practices taking place within market economic systems. There may be challenges of wider implementation, including how to peacefully detangle complex and global chains of production and consumption. Furthermore, this framework involves intentional processes; indeed, degrowth relies on a voluntary shift to more frugal production and consumption, and these processes do not and will not take place in a vacuum. Implementation of such a framework might entail considering dynamics of different transition scenarios. For instance, different types of crises could pose limitations or challenges for implementing such a framework. Ultimately, questions of feasibility and implementation must be balanced with the implications of systemic change. As previously mentioned, degrowth may be less likely under current capitalist economies. Systemic change, then, is an integral part of the framework, both in terms of making it possible and envisioned outcomes. Ethical considerations must grapple with questions about who or what stand to lose from these processes of change. Given dynamics of intersectional positive peace, highlighted earlier in the paper, ethical considerations may pose limitations to how, when, or where such a framework for climate resilient peace could be desirable or possible.

What does seem clear is that degrowth transitions rely on systemic change and that conceiving of this framework requires envisioning alternatives to our present reality. Looking ahead, alternative visions of peace that address climate limitations might more critically engage with different dynamics of economic growth. Future research might consider impacts of growth in different sectors, different temporal scales including violence against future generations, or in different geographic contexts such as rural versus urban communities. This framework's focus on peace has opened opportunities for further empirical research to explore the potential violent or peaceful experiences of a degrowth society. Greater intersectional focus in research, as included here, could also help to focus degrowth on dynamics of power structures. This also poses further questions about dynamics of individual agency in light of negating structural violence, the role of different actors, or state relations, for example relating to international division of labor or natural resources. Other strands of peace research, such as peacebuilding, might also be investigated through a degrowth approach.

If we wish to pursue peaceful societies, the environment in which we envision and experience this peace must be considered forefront. I have aimed to further discussions around peace more holistically, bringing together peace, intersectionality, resilience, and degrowth to demonstrate benefits of such an approach to normative and theoretical thinking for peace scholars. This paper contends that climate resilient peace must take intersectional experiences into account by addressing structures of power and demanding that peaceful means themselves help mitigate climate change. This framework calls on both academic and practical efforts to think ambitiously and differently about what is both needed

and possible, within and beyond current systems. I hope to have opened new avenues to consider the relationship between peace and climate change, and to have prompted broader discussions around sustainability. Peace in today's landscape must not only answer to different people, but also the demands of a changing climate.

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# Paper 2

# Climate transformation through feminist ethics of care

Christie Nicoson

Under review

**Abstract**

Aiming to mitigate negative impacts of climate change, climate adaptation policy and practice increasingly engages with nuanced and differentiated impacts of climate change. Existing adaptation approaches and research informing them largely focus on outcomes of climactic events, but lack consideration of power structures shaping these phenomena and experiences of them. From a feminist peace perspective, I posit that tackling intersectional violences of climate change necessitates greater engagement with underlying knowledge. This paper explores how ways of knowing climate change impact ways of living with it: analyzing the ground on which climate action interventions stand and the paths on which they set us.

I theorize 'climate transformation' as processual shifts in ways of knowing a problem and solution toward norms of a feminist peace. Theory is developed abductively, based on original fieldwork in Puerto Rico and drawing on conflict transformation theory and elaborating knowledge production through feminist ethics of care. The model developed here enables analyzing orientations of current situations and change processes in relation to desirable futures. I find that actors involved in peace work and climate action in Puerto Rico foster transformation based on: caring *in* current relations and experience; caring *through* change processes affectively and reciprocally; and caring *for* a vision of the future through prefigurative and historicized imagination. The framework advances academic study and policy development on transformative climate action for tackling historic and intersectional violences to influence and enact particular visions of peace.

**Key words:** climate change, ethics of care, knowledge production, Puerto Rico, transformation, feminist peace

## Introduction

Increasingly, efforts to understand and foster peace incorporate climate change considerations and recommend adapting for more peaceful futures. Climate change, understood as co-constructed with society (Taylor, 2014), challenges peace through for example impacting food, health, and mobility as well as amplifying drivers of armed conflict, and shaping contexts in which peacebuilding work operates (Cohn & Duncanson, 2020). To this end, scholars suggest climate change adaptation holds potential benefits for building peace through contributing to community resilience and coping capacity (Matthew, 2018). Although literature highlights the need for context-specific and locally-focused interventions to mitigate negative impacts of climate change, current adaptation approaches largely address symptoms rather than roots, focusing on accommodation or coping rather than posing alternatives (O'Brien, 2012). Critiques of adaptation alongside calls for advancing peace urge systemic change beyond possibilities of current pathways or addressing impacts of climate change to interrupt and tackle the underlying forces driving physical events and shaping people's diverse experiences of them (Nicoson, 2021; Sultana, 2022; Tirrell, Cordero, & Crane, 2021).

Contributing to this dialogue, I bring peace literature into conversation with environmental policy and research, exploring how ways of knowing advance peace in a changing climate. To do so, I take an abductive approach to normative research, moving between theoretical ideas and original empirics from fieldwork in Puerto Rico (Borikén), May-July 2022, centering community leaders, artists, and activists' experiences with climate action. My study deepens understanding of the links between key concepts of peace, knowledge, transformation, and care. I develop an ethic of care (EoC) approach to climate transformation (rather than adaptation) through tying together presents-pasts-futures in peace processes; situated care-based knowledge enables critical questioning of, for instance, what is sustained, by whom, how, and for what. I study how knowledge that emerges with values and practices of care (re)orient dependencies and oppressions shaped by 500 years of colonialism. Examples emerge of efforts to transform violent relations, e.g., imposed reliance on imported fossil fuels, and to strive toward peaceful visions of the future, e.g., energy systems that benefit, not harm, humans and more-than-humans in the archipelago.

Guiding analysis between theory and empirics, I adopt normative commitments of feminist peace toward what kind of futures are desirable. Feminist peace entails a process of tackling unequal or violent power relations to advance visions of radically different futures (True, 2020; Väyrynen,

Parashar, Féron, & Confortini, 2021), picking up from literature on positive peace that sees the phenomenon as more than the absence of physical violence or armed conflict (Addams, Carroll, & Fink, 2007 [1906]; Galtung, 1969). I understand experiences of peace through intersectionality (Kappler & Lemay-Hébert, 2019; Wibben et al. 2019), attending to privileges and oppressions (re)produced through dynamics of, for example, gender, race, and class (Crenshaw, 1991; Hill Collins, 2017). This reveals peace and violence not as opposites, but as co-existing on a continuum (Cockburn, 2004; True, 2020) and resists universalizing experiences and a specific, defined condition (Väyrynen et al. 2021).

From this starting point, I develop feminist EoC as an epistemic tool for 'climate transformation'. I theorize climate transformation as a process of tackling material and discursive violences of climate change and fostering peace through care-based ways of knowing. Feminist EoC theorizes moral deliberation based on practices and values arising from concrete relationships of giving and receiving care (Gilligan, 1982; Vosman, 2020), while transformation entails shifts in a way of knowing problems and solutions toward desirable futures, attending to immediate and long-term structural conditions underpinning conflicts (Rodríguez & Inturias, 2018). Other scholars demonstrate benefits of greater attention to care in climate policies and action (e.g., Bond & Barth, 2020; FitzGerald, 2020); instead, I am concerned with the political potential of care in knowledge production. This is not a claim that more care equals more peace or the 'best' way of knowing, nor a formula for the 'right' way to care. Instead, toward a plurality of peace processes, ways of knowing through care shape responses and experiences to climate change.

As illustrated below, Puerto Rico provides unique insights based on how actors address urgent needs connected to ongoing climate change, from which I provide concrete framings of knowledge and transformation to guide adaptation research and policy. Using the feminist peace approach, this paper contributes to critical environmental research on climate adaptation with insights about the political potential of epistemological pluralization and trajectories of transformative change, and provides empirical examples of living with climate change while tackling underlying inequalities and historic violences (Blythe et al. 2018; Eriksen, Nightingale, & Eakin, 2015; Haverkamp, 2020; Morchain, 2018; O'Brien, Eriksen, Inderberg, & Sygna, 2015). I also deepen debates in peace and conflict research about how violence and peace relate to climate change, and add to empirical study of peace beyond the absence of violence (Detraz & Sapra, 2021; True, 2020). Furthermore, this study strengthens EoC literature about the dialectical care-knowledge

relationship and political potential of care (Robinson, 2011; Puig de la Bellacasa, 2012; Held, 2005). In the following, I first briefly review critiques of climate adaptation and knowledge. Following this, I introduce climate transformation; describe methodology for generating, collecting, and analyzing the empirics; and unpack the theory with insights from Puerto Rico. I conclude with a discussion of policy implications and limitations, as well as pathways for future research.

**State of the field: knowing and adapting to climate change**

Existing research on climate adaptation reveals discrepancies between how responses to climate change take shape and to what end, what knowledge holds value, and what solutions seem possible. Scholars increasingly note differentiated experiences of climate change and push for greater equity and justice in adaptation mechanisms, going beyond proximate risk to address structural causes (Amorim-Maia, Anguelovski, Chu, & Connolly, 2022; Pelling, O'Brien, & Matyas, 2015; Shi & Moser, 2021). In a similar vein, scholars urge re-engagement with historicized, structural analyses that address the normative and value-laden forces and imbalances of power as well as the politics of material and discursive powers that underlie climate phenomena (MacGregor 2014; Nightingale et al. 2019). For example, Caribbean islands are recognized as highly climate-vulnerable. This condition reflects not only geopolitical or social factors of vulnerability, but especially the reliance on tourism, agriculture, and fishing-based economies – sectors particularly threatened by climate change. These emerged in colonial contexts and through promotion and implementation of neoliberal development models, under pressure of debt crises (Sealey-Huggins, 2017, p. 2445). Thus, findings that certain states or households face particular vulnerabilities is conditioned by historical context rather than solely physical occurrence of climate change events. Indeed, the Intergovernmental Panel on Climate Change report on adaptation recognizes that colonialism both drives the climate crisis and exacerbates differentiated vulnerabilities (IPCC, 2023). Despite growing recognition, responses that attend to such underlying dynamics of climate change and their consequences remain largely rhetorical (Bhambra & Newell, 2022; Sultana, 2022).

To this end, rather than solely focusing on how to improve adaptation, transformation at a deeper level requires attention to and steps to redress imbalances not only in the implementation of interventions, but also shifts in how we know problems and understand solutions. Existing literature demonstrates that climate science largely relies on ways of knowing that proport 'neutral' and 'value-free' understandings of climate change as a

biophysical and external threat with aggregate harms to human societies (O'Lear, 2016; Tuana, 2013). Attempts to account for differentiated experiences and everyday needs spurs inclusion of different actors in climate knowledge (e.g., Martinez-Alier, 2002; Whyte, 2017). Yet, ontological plurality largely 'adds-on' diverse stakeholder participation to existing dominant conceptualizations (Nightingale et al. 2019). For instance, Indigenous voices are often re-shaped to fit within Western systems of knowledge and purported solutions, such as techno-managerial adaptation frameworks (Gram-Hanssen, Schafenacker, & Bentz, 2021). Broad reviews show that adaptation largely attempts to remedy climate harm within the same ways of knowing or frames that caused it, and (re)produces violent privileges and oppressions (Barnett, 2020; Bee, Rice, & Trauger, 2015; Nightingale et al. 2019).

