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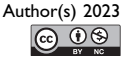

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The dangers of masculine technological optimism: Why feminist, antiracist values are essential for social justice, economic justice, and climate justice

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Abstract
Responding to the climate crisis requires social and economic innovation—because climate change is a symptom of patriarchal capitalist systems that are concentrating—rather than distributing—wealth and power. Despite the need for social and economic innovation, technological innovation continues to be prioritized in climate policy and climate investments. This paper reviews the dangers of technological optimism in climate policy by exploring its links to patriarchal systems and masculinity. The disproportionate focus on science and technology emerges from and reinforces "climate isolationism," a term that I use to refer to the common framing of climate change as an isolated discrete, scientific problem in need of technological solutions. This framing stems from assumptions of patriarchal white-male conceptions of privilege and power that evolve from a colonizing and controlling mindset. Masculine technological optimism is dangerous because it is exclusive, it minimizes the need for social change and social innovation, and it is ineffective in catalyzing inclusive societal transformation. This paper argues that embracing feminist, antiracist values is necessary for transformative climate policies, economic justice, and climate justice.

Keywords
Feminism, masculine, climate isolationism, gender, climate, technological optimism

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The climate crisis and the need for societal transformation

The need for transformative social change is becoming more obvious as the injustices of the climate crisis are getting worse (Robinson, 2018; Sultana, 2022). It is increasingly clear that societal responses have been inadequate and ineffective, and some climate actions are exacerbating stark injustices and inhumane inequities in society (Stephens, 2020). Societal transformation requires collective, collaborative change that is based on so much more than technological innovation, yet investments in technology remain the priority in most climate policy (Stephens, 2022a).

In response to growing vulnerabilities and inadequate climate action, a global climate justice movement has been rapidly growing throughout the past decade led primarily by women (Harlan et al., 2015; White-Newsome, 2016; Robinson, 2018; Roberts-Gregory, 2021). The gendered realities of traditional climate action—those initiatives, priorities, policies, and investments that have focused narrowly on technological innovation to meet goals of emissions reductions and decarbonization—have become more clear as climate injustices worsen (Daggett, 2018). Patriarchal systems have reinforced and perpetuated the assumption that investing in technological innovation will enable humanity to control the climate, while minimizing the potential of investing in social innovation, social justice, and social change.

As the world grapples with the reality that masculine decision-making and patriarchal policy processes have resulted in ineffective and inadequate responses in both climate mitigation (UNEP, 2019) and climate adaptation (Kuhl, 2021), the COVID-19 pandemic, the Russian-Ukraine war and the Israel-Hamas war reveal additional dangers of patriarchal leadership. Elevating the value of a different kind of leadership, specifically leadership that embraces antiracist, feminist values focused on social justice and equity is increasingly important (Stephens, 2020). Highlighting the value of resisting policies, priorities, and practices that exacerbate the concentration of wealth and power is essential for a more just and equitable climate resilience future. Throughout the past two decades, mainstream climate governance based on technological optimism and climate modeling has failed to respond to the climate crisis (Keary, 2016), and ineffective and inadequate climate policies have concentrated wealth and power among powerful polluter elites and fossil-fuel-rich countries (Stephens & Allen, 2022). This has perpetuated fossil fuel reliance by supporting fossil fuel interests, and this approach has disempowered the most vulnerable people and communities around the world resulting in unjust disinvestment.

With societal responses to COVID-19 exacerbating economic inequities so that the wealthiest 10 male billionaires have more than doubled their wealth since the beginning of the pandemic (Oxfam, 2022), new coalitions of social movements embracing antiracist, feminist values are gaining strength calling for systemic, transformative changes that focus on diversifying and distributing power (Stephens, 2020). With more intense climate disruptions occurring more frequently around the world (IPCC, 2018) and the devastation of war, efforts to reveal and resist the power and influence of the polluter elite who have been strategically investing for decades to slow down climate action are growing (Kenner, 2019). Within this context, the call for structural and transformative change is growing louder, and an explicit focus on redistributing and reallocating power is becoming central to climate and energy politics. Given the

centrality of power dynamics in climate and energy, a more explicit focus on power is emerging among activists, practitioners, and researchers (Avelino, 2021; Baker, 2021).

With urgency building for bold transformative action on climate and energy, individuals, communities, organizations, and countries around the world are recognizing that an energy transformation away from fossil fuel reliance toward a renewable-based future offers much more than reliable clean electricity, pollution reduction, and climate mitigation (Burke & Stephens, 2018). In addition to these environmental benefits, transformation away from fossil fuels also provides an opportunity to transform society by more equitably distributing jobs, wealth, and health, as well as economic and political power (Stephens, 2019; Banks & Stephens, 2020). Energy system transformation provides a tangible mechanism to respond to climate injustices by investing to redistribute power, literally and figuratively (Baker, 2021). This new explicit focus on power dynamics has emerged as a central part of the future of climate politics (Stephens, 2020; Stephens & Allen, 2022).