Stemming from this body of knowledge, climate policy and research focus on achieving targets to solve (biotechnical) problems of climate change, which hinders structural change and critical and imaginative thought (Hammond, 2021). For instance, goals to limit global warming to 2°C ignore harm to human and more-than-human ecosystems below specific increments as well as changes not accounted for or prevented by this limit (Seager 2009). This type of thinking further emphasizes aggregate harm, ignoring questions of which harms and benefits are counted and for whom (Moosa and Tuana 2014). Such focus may "reinforce unequal power relations and logics that underlie the problem [of climate change] in the first place" (Bee et al. 2015, p. 9), as resulting mechanisms respond to climate change apolitically and obscure normative and value-laden politics (Nightingale et al. 2019). The resulting technoscientific understandings predominant in science and policymaking often miss lived experiences and hide value judgements (Cuomo, 2011; MacGregor, 2009; Moosa & Tuana, 2014).

Casting beyond 'objectivity' that underlies such ways of knowing, feminists theorize knowledge as originating in situated experiences, self-reflection, and judgements (Harding, 1986); this accounts for contextual differences and disentangles oppressive conditions within ways of knowing (Haraway, 1988). Production of knowledge then is hardly apolitical or neutral, and must be understood as a production of particular interests. As Sandra Harding observes, despite claims and assumptions of neutrality, modern science serves particular interests and even furthers "sexist, racist, homophobic, and classist social projects" (1986, 21). Science roots in particular social and cultural contexts, moreover having a co-constitutive relationship with its society. At this juncture, I argue for addressing shortcomings of climate adaptation through a

shift in knowing that bridges micro-level experiences and higher-level observations, with implications for what kind of processes and experiences of peace take place and are possible in a changing climate.

## Theorizing climate transformation through a feminist ethic of care

I theorize and illustrate transformations toward feminist peace(s), presenting *climate transformation* as entailing material and discursive processes of fundamental change for tackling the historic and intersectional violences of climate change to foster peaceful futures. I develop the climate transformation model with a particular normative commitment to feminist peace. As described above, *feminist peace* entails a process, instead of a goal or event, of ongoing efforts to tackle violences and advance visions of alternative futures (e.g., Tickner & Smith, 2020; Väyrynen et al. 2021). I case this study of feminist peace in Puerto Rico, seeing peace(s) and violence(s) on a continuum. For instance, as presented below, five centuries of militarized colonialism have conditioned values and norms, shaped an extractivist and import-reliant economy, and physically impacted everyday existence. These different types of violence perpetuate one another. Communities in Puerto Rico resist environmental destruction and foster human and more-than-human well-being by pushing for regulation of contamination and degradation, and by protecting beaches and forests from development projects (Atiles-Osoria, 2014; Santana, 1993); island communities within the archipelago have protested and expelled the US navy (Atiles-Osoria, 2014); communities establish gardens, kitchens, and brigades to provide care, clear debris, and deliver aid after hurricanes (Garriga-López, 2019; Lloréns, 2021; Unanue et al. 2020). I study feminist peace in Puerto Rico through how these structural, physical, and cultural dynamics (re)produce simultaneous harms and possibilities for well-being.

From this basis, my theorizing of climate transformation brings key concepts of knowledge, transformation, and care together in two disparate elements: *transformation* and *ethics of care* (visualized in figure 1 and each further elaborated upon below). I develop the model from preliminary study on these two strands of literature, which I then bring into iterative conversation with empirics from Puerto Rico. This abductive theorizing leads to novel insights about *how* a care-knowledge dialectic functions in transformative processes. Described below, I demonstrate (1) caring *in* a current situation based on relations and experience; (2) caring *through* change processes based on affect and reciprocity; and (3) caring *for* a vision of the future based on prefigurative and historicized imagination.

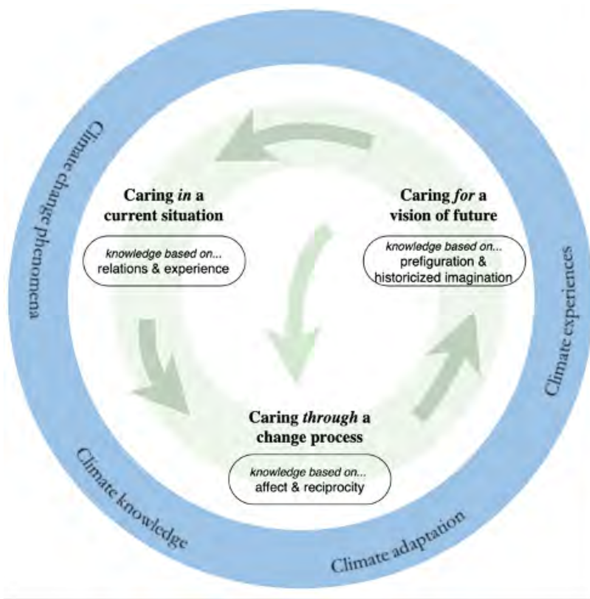


**Figure 1: Climate transformation process through a feminist ethic of care**

This model combines insights from environmental and peace literatures. Transformation generally conveys an idea of "fundamental, systemic, or radical change" (Feola, 2015, p. 379). This includes fundamental shifts in ways of knowing problems and solutions around a norm that change "is essential to support desirable futures"; what constitutes such change and how this translates into action remains open (Blythe et al. 2018, p. 1208). In peace research, transformation views conflict as part of normal social interactions and an opportunity for change through attitudes and behaviors in relationships, and changes to structural conditions underpinning conflicts. This process attends to both immediate needs and long-term dynamics or destructive contexts, cycling between a present situation, process of change, and envisioned future (Dayton & Kriesberg, 2009; Lederach & Maiese, 2009). Transformation also requires an examination of (hegemonic) discourse and regimes of knowledge (Fetherstone, 2000) that goes beyond greater inclusion or exchange, to a fostered sense of co-existence (Rodríguez & Inturias, 2018). Although power works in structural and cultural forms, its tie to individual agency holds potential to tackle injustices and violences.

Scholars demonstrate care as a crucial part of peacebuilding, addressing structural as well as physical violence and underpinning transformation toward more gender-just, peaceful societies (Berman-Arévalo & Ojeda, 2020; Ibnouf, 2020; Petterson, 2021). According to Joan Tronto and Berenice Fisher, care "includes everything that we do to maintain, continue, and repair our 'world'" (Tronto, 1993, p. 103). Care is thus embedded in processes of peace as well as violence and, as such, is not inherently 'good'. For example, care sustains paramilitary and extractive violence (Berman-Arévalo & Ojeda, 2020), perpetrates discrimination and abuse against people with disabilities (Williams, 2018), or enables ecofascist agendas to selectively 'purify' nature and people (Darwish, 2021). Addressing this ambiguity, I adopt a feminist perspective on a political ethic of care that commits to condemning harm and exploitation and enabling human flourishing (Robinson, 2011). Feminist EoC entails practices of local care work and values of addressing harm and restoring relationships (Held, 2005; Petterson, 2021). This emerges through different gendered hierarchies of race and class (Hankivsky, 2014; Williams, 2018), functioning through intersectional competence and skills needed for care, recognition of what care entails, who performs and receives it, constitutive emotions, and material manifestations (Raghuram, 2019). From this foundation, I adopt an understanding based in existing scholarship that since care practices and needs are not universal, it takes contextual knowledge to care and care puts beings into relation in a way that generates relational knowledge (Parker, 2010; Puig de la Bellacasa, 2012). Rather than inherent or pre-existing, care emerges through embodied experiences and relations (Hamington, 2015). As care is understood through concrete, complex caring relationships rather than abstract principles or situations (Gilligan, 1982; Vosman, 2020), knowledge then entails processes of recognizing and responding to relational hierarchies.

## Research design

I situate this research in Puerto Rico through reflection on positionality and with consideration for the site suitability as a place of rapidly escalating climate impacts, ongoing coloniality where violence and peace coexist, and contested struggles for alternative futures. In this section, I begin with motivating case selection before turning to methodology, ethics, and positionality.

### *Siting the research in Puerto Rico*

Upon arrival in the Caribbean in 1492, Europeans found complex social and political Taino communities (Neeganagwedgin, 2022). Occupying the Puerto

Rican islands, the Spanish led a genocide against these Indigenous peoples and began a process of colonization that continues today with Puerto Rico held as an unincorporated territory of the United States (US) (Rouse, 1992). Throughout these centuries of empire-building, Puerto Rico has served as a base for extractive economies of enslaved labor, mining, and industry as well as military expansion; ramping up during WWII, the US conducted live-fire exercises, aerial bombing, and chemical weapons testing in the territory (Cabán, 2002; Dickerson, 2015; Santana, 1998). These forces contribute to ongoing climate change, driven in large part by US industrialization and military operations (Crawford, 2019; Hickel, 2020).

International reports often describe Puerto Rico as being at the forefront of climate change and among the countries most negatively affected (Eckstein, Winges, Künzel, & Schäfer, 2019). Changes include higher air and surface water temperatures, rising sea levels, and increased ocean acidification, landslides, floods, and severe storms (PRCCC, 2022). These phenomena destroy infrastructure, harm or kill humans and more-than humans, and forcibly displace many. For instance, Hurricane Maria in 2017 resulted in an estimated 3,000 deaths and displaced approximately 160-200,000 people, Puerto Rico's largest recorded emigration (Hinojosa & Meléndez, 2018). Aside from geographic vulnerability, ongoing colonialism aggravates climate harms. For instance, legislation restricts all maritime cargo to and from Puerto Rico to US carriers, resulting in higher costs for food, fuel, and other basic goods (Torruella, 2018; Valentin-Mari & Alameda-Lozada, 2012). This also prevents the islands from receiving much-needed recovery assistance from neighboring countries during disasters, as happened in the wake of Hurricane Maria (ICADH 2017; Lloréns 2021).

***Methodology***

Against this background, I present an in-depth, qualitative case study with an abductive approach. Abduction entails continually conjecturing about phenomena through analyzing novel empirics in conversation with existing theories (Sætre & Van de Ven, 2021). My positional way of seeing holds iterative dialogue to contribute original theorizing, rather than verifying or falsifying theory (Timmermans & Tavory, 2012). I formulated theory through preliminary study, departing from the state of the field and reading into the foundational elements of transformation and ethics of care described above, from which key concepts of peace, knowledge, transformation, and care emerge.

I then brought these concepts into the field with a feminist case study method: grounding the research in specific contexts, recognizing collective knowledge, exploring mechanisms of power and oppression intersectionally, and reflecting on care throughout the research process (Ackerly & True, 2010; Colón Warren, 2003; Domínguez, 2000; Maruska, 2017). I generated and collected data through fieldwork in Puerto Rico, May-July 2022. Fieldwork data include interview transcripts, researcher fieldnotes, photographs, audio files, videos, reports, maps, and art. To generate these sources, I used informal meetings and semi-structured interviews as well as participant observation in contexts of participant-identified peace work and climate action: I observe and engage with caring practices, and listen to stories of caring values to understand how climate change is known and what this knowledge does in processes of change.

Purposive sampling followed by snowball sampling identified key actors in climate change or social transformation efforts. I then conducted semi-structured interviews with twelve participants, each well-embedded and active in or leading such efforts in their communities. These participants span approximately 60 years of age, come from and live in different parts of the archipelago, identify as men or women, and represent vastly different educational and occupational backgrounds from engineering to art and education. Using participant observation, I made tours and site visits, attended events, and took part in everyday activities related to climate adaptation, social justice, or environmental care in various parts of Puerto Rico. I held dialogue and observations in both English and Spanish; colleagues and dictionary tools supported translation in some cases.

For the analysis, I used abduction during and after the fieldwork. During interviews, participants directly engaged with the key concepts I identified from previous study to help hone meaning, situate it the field, and describe relationships between them. After fieldwork, I processed empirics using NVivo software: I code data based on collaborative conceptualizations, explore emerging patterns, and run queries so as to identify thematic nodes. These nodes sharped the theoretical relations of concepts by revealing key aspects of knowledge production and use.

The feminist case study approach moreover guided implementation of the method and ethical consideration. Although my doctoral funding and US passport made travel and arrangements relatively easy, my status as non-Puerto Rican and intermediate Spanish-speaking skills kept me relatively constrained in the research. For example, I avoided study in some places or with groups that have been particularly harmed by outsider interests. The study centered co-production of knowledge to counter extractivist research methods. In the

initial scoping, I built relations and practices that continue through ongoing collaboration. The semi-structured interviews gave space for participants to shape content and direct conversation. Participatory observation shaped my means of doing research, for instance allowing participants to bring me into ongoing activities. We planned my participation to coincide with labor or outputs that support ongoing actions, and outputs give credit for intellectual contributions.

All participants gave consent to be included in the study, and those identified in-text agreed to be named in connection with shared knowledge and their work. My feminist case study method incorporates an ethic of care practice (Björkdahl & Mannergren Selimovic, 2021; Cadaval Narezo, 2022), which guided the decision to use names. Participants and I discussed and agreed upon identification in order to give credit for different intellectual contributions. Interview excerpts in this paper are closely paraphrased, not direct quotes; I have translated and minimally edited. Finally, in addition to more formal aspects of ethical guidance such as informed consent and data protection,[1] my preparations and practice during and after the fieldwork included efforts to minimize environmental and social harm. For instance, as much as possible, I limited travel with harmful emissions, planned meetings to minimize spreading COVID-19, and arranged stays with community groups to avoid short-term housing that benefits tourists at the detriment of residents.

## Climate transformation in Puerto Rico

In this section, I present a deeper discussion of the climate transformation model above through elaboration of the abductive process and examples from the analysis of the empirics. Each subsection shows how the Puerto Rico data shape theorizing about how each of the phases relate to the others (figure 1, phases identified counter-clockwise), and on the dialectic relation between care and knowledge.

### ***Caring* in *a current situation***

Through study in Puerto Rico, I find that how people know climate change (phase 1) depends on their experience of relations, the means by which people sustain something/one. In part, these experiences and relations stem from caring for particular ideas about the future (phase 3), and shape how people seek or enact change (phase 2). From initial literature study, I see care and

[1] Ethical procedure included formal approval from the Swedish Ethical Review Authority, as well as a parallel training and consideration in line with the ethical codes and research standards for conducting social research in the US (though formal approval with an institutional review board was not required for this project).

knowledge co-constitutively emerging as relational and experiential. In Puerto Rico, I observe and engage with participants to learn how their work related to climate action assesses needs, how climate phenomena affect their work, and who is involved in these processes, including others they work with and who is impacted. Iterative rounds of analyzing the empirics demonstrates that beyond *who* composes relations, knowledge production emphasizes how relations form and persist. The study demonstrates that transformational potential for peace lies at the intersection of experience and relations: where and how relations are experienced in a current situation shape and orient knowledge of climate change.

Individuals in Puerto Rico recognize climate change in a present context through their experiences of dependencies, which are necessarily relational. When discussing climate, participants turn my attention to service provision (e.g., food, energy, shelter, water, technologies, or information); analyzing the data, I identify intricacies of materiality and discourse in which beings experience dependencies as care-givers or -receivers. For example, reflecting on the installation of solar panels in his town, Alexis remarks,

> I will tell you that there is also a change in the attitudes of people when they see the quality of life in friendship, solidarity. People start to say, when we are putting up a solar panel, 'I think it is better they put it on that old lady's house because she has to undergo dialysis and needs energy.' There is solidarity. (Alexis interview)[2]

This intervention demonstrates that relations and experiences of these are central to how Casa Pueblo, the organization installing solar panels, understands and conducts their work. Solar energy provides care, for example powering refrigerators to store medicine and food or charging mobile devices to maintain communication when extreme storms interrupt fossil fuel-based electricity grids. Needs relative to knowledge of climate change emerge based on relations between community members, or providers and receivers of solar panels. Knowledge is not solely informed by an individual's experience, but rather hinges on relations.

Moreover, fieldwork demonstrates experienced relations beyond individual levels, materializing in policy mechanisms and discourses. Historic and ongoing coloniality perpetuate dependency hierarchies in the present and

[2] Alexis Andrés Massol González, co-founder, Casa Pueblo; civil engineer.

influence imaginaries, serving to "condition the possibilities" (Federico interview).[3] Arturo reflects,

> [Puerto Ricans] have been told from the very beginning that we cannot exercise self-determination because we are in a small country without natural resources […] We need to decolonize Puerto Rico and one way to do it in practical terms is to build energy independence. (Arturo interview)[4]

He refers to Puerto Rico's electricity grids running primarily on imported fossil fuels through persistent colonial infrastructure: the Jones Act, or Merchant Marine Act of 1920, limits maritime cargo to and from Puerto Rico unless transported by ships of US construction, ownership, flag, and crew (Valentin-Mari & Alameda-Lozada, 2012). While purportedly benefitting national defense as well as foreign and domestic commerce, this means Puerto Ricans pay higher costs for basic goods and services (Torruella, 2018). More recently, Acts 20 and 22 of 2012 established incentives to attract residents and businesses from outside Puerto Rico, providing tax breaks with stipulations that new businesses export services. This facilitates a rapidly growing service sector for technologies such as blockchain and cryptocurrencies, emulating outward-incentivized agricultural and industrial market-booms throughout Puerto Rico's history as a US territory (Crandall, 2019). Participants describe that higher costs disproportionately create situations of vulnerability through disparities of class, race, age, ability, and gender. José (interview)[5] describes, for instance, that Puerto Rico's food is 80 percent imported, and preparations or responses to climactic events are mediated by cargo restrictions.

These examples demonstrate that relations are not inherently more or less peaceful; attention to experienced relationality brings would-be invisible or normalized conditions into view. The fieldwork reveals what experienced relationality entails and how it works through visibilizing upon whom or what people rely to meet needs, and how this reliance sustains or shapes relations between care-givers and -receivers. Thus, climate change challenges are known through one's assessment of who needs care when and where, who or what assumes responsibility for and carries out care, and how care is practiced to a particular end.

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[3] Federico Cintrón Moscoso, director, El Puente-Enlace Latino de Acción Climática in Puerto Rico; anthropology profesor, University of Puerto Rico - Rio Piedras.

[4] Arturo Massol Deyá, director, Casa Pueblo; microbiology and ecology professor, University of Puerto Rico - Mayagüez.

[5] José Francisco Galarza Flores, direct service coordinator, La Matria.

### *Caring* through *change processes*

Change processes in the transformation model (phase 2) shape and are shaped by how one knows a current situation (phase 1) and envisions futures (phase 3). A preliminary component of my theorizing draws on the idea that care necessitates and yields affective experience in relation (Puig de la Bellacasa, 2012). This directs my study toward what emotions are known and how or what these emotions sustain. With participants in Puerto Rico, I see that experiences and relations generating knowledge produce particular emotions that are (re)enforced and function through relations of reciprocity – of positive behavior in response to other perceived positive behaviors. Emotions shape caring practices and values happening in relation: emotions affect how care is done such that there is a reciprocity from care back to emotions. With this observation, I return to existing theory, where Donna Haraway illustrates how emotions and their knowledge production emerge not abstractly but through intersectional histories of gendered, colonial, and racist dominations (1989). Intersectionality compels consideration of how oppressions or privileges relate to "passionate construction" (Haraway, 1988, p. 585) of knowledge. Moreover, passionate construction of knowledge entails "prolongations and interdependencies" (Puig de la Bellacasa, 2012, p. 203). Bringing this theory once more into conversation with the empirics, I find that climate action in Puerto Rico demonstrates that beyond *what* is done, affect and reciprocity (re)focus whether and how climate impacts are addressed in processes of peace.

Participants in Puerto Rico show that feelings such as love, anxiety, fear, or trust constitute processes of knowledge production between care-receivers and -givers. Worry, for instance, emerges in contexts of imperial legacy, ongoing colonialism, racialized (dis)advantages, socioeconomic status, and gender roles. Working on climate justice in San Juan, Federico remarks that seeing little governmental climate action and low levels of public awareness or concern demoralizes and causes frustration. He shares how emotions generate knowledge that shapes work: "We've been changing the narrative to talk about the present, and that's important. So, we no longer talk about, you know, the wolf is coming. No, it's here" (Federico interview). In another example, Arturo reflects that Casa Pueblo's work stems from emotions that keep people together and spur their work:

"We're driven by our *convencimiento* [conviction]. We are committed to doing, and as you're moving forward and achieving goals that were like… I mean, confronting multinationals for open strip mining or the natural gas pipeline, those are not easy opponents. […] But if you see that happening and

you're not a spectator, you are involved somehow, you derive a great sense of happiness and accomplishment" (Arturo interview).

Federico and Arturo show that affect orients care practices and values, producing as well as stemming from particular situated knowledges embedded in emotional experiences. As caring is always specific and situated (Puig de la Bellacasa, 2012), people care and feel emotions toward different things and people; these affective ties are central to how and what knowledge is produced, as well as what knowledge is deemed valuable. Knowledge shaping change processes entails and emerges through affective attachments and empathetic criticality, full of conflicts emergent in caring for that which we love.

Fieldwork in Puerto Rico moreover demonstrate caring values and practices through intersectional axes: affect generating and generated by care also carry hierarchies. Herein, reciprocity emerges, highlighting how care functions through agency of both givers and receivers in feedback cycles. Iliana and Puchi[6] talk about the rhythm at La Goyco, where they organize recycling, gardening, cultural events, and neighborhood cleaning brigades. Their projects stem from the interest, expertise, or capacity of community residents; these activities and relations that make the projects possible thrive through affect and reciprocity. In dialogue, they share:

> *Iliana*: You have to have fun, you know, so we like to have fun together and that makes easier all the work that we do.
>
> *Puchi*: There's a lot of compensation in that way - of joy, of support. […] The network of help and support […] it is based on affection.
>
> *Iliana*: It's like, for me, that's the key. Because we love each other a lot. […] And the neighborhood, of course. (Iliana interview; Puchi interview)

They illustrate iterative processes of living together and practicing care for each other and their environment. Full of affective attachments, the embodied work they do creates cycles that sustain them. Thus, emotions not only shape the knowledge and experience; they feed care itself.