While the call for structural and transformative change is growing louder, action toward major societal transformation is hindered by the dominant mainstream approach to conceptualizing the climate crisis as an isolated, discrete, scientific problem in need of individualistic and technological solutions. Climate isolationism is the term that I use to refer to this narrow, ineffective but dominant, framing of the climate crisis that has emerged from a patriarchal technological optimism (Stephens, 2022b). In the context of the climate crisis, explicitly linking optimism in technology with masculinity and a patriarchal, controlling way of thinking provides a useful framework for understanding the appeal of technological innovation. The widespread perception of the climate crisis as a scientific problem that is separate and disconnected from other social issues has led to a fragmented technocratic approach that all too often attempts to treat the symptoms rather than the cause of the climate crisis. The narrow focus on technology and the potential for investments in technology to "solve" the climate crisis is dangerous. Climate isolationism ignores issues of power, wealth, and growing inequities, and in so doing ends up perpetuating and exacerbating economic precarity and climate injustices which has huge negative implications for democracy and social justice. Climate isolationism disempowers people and communities by narrowly focusing on technological change rather than transformative social change that is essential for effective climate governance. The transformative changes that are now needed require a collective resistance to climate isolationism so that diversifying and distributing power is central to all climate policy and climate investments.

This paper first provides some background on gender, climate, and energy. Then the risks of masculine technological optimism are explored through discussion of how this is linked to climate isolationism. The dangers of this narrow framing of climate change as an isolated, discrete, scientific problem in need of technological solutions are explained (Stephens, 2022a), and strategic efforts to contain climate discourse within this frame are revealed. Then the paper introduces feminist, antiracist values and describes why these values are essential for moving from climate isolationism to climate justice.

Gender, climate change, and energy

Academic discussions at the intersection of gender, climate change, and energy often focus on understanding inequalities in access to energy and differential impacts of

energy access, impacts of climate change, and opportunities to engage in decision-making about energy and climate action (Listo, 2018). Some research on women, climate, and energy has focused on the gender divide in perceptions of climate change (McCright, 2010), in household energy use, as well as gender disparities in professional careers and research in energy and climate (Pearl-Martinez & Stephens, 2016). The gendered realities of adaptation to climate impacts are also widely recognized acknowledging that women often bear a great burden in climate disruptions, that is, struggling with the hardships of reduced access to water and food (Denton, 2002; WEDO, 2008; Nagel, 2015). It is also noted that women are the primary producers and managers of energy at the household scale (e.g., collecting firefood for fuel), and thus there are calls for consideration of gender roles in renewable energy and microfinancing economic development programs (Farhar, 1998).

Historically, there are many points of intersection in women's political activism, feminist activism, environmental social movements, and direct action (McCammon & Banaszak, 2018). Scholars of ecofeminism have explored historically how western science's view of the Earth's systems as a machine rather than as a living organism has led to the domination of both nature and women (Merchant, 1980). Ecofeminism, a grassroots women-initiated movement around the world, has elevated the value of women's knowledge as expert knowledge (Curtin, 1997; Warren, 1997). There is evidence that organizations and governments act differently when women are better represented in positions of power and the rise of women's status in a nation is associated with greater support for environmental protection (Kronsell, 2013). Women's environmental leadership in the United States has taken a broad range of forms historically, including black women's community organizing around environmental justice and health issues, Native American women's action to protect biodiversity and white women's engagement in the early 20th century conservation and preservation movement (McCammon et al., 2018). A gendered lens on climate, energy, and technological optimism is clearly important to understanding the landscape.

Concepts of women's closeness to nature, virtuousness, and roles as mothers and protectors have frequently been strategically invoked in environmental activism (Cable, 1992; Di Chiro, 1998; Bell & Braun, 2010; Arora-Jonsson, 2011). Women environmentalists speak of protecting children, ensuring a future for future generations, preserving home and family life and maintaining health and quality of life for people in their communities (Ergas & York, 2012; McCammon et al., 2018). Perceptions of women's vulnerability, virtuousness, and their predisposition to being more environmentally friendly are echoed in much of the current literature about gender and climate change (Denton, 2002; Brody et al., 2008). Arora-Jonsson (2011) argues that this focus on women's vulnerability to climate change impacts and emphasis on women's virtuousness in protecting their families from environmental harms can have the consequence of deflecting attention from power relations in institutions at all levels. More recent work on feminist climate justice links centers feminist principles at the core of climate justice (Terry, 2009; Cochrane, 2014; Albertyn, 2023). The climate activist phrase "no climate justice without gender justice" represents the centrality of feminism in climate justice (Terry, 2009). Recognizing this complexity, the impacts of gender inequities in climate and energy leadership need to be more widely acknowledged, and the links

between greater gender diversity and a transformative social change approach to climate action could be better understood.