Another example can be found in the work processes and ties binding the collective of Mujeres de Islas. Their work on sustainability, education, and health stem from and are propelled by affective care, love demonstrated in

[6] Iliana Garcia Ayala and Lydia "Puchi" Platón Lázaro, co-founders and members, Taller Comunidad La Goyco working group.

compassion and struggle. For instance, Dulce[7] refers to *saberes y sabores*, a program coupling sharing knowledge and sharing food in processes of intentional community-making and -keeping. Dulce reflects that a sense of belonging connects and sustains them: “The truth is, if you don't feel you belong, it doesn't matter. […] We belong and we have each other. And that feeling helps us through a lot… with a lot of the possibilities that are yet to come” (Dulce interview). Here, emotional ties define and bring into being the work they chose to do and create possibilities for what more might come. This fosters individual well-being while guiding and manifesting care through affective relations between human and more-than-human environments. Caring via affect and reciprocity produces change and changes also produce care, orienting processes toward desires of particular and situated peace(s).

***Caring* for *a vision of the future***

The fieldwork in Puerto Rico demonstrates, thirdly, that people envisage a future through historicized imagination, and prefiguration makes these more tangible and known. These aspects enable sustaining of beings and their relations through meeting care needs; relations produce knowledge about a current situation (phase 1) and make change possible (phase 2) toward and along the processes of peace desired. Starting with an existing line of theorizing from conflict transformation literature (Lederach & Maiese, 2009), I begin my study with the idea that this visioning offers a line of inquiry to imagine what is desired and explore how to bring it about; visions may remain undefined or without a particular goal. Analyzing the fieldwork, I find that this visioning entails historicized imagination: empirics demonstrate that peoples’ memories of relations, experiences, and emotions shape what kind of future they imagine or desire.

Moreover, through forming and examining themes in the empirics, I find that present embodiments make imagination tangible so that a vision of the future emerges as a kind of horizon toward which people work. Returning, to existing peace research, I identify these patterns as prefiguration: a way of doing or thinking in the present along some vision of a just and peaceful future, despite such movements often being difficult to maintain, conflictive, and possibly producing harm through hierarchies (Confortini, 2017; Wibben et al. 2019). In Puerto Rico, prefiguration accompanies historicized imagination in transformations for peace: visions may be undefined, but participants know these through historic references and present embodiments. I conclude that, as with each transformation phase, the peaceful potential is not given or pre-

[7] Dolores “Dulce” del Río-Pineda, director and co-founder, Mujeres de Islas.

determined, but instead lies in how these aspects of prefiguration and historicized imagination orient and are oriented.

Research in Puerto Rico shows that a goal and process toward some vision of the future may come hand-in-hand, or goals emerge through doing. Arturo, for example, shares experiences of Casa Pueblo's decades-long work toward environmental justice and *autogestion* (self-governance), beginning in the 1980s with community protest against open-pit mining, calling "*sí a la vida, no a las minas*" (yes to life, no to mines), and continuing today with work to supply electricity via solar energy. He says,

> Our intention is not to build a solution. It is to build a path to a solution and it takes time. […] We know that we want to walk toward that mountain, and you might have to go around, but we're going there, and that mountain is freedom. (Arturo interview)

Here, the future remains undetermined but they work toward a vision, and as they walk, more clarity about possible futures and ways toward them comes into view. Casa Pueblo is described to have "remained committed to an experimental project of demonstrating (performing) alternative present and future worlds based on the defense and regeneration of livable (human and non-human) lives" (García López, Velicu, & D'Alisa, 2017, p. 103). Despite the continued neoliberal and colonial structures that dominate Puerto Rico, Casa Pueblo strives beyond critique to embody the practices they desire for some better life.

Another example comes from José, who works with La Matria to advance rights of LGBTTIQ+[8] people and to overcome gender violence and discrimination in society. He reflects:

> Along the way we discover that interest in reaching the unattainable. […] And we have done many things that were almost impossible. […] We start from what happens that hurts us, but we are not satisfied with that. We fight for our communities to rise up and claim [more]. (José interview)

Here, it is not some perfected achievement that marks prefiguration, but rather dynamic struggles amidst contradictions - moving beyond surviving, toward thriving (García López et al. 2017). Participants in Puerto Rico show that when envisioning some 'better' future, they refer to imagined scenes or feelings that they orient towards by way of ongoing activities or engagements. Prefiguration

[8] Although meaning may vary depending on context, LGBTTIQ+ here follows La Matria's description and denotes lesbian, gay, bisexual, transgender, transexual, intersexed, queer, and inclusivity of other gender identities and sexual orientations.

thus comes along with interconnected roles of imagination and historicization. In this sense, imaginaries are not completely abstract; they may be undefined and future-looking, but participants come to know imaginaries through historic references and present embodiments.

Imaginations come tangled with gendered and racialized structures, as "colonialism has sedimented, contorted and reframed existing social divisions through which care was organised and received but it has also left a legacy in how it is remembered and accounted for" (Raghuram, 2019, p. 622). For instance, a participant working with environmental justice notes:

> We depend on memory, but the collective depends on vision, on imagining things, on how we see it will look, how we imagine living here. A lot of times I see myself asking people, 'Do you, can you imagine when it's all dredged and we can come here and have a birthday party and you can throw your kayaks?' And people will say, 'Oh, I can have a raft, that could be so amazing' and people begin to imagine, as well, what could happen. (Estelí interview)[9]

Estelí demonstrates that affective relations produce imaginations rooted in memories of feelings and experiences. The community with which she works spans eight neighborhoods adjacent to a tidal channel running through San Juan. Following the decline of sugar plantations, during the 1930s, thousands of families relocated to urban areas in search of jobs and the government incentivized informal settlement in this area (Estelí interview). Once biodiverse and dense with mangrove forests, the area now houses over 26,000 residents in a densely-populated flood zone contaminated with sewage, garbage, and other pollutants (ENLACE, 2014). Many residents experience poverty, threats of displacement due to increasing gentrification, and poor health from frequent contact with the contaminated floodwaters (Estelí interview; ENLACE, 2014).

Saying, "they wish to be able to use a kayak again; they wish to have natural pools for their children or grandchildren to swim as they did," Estelí (interview) demonstrates that historicized imagination tied to a sense of place is crucial in their work, guiding conservation processes toward what community members envision. These references tie into difficulties and hopes, material and emotional cues, needs or experiences of harm, as well as fond memories or fulfilling experiences. As historicized imagination envisages possible futures, prefiguration makes these more tangible and known.

[9] Estelí Capote Maldonado, urbanism and infrastructure program coordinator, Corporación del Proyecto ENLACE del Caño Martin Peña.

Together, these aspects demonstrate and enable relations through orienting to meet caring needs and sustain relationships for and around care. These relations, in turn, and together with experience of the relations, produce knowledge about a current situation, and make change possible toward and along the particular processes of peace desired in a particular context.

## Conclusion

This paper explores how ways of knowing climate change influence a society's potential for different futures, bridging questions of knowledge production with processes of transformation. I argue that in producing and stemming from situated knowledge, a feminist EoC orients knowledge and transformation along desirable pluralities of feminist peace. The model of climate transformation developed through the study in Puerto Rico shows that care-based knowledge on climate change derives from and also produces how people experience dependencies and how they might desire these dependencies to be otherwise. Knowing climate change through care poses it as a matter of relations and experience, such that emotions and reciprocity back-and-forth between beings that care for one another generate change processes; these processes shape and are shaped by how people remember relations and experiences of change and how they act based on these toward what is desired. These findings help bridge discrepancies between how responses take shape and to what end, and what type of knowledge holds value.

Care, transformation, and peace are not neutral or innocent concepts or processes; the theoretical model of climate transformation opens avenues for much further study on how knowledge orients these processes and phenomena in particular directions. For instance, climate transformation opens for critical consideration on the normative commitments of feminist peace, different experiences of climate change, and dependencies. As the wide field of care scholarship demonstrates, definitions of care are multiple and, at times, contradictory. Is a strict definition necessary in order to see the orientation of transformation? How might some care work involve the removal of affect, as suggested by Puig de la Bellacasa (2017), and what might this imply for change processes? Deeper study on the limitations or conflicts of care may further expand understanding on the epistemic processes of EoC and its role in transformation.

Amidst research and policy bringing more local knowledge into climate adaptation, this paper offers a normative approach to understanding how ways of knowing relate to broad climate transformation. Though knowledge on climate change often is produced at a highly abstract level with long-term

timelines, individuals experience climate change in the present. The care-based approach to knowledge for transformation in this paper connects both levels of knowing through a focus on social and political norms and power hierarchies. This may, for example, help analyze would-be adaptation interventions or specific systems of provisioning with a critical eye toward how and why knowledge orients in particular ways, and the implications of this.

Moreover, while representation is essential, more voices at the table does not necessarily lead to a just change in direction. Toward this end, the matter of *how* different voices come together and *toward* what end becomes critical. The theoretical contribution here offers a concrete lens for scholarly and policy-oriented research and practice to hold knowledge production together with questions of whether and how an intervention addresses historic and ongoing injustices alongside critical engagement about what kind of future the intervention would support and for whom. Ultimately, since the framing and understanding of a problem direct how people live with or respond to it, processes of transformation require imaginations beyond current pathways to action (Nightingale et al. 2019). Thus, deeper consideration of climate change knowledge as a material and discursive exercise of power holds great potential for orienting climate-action efforts toward transformative processes of peace.

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# Paper 3

# Imagining peace and enacting utopias in Puerto Rico

Christie Nicoson

Unpublished manuscript

**Abstract**

Local groups in Puerto Rico are often described as being at the forefront of climate transformation. This article explores active struggles towards alternate futures, using a critical concept of utopia in a phenomenological study alongside women at a community organisation in Culebra, Puerto Rico. I use feminist ethics of care as a theory of knowledge to study how cognitive, embodied, and affective visions influence struggles toward utopian futures. As the empirical study reveals, women experientially understand climate change through food, livelihoods, and identity in Culebra. They express and imagine futures through orienting dependencies toward reciprocal care; foster place-based belonging through collective relations; and envision alternatives through longing that intertwines past, current, and yet-to-come temporalities. This study contributes to knowledge production about transformation and peace, and underlines the importance of imagination as part of the politics of knowledge.

**Keywords**

care, climate change, knowledge production, peace, phenomenology, utopia, Puerto Rico

## Introduction

In Puerto Rico, visions of the future form amidst ongoing climate change and fiscal crises connected to the archipelago's status as an unincorporated territory of the United States (US). Puerto Rican scholar Yarimar Bonilla speaks about a lack of imagination for alternatives, saying this has 'locked us [Puerto Ricans] into a set of options none of which fully represent what Puerto Ricans really want, but which at the same time limits our ability to think beyond them.'[1] Imagination entails material and perceptual interplay.[2] Rather than something superficial, it defines and enables possibilities for worlds in the present and those yet-to-come, framing potential ways out of crisis or for instance paths to peace, gender equality, or flourishing environments.

The overarching aim of this article is to study how imaginations are shaped by ways of knowing, exploring visions of peace as utopianism. I analyse peace in a changing climate, drawing on theory that knowledge of climate change shapes more or less peaceful ways of living with hurricanes, rising temperatures, and other changes.[3] I explore how women engaged in peace- and climate-work experience knowledge production and make meaning of utopias through a case study with the community organisation *Mujeres de Islas*[4] (MDI) in Culebra, Puerto Rico that works for a culture of peace and sustainability.

I conduct a phenomenology of how women, including myself, understand utopias. To this end, I apply both a critical concept of utopia and, as a theory of knowledge, feminist ethics of care (EoC). Utopias serve as a visionary critique and active struggle towards alternate futures, rather than some blueprint or impossible fantasy.[5] More than describing specific utopias, I seek to understand what different imaginaries do – how people come to know visions of utopia and how these are (or not) enacted. I use feminist EoC[6] to study imagination as cognitive, embodied, and affective knowing in

[1] Yarimar Bonilla and Naomi Klein, 'The Trauma Doctrine: A Conversation between Yarimar Bonilla and Naomi Klein', in *Aftershocks of Disaster: Puerto Rico before and after the Storm*, eds. Yarimar Bonilla and Marisol LeBrón (Chicago, 2019): 26.

[2] Kathryn Yusoff and Jennifer Gabrys, 'Climate Change and the Imagination', *WIREs Climate Change* 2, no. 4 (2011): 517.

[3] Christie Nicoson, 'Climate Transformation Through Feminist Ethics of Care (paper presented at the Pan-European Conference on International Relations, Virtual, 14 September 2021).

[4] Women of the Islands.

[5] José Esteban Muñoz, *Cruising Utopia: The Then and There of Queer Futurity* (New York, 2009); and Ruth Levitas, *Utopia as Method: The Imaginary Reconstruction of Society* (Hampshire, 2013).

[6] María Puig de la Bellacasa, *Matters of Care: Speculative Ethics in More Than Human Worlds* (Minneapolis, 2017).

transformative processes of peace. In this article, I understand peace as a process rather than some final state, existing on a continuum with epistemic, structural, and physical violence.[7] Taking a feminist approach herein, the research follows normative commitments to study visions of different peace(s) and contribute to paradigm shifts so as to avert violence, including those related to climate change.[8]

Although envisioning futures is a crucial aspect of peace research,[9] few studies on this exist.[10] Existing literature often neglects political systems that (re)produce climate change and forecasts using evaluations of the past.[11] Research also demonstrates experiences of climate change and peace are gendered, yet how everyday experiences shape knowledge around these matters is less well understood.[12] Studies show that engaging different ways of knowing in climate science and action can challenge existing patterns (e.g., of extractivism or patriarchy) so as to mitigate climate change and foster peace that goes beyond the absence of physical harm.[13]

This article builds on these findings and responds to calls for greater inclusivity in peace processes and in climate knowledge production and action[14] through

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[7] Laura McLeod and Maria O'Reilly, 'Critical Peace and Conflict Studies: Feminist Interventions', *Peacebuilding* 7, no. 2 (2019); and Jacqui True, 'Continuums of Violence and Peace: A Feminist Perspective', *Ethics & International Affairs* 34, no. 1 (2020).

[8] See note 3.

[9] Tarja Väyrynen et al., introduction to *Routledge Handbook of Feminist Peace Research*, eds. Tarja Väyrynen et al. (London, 2021).

[10] Annick T. R. Wibben et al., 'Collective Discussion: Piecing-up Feminist Peace Research', *International Political Sociology* 13, no. 1 (2019).

[11] Berit Bliesemann de Guevara, Paulina Budny, and Roland Kostić, 'The Global-Capitalist Elephant in the Room', *Current Opinion in Environmental Sustainability* 62 (2023); and Tobias Ide et al., 'The Future of Environmental Peace and Conflict Research', *Environmental Politics* 32, no. 6 (2023).

[12] Nicole Detraz and Sonalini Sapra, 'Climate Change, Gender, and Peace: Thinking Differently in a Brave New World?', in *Handbook Feminist Peace* (see note 9).

[13] Leah Temper et al., 'A Perspective on Radical Transformations to Sustainability: Resistances, Movements and Alternatives', *Sustainability Science* 13, no. 3 (2018); Kate Paarlberg-Kvam, 'Open-Pit Peace: The Power of Extractive Industries in Post-Conflict Transitions', *Peacebuilding* 9, no. 3 (2021); and Ide et al., 'Future Environmental Peace'.

[14] E.g., Beth A. Bee, '"Si No Comemos Tortilla, No Vivimos:" Women, Climate Change, and Food Security in Central Mexico', *Agriculture and Human Values* 31, no. 4 (2014); Devon E. A. Curtis, Florence Ebila, and Maria Martin de Almagro, 'Memoirs of Women-in-Conflict: Ugandan Ex-Combatants and the Production of Knowledge on Security and Peacebuilding', *Security Dialogue* 53, no. 5 (2022); Abrania Marrero, Christie Nicoson, and Josiemer Mattei, 'Food Laborers as Stewards of Island Biocultural Diversity: Reclaiming Local Knowledge, Food Sovereignty, and Decolonization', Frontiers in Sustainable Food Systems 7(2023); and Nancy Tuana, 'Gendering Climate Knowledge for Justice: Catalyzing a New Research

an empirical focus on women. I advance theorizing on the political potential of imagination as well as to power relations in knowledge production[15] through studying care-based knowledge. Using phenomenology and the utopia concept, I also contribute to research on peace in everyday experiences through not only different conceptualizations of both violence and peace[16] but also through epistemological and methodological attention to emotions and different ways of knowing.[17] Empirically, I add insights of how women in Puerto Rico experience peace and envision utopias to deepen understandings of transformative processes. In doing so, I also contribute to EoC literature by studying different types of care in a dialectic with knowledge, policy-making, and research.[18]

This article and its findings demonstrate that women in Culebra know climate change through care, centring food, livelihoods, and identities. Analysing these empirical themes, I find visions of peace consisting of (1) dependencies orienting towards reciprocal care; (2) place-based belonging that fosters

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Agenda', in *Research, Action and Policy: Addressing the Gendered Impacts of Climate Change*, eds. Margaret Alston and Kerri Whittenbury (New York, 2013).

[15] Kate Paarlberg-Kvam, 'What's to Come Is More Complicated: Feminist Visions of Peace in Colombia', *International Feminist Journal of Politics* 21, no. 2 (2019); and Marit Hammond, 'Imagination and Critique in Environmental Politics', *Environmental Politics* 30, no. 1-2 (2021).

[16] E.g., Tiina Vaittinen et al., 'Care as Everyday Peacebuilding', *Peacebuilding* 7, no. 2 (2019); Roger Mac Ginty, *Everyday Peace: How So-Called Ordinary People Can Disrupt Violent Conflict* (New York, 2021); and Pounamu Jade William Emery Aikman, 'Indigenous Rights: Colonial Chimera? The Illusion of Positive Peace in a Settler Colonial Context', in *The Palgrave Handbook of Positive Peace*, eds. Katerina Standish et al. (Singapore, 2022).

[17] E.g., Stefanie Kappler and Nicolas Lemay-Hébert, 'From Power-Blind Binaries to the Intersectionality of Peace: Connecting Feminism and Critical Peace and Conflict Studies', *Peacebuilding* 7, no. 2 (2019); Priscyll Anctil Avoine, 'Insurgent Peace Research: Affects, Friendship and Feminism as Methods', *Conflict, Security & Development* 22, no. 5 (2022); Mollie Pepper, 'The Possibilities of Studying Affect to Illuminate Women's Contributions to Peace', *Conflict, Security & Development* 22, no. 5 (2022); Johanna Söderström and Elisabeth Olivius, 'Pluralism, Temporality and Affect: Methodological Challenges of Making Peace Researchable', *Conflict, Security & Development* 22, no. 5 (2022); and Annika Björkdahl, 'Spatializing Peace and Peacebuilding: Where Is Knowledge About Peace and Peacebuilding Produced?', in *Making Geographies of Peace and Conflict*, chap. 4, eds. Colin Flint and Kara E. Dempsey (London, 2023).

[18] E.g., Jenneth Parker, 'Towards a Dialectics of Knowledge and Care in the Global System', in *Interdisciplinarity and Climate Change: Transforming Knowledge and Practice for Our Global Future*, chap. 12, eds. Roy Bhaskar et al. (London, 2010); Fiona Robinson, 'Care Ethics and International Relations: Challenging Rationalism in Global Ethics', *International Journal of Care and Caring* 2, no. 3 (2018); Ashraful Alam and Donna Houston, 'Rethinking Care as Alternate Infrastructure', *Cities* 100 (2020); and Jamie Haverkamp, 'Where's the Love? Recentering Indigenous and Feminist Ethics of Care for Engaged Climate Research', *Gateways: International Journal of Community Research and Engagement* 14, no. 2 (2021).

collective relations; and (3) nonlinear ideas about the future stemming from longing. These findings identify and assess how climate action towards utopian futures can be known, imagined, and built based on local-level experiences, desires, and needs while maintaining connection to global processes that drive climate change. The article proceeds with presenting the theoretical framework for studying utopias through care-based knowledge and case material and methods. It then analyses the empirical findings and concludes with a discussion on new directions for research.

## Theory

My framework builds on the overarching theoretical assumption that an EoC episteme enables processes of peace through critiquing a current situation and enacting change processes towards visions of worlds otherwise.[19] I operationalize 'visions of peace' using a concept of utopia and then analyse imagination through cognitive, embodied, and affective care-based knowing. I thus argue that knowing through an EoC reveals how utopianism in Culebra tackles violences of climate change in processes of fostering peaceful presents and futures.

Operationally, I study peace by using the concept of utopia, understood as an 'expression of the desire for a better way of being or of living.'[20] This builds on the Marxist philosophy of Ernst Bloch that poses 'concrete' utopia as rejecting fantastical, impossible 'no-places' as well as pragmatic, designed goals. Rather, utopia entails a potential or actual collective in societal processes, recognizable through engagement with what it might become.[21] In that sense, utopia is provisional, reflexive, and dialogic, continually open to critique and failure in its partiality.[22] This utopia both rejects or critiques the present – as marginalizing, oppressive, or violent – and imagines and actively struggles towards a yet-unknown but desired future.[23] For instance, my previous research in Adjuntas, Puerto Rico demonstrates that utopianism takes the form of community self-governance; the community rejected a planned open-pit mine that would serve outside investors, and use new solar energy

[19] Nicoson, 'Climate transformation'.
[20] Levitas, *Utopia as Method,* xii.
[21] See note 5.
[22] Levitas, *Utopia as Method.*
[23] Muñoz, *Cruising Utopia.*

systems in a struggle toward a desired future of well-being for people and the environment.[24]

I situate this concept of utopia amidst EoC as a theory of knowledge. Ethics of care involves values and practices of care, and normatively calls for sustaining life by reducing harm and restoring relationships.[25] As a theory of knowledge, it holds knowing and caring as co-constituted through the values and practices maintaining our world(s).[26] From these foundations, I approach care-based knowledge in three manners. First, EoC focuses on care 'needs', conceived as intersubjective and cultural matters of social concern, instead of individual and disputable.[27] This entails compentence for concern or conceiving of a need through for instance a particular awareness or skill (cognitive). Second, these concerns or skills grow from constant practices of meeting needs by contextually-situated bodies that hold and create meaning.[28] This presents knowledge as stemming from experiences of social and material relations between beings (embodied). Third, the dialectic relation between caring and knowing emerges from passionate and experiential (affective) understandings of power structures.[29] Here, emotions and intimacy craft desire, relations, and labour. These categories overlap, as for instance embodied experiences entail affect, as well.[30] Thus, I study care-based knowledge through entanglements of cognitive, embodied, and affective ways of knowing.