Technological optimism and climate isolationism

Recognizing the gendered realities of climate policy and climate decision-making, this section reviews technological optimism and climate isolationism to masculinity. Since the 1980s and 1990s, when climate change first emerged as a global challenge, leading voices advocating for action focused on the need to invest in understanding better the science of climate change and in technological innovation to reduce the impacts (Stephens & Markusson, 2018). Technological optimism has distorted climate policy and climate action in countries throughout the world because the science and engineering focus has dominated climate discourse (Stephens, 2009). Review of the history of climate action in the United States demonstrates that the US has been a climate technology leader but a climate policy laggard (Stephens, 2009).

A major consequence of this masculine technological optimism has been climate isolationism. Climate isolationism refers to the narrow technocratic lens that is prevalent in patriarchal decision-making around both climate mitigation and climate adaptation. When climate isolationism is applied to climate mitigation, decarbonization is usually the goal (Geels et al., 2017), carbon accounting is the primary metric, and incentives and costs of a variety of different mitigating technologies are often projected and compared (Auel & Cassady, 2016). When climate isolationism is applied to climate adaptation, a disproportionate focus on investing in technical infrastructure (i.e., sea walls and drought-resistant crops) often detracts attention and investment from social innovation and social changes that could enhance climate resilience (Rodima-Taylor et al., 2012).

The narrowness of climate isolationism results in limited opportunities for people to connect and engage (Peterson et al., 2015). The technocratic focus limits public discourse because it excludes people for whom these abstract, scientific terms, or the technological details may not be meaningful and it makes the challenge seem distant and unapproachable (Stephens, 2020). Not only does this very technical way of discussing climate change resonate with only a small subgroup of society, it also often projects the need for sacrifice and hardship rather than highlighting benefits and opportunities (Peeters et al., 2019). Climate isolationism is also exclusive because many proposed technological "solutions" are also expensive and perceived as options that are only accessible to the rich (Biermann & Möller, 2019). Driving a Tesla electric vehicle, for example, is not an option for most people, so the focus on this technological innovation results in many people feeling disempowered and disengaged (Stephens & Surprise, 2020).

This disempowerment is compounded by science and engineering being fields that continue to be dominated by white men (Woolston, 2020). Despite efforts to diversify science and engineering, persistent racial, gendered, and economic injustices of our economy and our educational systems perpetuate exclusive access to science and engineering (Valantine & Collins, 2015). Participating in science continues to be a selective activity only accessible to a privileged few (Lee, 2016). The lack of diversity within the fields of science and engineering limits the scope of inquiry and constrains the types of connections that are made among science, technology, and society (Stephens,

2020). As we move to incorporate innovative responses that promote social justice to climate change beyond technological justifications for energy transformation, there is a need to include other kinds of expertise, experiences, and perspectives.

The technical focus of climate isolationism also obfuscates and diminishes the potential for transformative social change (Anderson & Peters, 2016) and it limits the possibilities for investing in social innovation, social infrastructure, and social justice (Stephens, 2020). When the climate crisis is framed as a scientific problem with a possible technological fix, the systemic societal and economic problems, including the concentration of wealth and power among those profiting from maintaining fossil fuel reliance, are all-too-often ignored (Stephens, 2020). The prevalence of climate isolationism has encouraged too many leaders to be blind to the important opportunities for improving people's lives and strengthening communities as we transition away from a society reliant on fossil fuels (Stephens, 2019).

The narrow technocratic approach of climate isolationism has not only been ineffective in mobilizing transformative change but it has also resulted in climate and energy programs and policies that exacerbate inequities and perpetuate injustice (Jenkins et al., 2020). Because the social dimensions of climate and energy have not been adequately considered, we have ended up with policies that further exclude and disadvantage low-income communities, women, and communities of color (Reames, 2016). The quantitative technocratic tendency of climate isolationism reinforces a dubious technological optimism (Basiago, 1994), which has led to growing interest and funding for technological fixes to the climate crisis (Stephens & Markusson, 2018).