**Case materials and methods**

This article presents results from seven months of fieldwork conducted in Puerto Rico during May-July 2022 and February-June 2023, including an in-depth study with MDI April-May 2023. I study continua of peace and violence with a focus on experiences of women in Puerto Rico. I do not set out to compare gendered differences, nor to explore essentialisations of care as

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[24] Christie Nicoson, 'A feminist ethic of care orienting utopia in Adjuntas, Puerto Rico', in *The Politics of Hope: Agency, Governance, and Critique in the Anthropocene*, chap. 6, eds. Valerie Waldow, Pol Bargués and David Chandler (Edinburgh, forthcoming).

[25] Fiona Robinson, *The Ethics of Care: A Feminist Approach to Human Security* (Philadelphia, 2011).

[26] Parker, 'Dialectics of knowledge'; and Puig de la Bellacasa, *Matters of Care.*

[27] Joan Tronto, *Moral Boundaries: A Political Argument for an Ethic of Care* (London, 1993).

[28] Catia Confortini and Abigail E. Ruane, 'Sara Ruddick's Maternal Thinking as Weaving Epistemology for Justpeace', *Journal of International Political Theory* 10, no. 1 (2014); and Tarja Väyrynen, 'Mundane Peace and the Politics of Vulnerability: A Nonsolid Feminist Research Agenda', *Peacebuilding* 7, no. 2 (2019).

[29] Donna Haraway, 'Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective', *Feminist Studies* 14, no. 3 (1988); and Puig de la Bellacasa, *Matters of Care*.

[30] Sara Ahmed, *The Cultural Politics of Emotion* (Edinburgh, 2014).

‘women’s work’. Instead, my research centres on material and social labour of a group of women including transgender and nonbinary people identifying with a feminine gender who come from different classes, backgrounds, and ages. This empirical focus provides a starting point from which to explore situated, historical experiences of climate change and visions of peace. MDI provides a unique case for this study; the group has organized around gender since their inception, as indicated by the name *Mujeres*. Described further in this section, the case study follows feminist peace research in recognizing collective knowledge, exploring mechanisms of power and oppression intersectionally, and reflecting on care throughout the research process.[31]

***Case presentation***

Puerto Rico experiences climate change as more frequent and intense storms and hurricanes, rising sea levels, increasing surface and water temperatures, changes in precipitation, and sea water acidification.[32] Pre-existing socio-political inequalities and injustices aggravate situations of vulnerability and are deepened by climate phenomena. For instance, US embargos on trade combined with policies shifting Puerto Rico’s food system from an agrarian base towards industrialization mean that already-strained food security becomes dire after storms.[33]

These conditions stem from centuries of colonialism that began with the Spanish arrival in 1492.[34] In Culebra, 28-square kilometres of land east of Puerto Rico’s big island, Spain promised agricultural land for those willing to permanently reside there.[35] After Spain ceded Puerto Rico to the US in 1898, President Roosevelt awarded Culebra to the Navy. By WWII, military occupations covered nearly three-quarters of the island. The Navy sent children home from school and moved families to use their homes; they closed beaches and expelled farmers from their land to hold training exercises and practice

[31] Wibben et al., ‘Collective Discussion’; and Annika Björkdahl and Johanna Mannergren Selimovic, 'Methodologies for Feminist Peace Research', in *Handbook Feminist Peace* (see note 9).

[32] Jennifer Runkle et al., 'Puerto Rico and the U.S. Virgin Islands State Climate Summary 2022' (NOAA/NESDIS, 2022).

[33] García-López, ‘Environmental Injustice’; and Adriana Garriga-López, 'Puerto Rico: The Future in Question', *Shima: The International Journal of Research into Island Cultures* 13, no. 2 (2019).

[34] Ramón Feliciano Encarnación, *La victoria de Monchín: Memorias de la expulsión de la Marina de Culebra* (San Juan, 2009); and Gibrán Cruz-Martínez, 'Puerto Rico, Colonialism, and Neocolonialism', in *The Palgrave Encyclopedia of Imperialism and Anti-Imperialism*, eds. I. Ness and Z. Cope (Cham, 2019).

[35] Feliciano Encarnación, *Monchín.*

aerial bombings.[36] As future mayor of Culebra Ramón 'Monchín' Feliciano Encarnación writes, 'We became foreigners […] We were prisoners in our own land.'[37] Many left Culebra in poverty to seek opportunities in the US or elsewhere.[38] Between 1900 and 1950, the civilian population declined from 4,000 to 580.[39]

Yet, these colonial aspirations contend with resistance and alternative visions from Puerto Ricans. For instance, the people of Culebra led legal campaigns and civil disobedience, resulting in a cessation of military operations on the island in 1975.[40] MDI is one group envisioning and enacting different futures for Puerto Rico through collective organising, remembrance, and resistance. They work in Culebra, today home to nearly 1,800 people.[41] MDI began as a small group of women meeting weekly to share their dreams for Culebra and discuss challenges across their different vocations – art, early childhood development, hospice, care for pregnant women and mothers. The group grew and continued working through the different interests and skills of members, and incorporated as a community organisation in 2011. Today, members range from high schoolers to retirees, with volunteers and paid staff of various sexual and gender identities operating out of a restored old school, '*Antigua Escuela*,' in the busy port-side part of the island. MDI seeks to impact sustainable development via a culture of peace by using art, education, and food to affect cultural, environmental, and socioeconomic well-being.

***Research methods***

I conduct this case study using phenomenology, the study of phenomena as subjectively experienced and perceived. This allows me to study the aforementioned three ways of knowing based on experience as 'the "mid-point" between mind and body, […] an active process relating to our ongoing projects and practices, and it concerns the whole sensing body.'[42] I understand

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[36] Diego De Texera, *Culebra El Comienzo* (Archivo Digital de Culebra, 1971); and Sherrie Baver, 'Environmental Struggles in Paradise: Puerto Rican Cases, Caribbean Lessons', *Caribbean Studies* 40, no. 1 (2012).
[37] *Monchín,* 40. My translation.
[38] Sonia Fritz, *Memorias De Culebra* (Culebra, 2012).
[39] Nathalie Schils, 'Puerto Ricans Expel United States Navy from Culebra Island, 1970-1974' (Global Nonviolent Action Database, Swarthmore College, 2011).
[40] Feliciano Encarnación, *Monchín*.
[41] U.S. Census Bureau, 'Total Population' in *Decennial Census, Dec Demographic and Housing Characteristics*, (Culebra, 2020).
[42] Kirsten Simonsen, 'Encountering O/other Bodies: Practice, Emotion and Ethics', in *Taking-Place: Non-Representational Theories and Geography*, eds. Ben Anderson and Paul Harrison (London, 2011): 223.

bodies to have experiences as social processes, differentially embodied and situated through particular, intersectional social and political histories[43] so as to connect knowledge to bodies with meaning (e.g., not only storing meaning).[44] Herein, I take an interpretivist feminist approach to phenomenology, which troubles the idea that researchers can objectively capture some true 'essence' of experiences; interpretations rather stem from attribution and visibility of the researcher's role.[45] Thus, my experiences are included alongside those of participants, and findings are reached through my (limited) perspective.[46] This article not only includes my researcher experiences as data, but also presents empirics and findings as filtered through my own perceptions.

I use methods that generate and collect empirics through collaborative knowledge production. Fieldwork data include detailed fieldnotes, interview transcripts, and other materials (such as illustrations, literature or original photographs of events, everyday activities, objects, and places). I use various tools to capture participants' (including myself) embodied, cognitive, and affective experiences: (a) participant observation: taking part in ongoing activities at MDI like weekly member meetings, health trainings, or tending to gardens; (b) joint participation: co-designing elements with MDI, such as creating educational material (Image 2) or organizing logistics for meetings with visitors; and (c) semi-structured interviews conducted with seven women-identifying persons 20-80 years of age, affiliated with MDI. Some are native Culebrense, others settled more recently. I guide interviews with open questions about climate change in Culebra, participants' roles in the community, and their visions of utopia. These discussions capture individual experiences and also speak to wider trends in Culebra. I conduct research in Spanish and English; translations in this article are my own. With consideration for those who prefer to remain unnamed, I attribute input with numbers. All images included are my original photographs.

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[43] Eden Kinkaid, 'Re-Encountering Lefebvre: Toward a Critical Phenomenology of Social Space', *Environment and Planning D: Society and Space* 38, no. 1 (2020); and Mariana Ortega, *In-Between: Latina Feminist Phenomenology, Multiplicity, and the Self* (Albany, 2016).

[44] Julia Bentz et al., 'Creative, Embodied Practices, and the Potentialities for Sustainability Transformations', *Sustainability Science* 17, no. 2 (2022).

[45] Silvia Stoller, 'What Is Feminist Phenomenology? Looking Backward and into the Future', in *Feminist Phenomenology Futures*, chap. 18, eds. Helen A. Fielding and Dorothea E. Olkowski (Bloomington, 2017); and Donna Haraway, 'Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective', *Feminist Studies* 14, no. 3 (1988).

[46] See note 50 and Ortega, *In-Between.*

The empirical analysis follows three steps. First, I organise texts, transcripts, and visual data and qualitatively analyse to identify cognitive, affective, and embodied knowing of utopian critique and struggle (see Results). From this, I analyse beyond the framework to find new patterns that cross-cut the themes of utopianism identified through the care-based ways of knowing climate change. Findings (see Discussion), show how actors form, understand, and act upon critique and how they think about, interpret, and enact struggle.

Reflexivity on emotions, embodiment, and positionality plays a key role in generating and processing data (see below).[47] For instance, my physical health and financial independence enable relatively easy travel to, from, and around the islands. I moved in and out of Culebra somewhat regularly to take breaks, as struggles with mental health made it difficult to sustain long-stretches of time and emotional labour involved in the field research. My political views give a favourable bias towards the participants, which likely allows me access to some spaces and conversations, while obstructing from others. As an outsider and researcher, I also encountered scepticism. Participants told me directly or I heard through other conversations that empty promises' from external funders, scholars, or would-be partners makes them somewhat hesitate to imagine alternatives. Data thus reflect the extent to which participants conceive or create utopias, as well as my ability to understand expressions of these.

Finally, this research encounters complex ethical dilemmas.[48] I research in Puerto Rico using airplane, car, and ferry travel – through colonially produced infrastructure that rely on extractivism and contribute to climate change. I minimize these travels as much as possible and seek accommodations that support communities rather than exploit (e.g., locally-owned rentals). However, my movements may reinforce extractive tourism and climate-

[47] Adrienne Johnson et al., 'Extraction, Entanglements, and (Im)Materialities: Reflections on the Methods and Methodologies of Natural Resource Industries Fieldwork', *Environment and Planning E: Nature and Space* 4, no. 2 (2020); Desirée Poets, 'Failing in the Reflexive and Collaborative Turns: Empire, Colonialism, Gender and the Impossibilities of North-South Collaborations', in *Fieldwork as Failure: Living and Knowing in the Field of International Relations*, chap. 6, eds. Katarina Kušić and Jakub Záhora (E-International Relations, 2020); and Björkdahl and Selimovic, 'Methodologies for Feminist Peace Research'.