While technology is an essential part of a transition toward a more just, equitable, and climate-stable future, investments in science and technology have not yet been balanced with investments in social science, social infrastructure, social innovations, and social justice. This lack of investment in social infrastructure and social innovations has weakened our social ties and reduced our societal resilience (Aldrich, 2012). For decades, strategic governmental responses to the climate crisis have been focused almost exclusively on investments in science and technology (Stephens, 2009), while very little has been invested in social innovation.

By focusing almost exclusively on technological innovation, climate isolationism obfuscates the potential for transformative social change and diminishes the priority of investing in climate-resilient innovations that simultaneously advance social justice (Jenkins, 2018). The persistence of the narrow climate isolationism perspective has been beneficial for the polluter elite, those wealthy individuals and organizations that do not want transformative change because they are profiting from fossil fuel reliance and exploitative corporate business practices (Kenner, 2019). Climate denialism, which has been supported by fossil fuel interests and the polluter elite, has also required climate decision-makers to spend a lot of time and energy defending what is known about the science of climate change (Oreskes, 2019). The polluter elite's decades-long strategic misinformation campaign to confuse the public about the science of climate change has been an effective delay tactic (Frumhoff et al., 2015). The prevalence of climate denialism has confined climate discourse to the scientific realm and limited options for nonscientific discourse about how to respond to the climate crisis and reduce climate vulnerabilities

Continuing to increase investment in technological innovation while underinvesting in social innovation is preventing the transformative changes that are required both for stabilizing the climate and for reducing social injustice. So not only does climate isolationism result in missed opportunities to advance social and economic justice, but it also results in insufficient environmental protection (Jenkins, 2018).

Feminist, antiracist values

This final section provides a transformative alternative to the ineffective and dangerous masculine technological optimism. To counter and resist the perpetuation of masculine technological optimism and climate isolationism, feminist, antiracist values need be prioritized in climate and energy policy. Feminist, antiracist values involve constant consideration of power dynamics, that is, paying attention to who has power and privilege, who is being excluded or marginalized, what legacy processes and priorities are perpetuating discrepancies in power, and ultimately whether and how power is being concentrated or distributed (Stephens, 2020). Vigilant and transparent analysis and assessment of power, including understanding the multiple ways that social, economic, and political power shape institutions and social change (Kashwan et al., 2019), are fundamental to the transformations that are needed for a more just, equitable, healthy and prosperous future. Recognizing that social change and innovation can disrupt or reinforce existing and legacy power dynamics, explicit and continuous attention to different forms of empowerment and disempowerment are critically important (Avelino, 2021). Given the disruptive time and the human suffering exacerbated by the pandemic and the climate crisis, elevating feminist, antiracist values is a central priority for societal transformation.

To understand the term "antiracist," Ibram X. Kendi's powerful 2019 book *How to Be an Antiracist* provides guidance. In his book, Kendi explains that anyone who declares that they are not racist is signifying neutrality, but, he points out, in the struggle with racism there is no neutrality (2019). Kendi explains that the opposite of "racist" is not "not racist" but it is "antiracist"—whenever we ignore issues of race we are inadvertently perpetuating racism. Given the deep legacy of racial injustice embedded in our culture, in our institutions, in our communities, in our economy, and in our policies, those who do not actively resist racism are in fact supporting it. Embracing antiracist values requires continual recognition and active resistance to racism in all its many legacy forms and structures.

A similar argument can be made regarding feminist values which are consistently resisting the power of patriarchy, misogyny, and gender discrimination (Manne, 2018). Like racism, sexism is deeply rooted in our society, and many of our institutions, norms, and values will continue to reinforce gender discrimination unless we are continually and actively resisting. Unless we are actively resisting racism and patriarchy we are actually perpetuating these systems of oppression. According to Chimamanda Ngozi Adichie, author of *We Should All be Feminists*, many men say that they do not think much about gender or notice gender disparities (Adichie, 2012). Similarly, many white people say that they do not think much about race or notice racial disparities. Those with privilege who consider themselves successful within current systems are generally less aware of the structural oppression that stratifies society.

This is why feminist antiracist values are so critical in society's efforts to confront the interconnected crises facing humanity. If society's response to the climate crisis is based on proposals from those who are unaware of or indifferent to racism and sexism, climate action is almost guaranteed to reinforce those inequities. And, if antiracist and feminist values are not prioritized, society is unlikely to succeed in designing inclusive and effective responses to the climate crisis.

It is important to note that anyone can embrace antiracist and feminist values. Every human being has the capacity to learn, understand and have empathy for other human beings, so all of us can resist systems of oppression regardless of where we are positioned within those systems. Ultimately, everyone is negatively impacted by racism, misogyny, and other forms of oppression. So everyone, regardless of gender, race, or any other identities, can be encouraged to embrace and prioritize feminist, antiracist values.

To move mainstream climate decision-making beyond climate isolationism toward climate justice, it is helpful to understand how climate isolationism is being perpetuated and why a gender lens is so important in advancing climate justice and resisting climate isolationism. The prevalence of climate isolationism can be attributed to multiple factors including the limited experiences and perspectives of many climate experts whose knowledge is limited to climate science and technology. White men have made up the majority of climate and energy experts (Kempe, 2021), and the systemic exclusion of diverse voices in mainstream climate decision-making has contributed to climate isolationism (Stephens & Surprise, 2020). Since the climate crisis was first recognized as an emerging problem in the late 1970s and early 1980s (Keeling et al., 1976, Marchetti, 1977, National Research Council, 1983), a technocratic, reductionist, top-down approach to climate policy has dominated. Large investments have been made in technological innovations to mitigate climate change (Gallagher et al., 2006, Holdren, 2006), but minimal attention has been given to social innovation, power dynamics, and how climate and energy policy could leverage change toward social justice (Webler & Tuler, 2010).

One prominent and influential privileged white man who has not embraced climate justice but is instead perpetuating climate isolationism is Bill Gates. His 2021 book "How to Avoid Climate Disaster" focuses exclusively on technological innovations demonstrating the inadequacy and dangers of climate isolationism (Gates, 2021). In this book, Gates openly acknowledges that he does not "have a solution to the politics of climate change." Rather he professes that new and existing technologies can solve the climate crisis; all that is needed is more investment in technological innovation to speed up the pace (Gates, 2021). Gates also describes solar geoengineering as a "cutting edge, 'Break Glass in Case of Emergency' kind of tool" that is valuable to have in case things get so bad that there are few other options. He says "There may come a day when we don't have a choice. Best to prepare for that day now." Gates singular focus on technological innovation is characteristic of climate isolationism and represents a trend of privileged tech-savy men, the so-called "climate dudes" who think they can swoop and solve complex problems that others have spent decades attempting to address (Jones, 2021).

The prevalence of climate isolationism can also be attributed to a male-dominated climate and energy leadership that continues to prioritize scientific and technological expertise to inform climate policy (Fraune, 2015, Pearl-Martinez & Stephens, 2016).

Like many other aspects of society, the science, politics, and economics of climate and energy have been dominated by privileged white-male leadership which has tended to be technocratic, reductionist, patriarchal, and top-down (Faber et al., 2017, Sorman et al., 2020). The technological optimism that is characteristic of climate isolationism is also linked to masculinity as the colloquial phrase "boys and their toys" represents (Lohan & Faulkner, 2004).

Conclusions

To move beyond masculine technological optimism and climate isolationism toward climate justice, climate decision-making has to embrace feminist antiracist priorities by focusing more explicitly on power dynamics and social innovations to redistribute power to people and communities who are most vulnerable. Climate decision-making needs to explicitly consider how policies, practices, and priorities either reinforce or disrupt the systems that are currently concentrating wealth and power. For less powerful groups to gain a foothold in decision-making processes, renewed attention to the multiple ways that social, economic, and political power shape social change must be acknowledged (Kashwan et al., 2019). Feminist theory offers expertise in the study of power (Bell et al., 2020), so embracing a feminist lens is one valuable approach to moving away from climate isolationism toward climate justice.

The social science literature on sociotechnical transitions has been critiqued for minimizing the role of power (Avelino, 2017), and a recent contribution by Avelino (2021) identifies seven specific ways to consider power in decision-making, processes of change, and innovation: (a) power over versus power to, (b) centered versus diffused, (c) consensual versus conflictual, (d) constraining versus enabling, (e) quantity versus quality, (f) empowerment versus disempowerment, and (g) power in relation to knowledge (Avelino, 2021). As jurisdictions around the world grapple with the interconnected crises of housing and food insecurity, climate disruptions, and economic precarity, narrow efforts to reduce greenhouse gas emissions or control the global average temperature are likely to cause more harm than good. New ways of strategically integrating climate action into other social policies, in the way that the Biden/Harris administration is "quietly" integrating their climate agenda in 2021 into pandemic recovery and infrastructure investments, provides an empirical example of the practical valuable potential of moving away from climate isolationism (Osaka, 2021).

Mary Robinson and many others too have recognized that the most powerful decision-makers in climate and energy are "too male, too pale, and too stale." There is an underrepresentation of women in energy and climate leadership. The societal transformation ahead requires mobilizing the potential and expertise of diverse energy practitioners and researchers.

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