[48] Formally, the Swedish Ethics Review Authority approves data collection and handling procedures. Although I took additional training and consideration in line with US standards for social research, approval is not required.

contributing dynamics that I critique, constituting an ethical limitation of this study.[49]

## Results

Through analysis, I identify empirical themes that show how participants (including myself) know, think about, relate to, or experience climate change in the present and in relation to utopian imaginaries. I present each theme below: food - including the labour of accessing and preparing food, desire and health, as well as logistics of production and consumption; livelihoods - means through which people make a living and spend their time; and identities – feelings, expressions, and interpretations people make about themselves, relationships and their role in the community. The results explain utopias through knowing co-constituted with care values and practices and demonstrate how affective, embodied, and cognitive knowledges (re)produce each other.

### *Food*

Participants' knowledge about climate change becomes evident as they describe how changes impact multiple layers of their food system - from transport to gardens, existing situations to imagined scenarios. Their knowledge is cognitive, identifying ways to access food or explaining nutrition; embodied, with concerns about health and labour conditions; and affective, in terms of accessing, producing, preparing, or desiring food. This reveals utopian critique of an import-reliant food system and struggle for collectively-produced local food.

People in Culebra navigate economic, legal, and material infrastructures to meet basic needs. Drawing on embodied and cognitive knowledge, participants describe that the Jones Act (1917) limits Puerto Rico's maritime cargo to transport via US ships, which cost more than alternatives.[50] They cite industry trends that approximately 85 percent of food consumed in Puerto Rico is imported; these imports feature lower availability and nutritional quality of food, and correspond with high rates of chronic disease and undernutrition.[51]

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[49] Johnson et al., 'Extraction, Entanglements, (Im)Materialities'; and Ramón Grosfoguel, 'The Structure of Knowledge in Westernized Universities: Epistemic Racism/Sexism and the Four Genocides/ Epistemicides of the Long 16th Century', *Human Architecture: Journal of the Sociology of Self-Knowledge* 11, no. 1 (2013).

[50] See also Jeffry Valentin-Mari and José I Alameda-Lozada, 'Economic Impact of Jones Act on Puerto Rico's Economy' (Working paper presented to US General Accountability Office, 2012).

[51] Julio César Hernández et al., 'La aportación de la producción local y las importaciones de alimentos en la demanda calórica de Puerto Rico', *Journal of Agriculture of the University of*

Participants explain these imports then travel to Culebra, demanding additional time, energy, and money. Small shops around Culebra sell relatively few options at higher prices. The ferry terminal on the big island paints a vivid picture: Culebra residents wait with carts and oversized bags stuffed with dried goods, fresh fruit, water, and other items such as electric fans. I follow suit; trips to large supermarkets on the big island shape my plans and transportation choices (a car is necessary).

Women at MDI remind me that even bring food or paying higher prices cannot be taken-for-granted. One participant, for instance, tells me about how climate change aggravates hurricanes, which damage infrastructure and transportation, leaving many without access to resources (C1). She knows this cognitively, through familiarity with climate data, and through embodied experiences of the storms and resource access. She also knows this affectively, saying these dynamics deepen their desire for self-sustainability in Culebra (C1). Another describes the increasingly extreme heat, saying, ‘climate conditions in the future are going to be disastrous to live with and live in’ (C3). She talks about MDI’s work to produce food in Culebra: ‘it would help in the sense that we are separated from the big island’ (C3). She shares this cognitive, embodied, and affective knowing, adding that she envisions dairy cows, fruits, and vegetables feeding the community and providing supplies when imports fail.

Participants’ affective desires and embodied needs for food self-sufficiency combine with cognitive, practical knowledge. Fresh water pumps through submarine pipes and energy generated by fossil fuel plants on the big island travels via underwater cables. I appreciate the precarity of this dependence first hand, experiencing times at MDI when the water stops and I carry buckets of collected rainwater up to the apartment where I stay. Participants tell me that weather events, energy interruptions and other problems such as broken tanks leave residents without fresh water for days or weeks at a time (C2; C7). Knowing these possibilities, participants care for food differently. MDI’s community kitchen and gardens include solar panels and water cisterns, making it possible to sustain a small-scale food system without relying on fossil fuels or imported water. Food grows all around Antigua Escuela (e.g., Image 1), including in a recently-constructed *umbráculo.*[52] I help an

*Puerto Rico* 101, no. 1 (2017); Vivian Carro-Figueroa, 'Agricultural Decline and Food Import Dependency in Puerto Rico: A Historical Perspective on the Outcomes of Postwar Farm and Food Policies', *Caribbean Studies* 30, no. 2 (2002); and Abrania Marrero and Josiemer Mattei, 'Reclaiming Traditional, Plant-Based, Climate-Resilient Food Systems in Small Islands', *The Lancet Planetary Health* 6, no. 2 (2022).

[52] Shade house.

agroecologist create educational materials about the *umbráculo* (Image 2). We write about its function and how it allows cultivating food with protection from the sun and pests, as well as about affective knowledge from other members - about how they envision it contributing to the island's well-being. They hope for a space where the community learns more about agriculture while also allowing Culebrenses to grow and harvest their own food (C3; C6).

**Image 1:MDI gardens and chicken coop**

**Image 2: Pages from umbráculo material**

## *Livelihoods*

Extractive relations have long dictated livelihoods in Culebra. Agricultural workers produce for export, militaries use land to train, and external developers

appropriate natural ecosystems, local properties, and culture for tourism. Participants tell me that climate change affects their livelihoods through this extractivism. They see physical differences, they sense changes in their ability to work, and they feel emotional impacts of the changes. Tied to this critique, they construct utopian alternatives of reciprocally constructed economies that uphold the collective, as described in this section.

Although many people with whom I speak enjoy meeting visitors and rely on tourist business, they critique dependency on the visitor economy. Through cognitive knowing, participants describe laws governing Puerto Rico, citing policies that enable outsiders, especially from the US, to buy land and operate businesses tax-free. These laws privatize land and incentivize developments, threatening the environment and disrupting political and economic power of Puerto Ricans.[53] The Puerto Rican government fast-tracks construction projects in Culebra, even in designated critical ecosystem zones, for real estate development, valuation, and speculation that promotes tourism over local well-being.[54] One participant describes,

> The main attraction [for tourists] is nature and if the natural resources that we have are neglected, well, it's going to stop being attractive. And Culebra is an island that is moved by tourism. Most of the employment here is for tourism (C3).

She speaks also about affective knowing, describing her desire to see an island economy that cares for its people and ecosystem, where tourism benefits visitors as well as residents. One day, I join at her second job, cleaning rental properties. Though she prefers working at MDI, the service job provides her with valuable income and meaningful connection to her island, in spaces otherwise accessible only to paying guests. We work at a hill-top villa, a place that gives her 'a lot of peace' (C3). It is quiet, without street noise; the yard is free from garbage; the view is expansive, we can see most of the island (Image 3). She shares embodied knowing entangled with affective and cognitive experiences, telling me the high cost of land makes her dream of farming in Culebra almost impossible (C3).

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[53] Naomi Klein, *The Battle for Paradise: Puerto Rico Takes on the Disaster Capitalists* (Chicago, 2018).

[54] García-López, 'Environmental Injustice'; and Bianca Graulau, *This Puerto Rican Island Is Resisting Overdevelopment* (2022).

**Image 3: View atop a hill overlooking Culebra**

Her situation is not unique. As another participant explains, tourism offers higher wages than other employment and proliferation of vacation rentals makes it difficult to find affordable housing (C1). These conditions hinder opportunities for people to stay in Culebra or work outside the visitor economy. Although for many, a utopian vision might include moving off-island, others would stay if they could live well. Several people with whom I speak returned to Culebra after moving away for higher education or work. Recalling displacement by the Navy, Culebrenses express love of place, saying 'I'm here and I'm staying here,' and 'I'm not going anywhere except the cemetery.'[55] Speaking of recent trends in construction and development, one resident remarks, 'Culebra is more than economic wealth for us. It's our life, […] if they [outside developers] think they are going to increase their wealth by displacing us and kicking us out so they can stay, it's not going to happen.'[56]

Several women describe their embodied knowledge by pointing to the schools declining enrolment and graduation rates. One stresses that without young people, 'I do not see a future [for Culebra]' (C4). She draws on and creates embodied and cognitive knowing in creating possibilities for those who want to stay on the island. MDI hosts workshops that provide spaces for learning new skills in woodworking, agriculture, sewing, and cooking (e.g., Image 4), and is helping revitalize the fishing industry. They support fishing practices that steward healthy aquatic ecosystems by, for instance, working with wildlife and fishing experts to identify areas for establishing new beds for oysters, which provide natural water filtration (C7). The art program allows artists to train, work, or sell their wares. One participant explains that in addition to offering educational or occupational opportunities, they also visiblise

[55] Fritz, *Memorias,* 39:17. Translation by filmmaker.
[56] Graulau, *Resisting Overdevelopment,* 13:07. Translation by filmmaker.

alternatives (C5). For instance, they create public art projects like mosaics and murals (Image 5); seeing an art teacher or an artisan working, she says, sows seeds for people to think, ‘if they can do it, maybe I can, too’ (C5). MDI not only cares for the island, members tell me, but also creates space for dreaming.

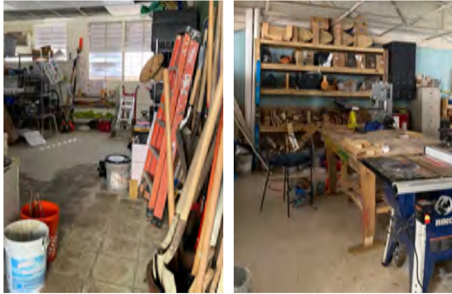

**Image 4: MDI workshop spaces**

**Image 5: Art created by MDI members (left: paint on wall, right: mosaic on stairs)**

### *Identities*

Discussing utopias, participants describe how they would like to live – with whom, home designs, or how to spend time. The fieldwork demonstrates utopias that weave connections to community and place through and reproducing identities past, current, and potential.

Participants describe a sense of self in relation to a collective, demonstrating affective and embodied knowing shaped by those around them and the work that binds them. For instance, one participant describes working at MDI,

saying ‘you meet with other women companions, also men, and from that moment you realize that the world is possible, truly. And from there we continue’ (C5). She shares that collective support allows each to manifest their own dream and do their part, contributing a grain of sand to a different, better future. Another member echoes this, saying that without a sense of belonging, the work ‘doesn't matter […] we belong and we have each other. And that feeling helps us through many, many [difficulties] – with a lot of the possibilities that are yet to come’ (C1). Despite growing tired and frustrated with seemingly never-ending struggles, members explain that connection with their companions sustains them; the collective helps define their individual identity through a sense of purpose.

Other participants connect their sense of identity to both people and place, to the present environment and memories of it, and climate change affects how they are able to interact with their environment and community. For instance, as part of the art program, MDI members created mosaic murals in prominent places around town that depict the island’s natural environment (Image 5, right). Aside from showcasing art as meaningful work, these projects build emotional connections for artists as well as community members – evident as embodied and affective knowledge. One woman explains, through adding beauty to everyday spaces and reflecting back to community members the natural beauty that surrounds them, ‘we did that here and then we saw the contagious effect’ (C5). She describes how these activities foster pride in Culebra and even change how people see their home and community. The work at MDI centres Culebrense identity and this sense of belonging, which connects all aspects of their work to address different issues, including caring for the environment, adapting to climate change, and supporting economic development.

Another Culebrense tenderly shares that she sees herself as constantly in formation:

> I think that my identity is a part of all the spaces in which I have been and… this… in coexistence with other people [… and] with my family, what I learned from my environment, from my friendships, from the people I meet every day (C3).

Her present and imagined future identity weave affective ties to people and place. She describes embodied knowledge - saying as a child, she visited ‘paradise’ beaches with white sand and clear waters, and now she sees climate change increasing deforestation, sedimentation, and accumulation of

sargassum (Image 6).[57] She says, 'I have been seeing it like this for months [sargassum on beaches], since last year. It's like, I get sad. […] the beaches are not the same' (C3). Another describes her identity through stories about how life has changed in Culebra. She describes corals bleaching and temperatures rising; how she needs to drink more water and pictures a house for herself in the future with design techniques for keeping cool (C2).

**Image 6: Sargassum drifts in the bay**

Others share that extreme heat keeps them awake or in a bad mood (C3; C6). One participant shares embodied knowledge of climate change. She identifies herself as connected to others through visiting with neighbours in the plaza or at parities; this makes Culebra feel like home (C6). She no longer visits beaches because of the heat and when it cools, the mosquitos are unbearable. The dust of the Sahara, too, makes it harder to be outside. She explains that she sees climate change also in nature – the trees give less fruit and the roosters that used to crow in the morning now sing all day (C6). These changes keep her inside more and more.

Identities, too, connect with potential futures. In the researcher data, my changing sense of self impacts how I envision futures and contribute to building alternatives with MDI. For example, a sketch in my fieldnotes shows a split self (Image 7): to the left, a newcomer with thoughts of people (detached), with a dizzy mind and earth set apart from me; to the right, I link with people, and vegetation wraps around me. The illustration depicts a moment of reflection on my identity; how I felt (affectively and embodied) at different points during the fieldwork. The right-side came about during a

[57] Mengqiu Wang et al., 'The great Atlantic Sargassum belt,' *Science* 365 no. 6448 (2019). Sargassum is a type of seaweed with influx linked to climate change.

process of opening up, sharing more of myself with others; of taking part in MDI activities. For instance, as I begin to feel more connected with MDI and new knowledge emerges; it becomes easier to see how my emotions, thinking, and physical abilities could contribute to ongoing work, including imagining different futures. I help young volunteers haul buckets of earth up the hill to fill garden beds in the *umbráculo;* initiated through my creative-writing interests, we produce the *umbráculo* materials (Image 2). These care-based processes connect me to people and place, shifting my identity in a way that makes it possible to see different utopias.

**Image 7: Author fieldnote illustration**

In another instance, I join members at a workshop for envisioning how MDI fits into the community and how they see it in the future. We use toys to depict our individual roles, and place these in a map created with colourful pens to depict types of work and the relations between people and between tasks (Image 8). This playful process and the resulting map demonstrate how they cognitively know based on embodied and affective experiences. 'Solidarity' stands at the centre, closest to a representation of their group. Other words like 'infinite love', 'resistance', and 'sustainability' stem from this and indicate embodied as well as affective knowing in out-ward growing circles that intersect with words representing specific tasks, such as education, or feelings related to their work such as 'fight', 'exhaustion', and 'opportunity'. This shows that the benefits and challenges of the MDI members' work grow from a sense of belonging and identity with the people and places in Culebra.

**Image 8: Impact-vision map created by MDI members**

## Discussion

The empirical results above show that, through the dialect between care and knowledge, women participants know climate change through relations with food, livelihoods, and identities. Women know cognitively, embodied, and affectively about climate change-induced storm, temperature, and sea water changes based on how these phenomena impact their lives, relationships, and environment. For instance, in Culebra, the lack of reliable water, food, and energy pose significant risks of climate vulnerability; a severe hurricane could knock-out the infrastructure that delivers water and energy, and interrupt transport lines or devastate storages of food. The utopian critique and struggles that emerge in this analysis tell us about what care-based knowledge *does*.

In this section, I discuss findings of the analytical method described above. I find three cross-cutting implications of this: knowledge production (re)orients utopias around *dependency*, *belonging*, and *longing*. For instance, relative to food, knowledge based on values and practices of care (1) reveals reciprocal dependency as a path to reclaiming the food system from colonial dependencies; (2) highlights belonging as (re)placing eco-social identities centre, amidst food imports that rather displace local culture and produce; and (3) weaves together past, present, and future environments and communities through a longing that resists the way things were, like past methods of acquiring food via ferry trips, as well as opposes a status quo future of for instance addressing vulnerability through stockpiling food.

First, the women participants, myself included, imagine peace through orienting dependencies towards reciprocal care. All beings necessitate care. Understood through care-based knowledge analysis, participants at MDI orient dependency for care from colonial structures to autonomous community reliance; from unidirectional to reciprocal dependencies. The utopian critique

does not eliminate dependency, but reorients it such that economic systems reciprocally care for humans and more-than-human ecosystems. Existing dependence on tourism leaves incomes vulnerable to interruptions as might occur during economic recessions, environmental hazards, or other conditions such as the global impact of COVID-19. Tourism, while bringing money, also brings large amounts of waste and high resource demands, drawing space, energy, and water away from those who reside permanently on the island. The MDI workshops, rather, support livelihoods that feedback into the community.

For example, MDI workshops allow individuals to imagine and pursue jobs in skill-based sectors, while also benefitting the island through for instance planting new gardens or beautifying physical infrastructure with public art (Image 5). These might indirectly draw more tourists, but the process remains reciprocal in benefiting individuals while servicing the community. Efforts to revive the fishing industry, likewise, demonstrate this reciprocity. Fisher people might provide for visitors, supplying restaurants or providing ecotourism options. However, they also supply local residents. The project underway accounts for environmental factors and anticipated effects of climate change by incorporating practices that support marine ecosystem well-being, as exemplified by the oyster project that accounts for both market value and ecological impact.

Second, the utopias described above foster belonging within care relations. In participants' examples, their sense of belonging connects with social as well as environmental relations. The utopian critiques and struggles for peace in a changing climate, then, orient towards a place-based belonging. Participants at MDI stress that their work depends on the collective: it exists to better the community, and the activities they do are only possible through group efforts. The activities that span the kitchen and garden programs necessitate a place and social relations, and their design centres around the importance of belonging.

For instance, MDI holds a monthly gathering organized around a film screening and meal. They harvest local food (often from the MDI gardens) and prepare healthy snacks in the on-site kitchen as part of the educational event. This opens possibilities by teaching new cooking skills or introducing new topics to audiences. It generates healthy food, emphasizing the capacity of local labour and environments to offer nutritious produce. It cultivates community, bringing people together to learn and eat in the reclaimed Antigua Escuela. The food prepared is intentionally healthy and draws on local recipes. Together, these create a sense of togetherness of people and environment, highlights Culebrense and Puerto Rican culture, and builds social ties through

closer experiences of giving and receiving care. The resulting energy, for participants, makes people and place matter. People belong to their place, and the place belongs to these people.

Finally, the empirics reveal cycles of longing: desires for something yet-to-come as well as yearning for something that has been or might have passed. Values and practices of care that connect people and places in Culebra evoke emotions that weave through time in spirals. In discussions about possible futures, participants share memories of when they were young, of the people with whom they shared time, activities held, and places that felt special. Others talk about how they imagine new ways of building a house or farm in the same place they are now, or else in a new place but in the company of current friends or family members. Rather than expressing a wish for how something used to be, their desire actively stretches time and place.

For example, when talking about how the art program opens opportunities for young people, members emphasise play, joy, connection, and well-being. The emphasis is on something familiar yet new – they create new, beautiful and often imaginary landscapes of for instance native coral reefs in the mosaic murals. The ambition presented in so many participant stories at MDI contain a deep desire for something new, different, and positive despite the fact that they might not yet know what that is or could be. By reaching for this longing, by performing it, they may bring the 'goal' into being but what 'matters' is the journey, so to speak. Over and over, what resonates is the importance of how they build something, more so than what they build in the end.

**Conclusion**

Through this phenomenological study of utopias, fieldwork in Culebra demonstrates cognitive knowing, such as particulars about food availability or skills training; embodied knowing through health impacts or labour; and affective knowing such as desire and frustration. Through the dialectic relation between care and knowledge, these themes point to dependency, belonging, and longing as crucial aspects of both how people identify or understand climate impacts as well as how they do or would like to live with these impacts. As these results show, using the utopia concept pushes our understanding of climate change and how it is experienced and imagined – holding together critiques of a situation (e.g., violences) with desires (e.g., visions of peace).

This presents care-based knowing as a useful tool that allows action to respond to both local (highly contextual and situated, such as a household livelihoods) and global dynamics (abstract, such as shifting a community away from a tourism-dependent economy) of historic, ongoing, and yet-to-come climate

change. This expands understanding of how care informs knowledge about and responses to climate change. Food, livelihoods, and identities are not necessarily new themes when it comes to analysing impacts of climate change. However, through a care-based way of knowing (rather than for instance measuring health or economic indicators), assessing climate impacts or designing adaptation mechanisms take on different dimensions. Adaptation becomes more than a matter of implementing the right mechanisms or techniques to fix inadequacies. This EoC approach not only highlights *what* aspects of life climate change impacts but also *how* people *would like* these to connect.

This article also raises new questions. Even studying 'alternative' imaginaries may be limited to discourses and materialities in existing research, or be co-opted by dominant actors to uphold a prevailing order.[58] Moreover, I worked with people on the island, limiting study scope. Some moved to Culebra from other parts of the US or Puerto Rico. Those who left, more or less willingly, likely would have different experiences and perspectives on what is desirable, perhaps picturing and striving for utopias off-island. My findings, too, prompt questioning about whether or how utopianism connected to nostalgia more-so prompts resilience (bouncing back to a status quo) or transformation (radical change). Further research might also usefully explore targeted care-based knowledge production in specific climate policies.

Finally, although many of the examples from Culebra may seem mundane or commonplace, each entail monumental effort. For example, purchasing, transporting, installing, and upkeeping garden facilities, workshop spaces, and attached solar and water resources face significant challenges due to limited resources on the island, higher costs for imports, and delays due to sheer complications of distance, as it is relatively difficult to bring experts and services to Culebra. Culebrenses illustrate that imagining is not a superficial or blasé activity, but rather a political tool necessary for creating change from violent to peaceful systems. Moreover, if utopia and care are both ambivalent concepts, attention to matters of *what* peace, *for whom,* and *how* remain necessary as part of a critical endeavour – however normative it may be.

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[58] Anahid Roux-Rosier, Ricardo Azambuja, and Gazi Islam, 'Alternative Visions: Permaculture as Imaginaries of the Anthropocene', *Organization* 25, no. 4 (2018).