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# Qualified Hope and the Ethics of Planetary Boundaries

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**Abstract:** The present essay explores the way theologies can contribute to the discussion of the ethics of the "planetary boundaries" framework and its rhetorical proposal for a 'safe operating space'. I first give a brief description of the 'planetary boundaries' framework proposed by Johan Rockström and others. The idea of a 'safe operating space' is not simply a neutral scientific assessment, but more importantly, a narrative framework that weaves stability, risk, and uncertainty together. This narrative needs both the humanities and the sciences to be understood. Second, I propose how theological reflection can contribute to the discussion through its interpretation of the rhetorical and ethical facets of the 'planetary boundaries' proposal. Specifically, a Christian theological lens is able to develop a model of a qualified sense of hope, which can be leveraged as a bridge between the dire warnings and uncertainty of the science of 'planetary boundaries', on one hand, and the call for transformation and action that researchers make on the other. Finally, I provide some recent examples of this theologically-inspired 'qualified hope' in the face of environmental change.

**Keywords:** planetary boundaries; hope; ethics; theology; sustainability



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## 1. Introduction

The year 2023 was globally the hottest year since humanity has taken records, nearing the threshold of 1.5 degrees Celsius warming identified by the Paris Agreement. This is symbolic of many environmental changes, and the social and cultural changes that will inevitably accompany them.

Religion is a facet of human culture that will be impacted by environmental change, but religious traditions will also be used to understand the shifting senses of meaning and value that humanity will confront. For as Todd LeVasseur (2021) and others have pointed out, religious beliefs, practices, and communities find themselves in a unique position: all religions are responsive to the material world in which they are embedded, and no religion currently practiced has ever before operated in a world defined by 420 ppm of carbon dioxide in the atmosphere. Simply put, religion has been a product of the Holocene. Indeed, the Holocene is "the only Earth system state civilizations have historically known" (Richardson et al. 2023, p. eadh2458). The planet—and, consequently, human religions and spirituality—are entering an entirely new climatic and material regime. Whether this period is called the Anthropocene, the Capitalocene, the Cthulocene, or something else entirely (Chwałczyk 2020; Lorimer 2017), human communities must now ask how religious traditions must change to address planetary change, environmental resilience, and climate adaptation.

Taking leave of the material and social stability of the Holocene, then, I argue that religious reflection has a role in understanding the crisis before us—and in assisting scientific and social communities in finding a pathway between unrealistic techno-optimism and fatalistic pessimism. Technological responses will likely play a role in our planetary future but are not always contextualized using the lens of human meaning structures. In this vein are theological responses to climate geoengineering (Clingerman and O'Brien 2016; Clingerman 2014, 2015, 2022), which caution against techno-optimism. Similarly, theological responses can assist in overcoming a sense of dread and fear of the future with a focus

on hope. As the following argues, then, religious reflection can reorient discussions of the ethics of planetary boundaries away from thin discussions of the precautionary principle and toward a dialogue about the possibility and limits of hope and the human future.

The present essay explores the terrain of the way theologies can add to how we interpret assessments of quantified framings of sustainability and our planetary home. I first give a description of the work on 'planetary boundaries' completed by researchers associated with Johan Rockström and the Stockholm Resilience Centre. With clarity and rhetorical forcefulness, this framework provides researchers with a way to propose a quantifiable diagnosis of the sustainability of human action on a planetary scale. It advocates for the need to be attentive to a 'safe operating space' on the planet using scientific assessments and (more recently) a view of planetary justice. While researchers assert that this framework is an objective assessment of the state of the planet, the planetary boundaries framework is not entirely neutral nor objective. Rather, it is a *story* that names humanity's material place in the midst of crisis and radical uncertainty. The story told is intended to be one that suggests an ethical stance toward human impacts on the planet, even though it chronicles scientific information. What is missing is a narrative vocabulary that frames how to respond to the ethical call that this scientific interpretation seems to require. And so, the second half of this article illustrates how Christian theological reflection adds to the discussion by providing a narrative tool. Specifically, religious reflection offers us the sense of qualified or constrained hope, namely, a hope that is bounded by the realities of the situation. This can be useful to bridge the gap between scientific assessment and the motivation to act, especially when we seek to understand why the planetary boundaries discussion is an attempt at human self-transformation in the face of environmental crisis.

The focus here will be on Christian theology and ethics, but with an acknowledgement that the dynamic presented here is true for other faiths. In the interplay of meaning and faith, narratives are important. Religious narratives, as ethicist Tallessyn Zawn Grenfell-Lee points out, are not simply antiquated tales. She argues that the theological reading of disruption-based narratives—precisely the type of narrative being discussed here—gives three ideas to readers. First, "they offer understanding and compassion" while validating anxiety or fear; second, "they offer a theological framework, or container, big enough to carry the crisis, no matter how big it is". And they act as an invitation to a sense of vision and hope (Grenfell-Lee 2022, p. 9). These three points are the dynamic that faith offers the scientific discourse surrounding planetary boundaries. Looking through the lens of Paul Tillich's sense of faith as 'ultimate concern'—what concerns us absolutely and completely, and what is ultimate itself (Tillich 1951, 2009)—seeing religious narratives as an invitation toward hope and compassion (even in stories rife with anxiety) becomes clearer still. This is especially true, given Tillich's story of the human condition is a 'courage to be' in the face of non-being—our embodied existence is not merely incidental, but the location wherein we find symbols of the ground and abyss of Being Itself. In other words, religion provides narrative frameworks that draw together and contextualize our partial narratives, thereby bestowing significance to ruptures and non-linear contexts in meaningful ways. For this reason, understanding our dependence on hope in environmental change benefits from including theological, ethical, and spiritual reflection.

## 2. The Science of Planetary Boundaries

The Holocene has been fundamentally hospitable for biological life, with human society—and, by extension, all extant religions, especially so-called 'world religions'—as prime beneficiaries. Therefore, it should come as no surprise that biophysical stressors (especially the recent, planetary changes connected to the Anthropocene) are of great concern for the human community because environmental stressors will likely lead to a significantly less hospitable future. If we are concerned about our planetary future, a question must be asked: "What are the non-negotiable planetary preconditions that humanity needs to respect in order to avoid the risk of deleterious or even catastrophic environmental change at continental to global scales?" (Rockström et al. 2009b). This

question might appear to be 'merely' scientific, but it is also central to religious studies and theology (LeVasseur 2021).

Addressing this question is the rationale for the 'planetary boundaries framework' proposed in 2009 by sustainability scientist Johan Rockström and several colleagues. The heart of this proposal is the idea that scientists *should* (not merely can) develop a systematic assessment of the systems upon which global sustainability and human society depend. The initial boundaries framework identified nine biogeophysical boundaries, which together mark out a habitable space for a sustainable future: climate change, ocean acidification, stratospheric ozone, global phosphorus and nitrogen cycles, atmospheric aerosol loading, freshwater use, change in land use, biodiversity loss, and chemical pollution. Each boundary has a theoretically measurable threshold: for example, the 1.5 degree Celsius threshold for climate change. In 2023, many of the scientists who were involved in the 2009 study contributed to a new study that updated the status of the nine planetary boundaries. This recent work includes gloomy news. In the authors' estimation, human activity has pushed six of nine boundaries beyond a 'safe operating space' (Richardson et al. 2023). Thus, researchers saw their work as a confirmation "that humanity is today placing unprecedented pressure on Earth system. Perhaps most worryingly in terms of maintaining Earth system in a Holocene-like interglacial state is that all the biosphere-related planetary-boundary processes providing the resilience . . . of Earth system are at or close to a high-risk level of transgression" (Richardson et al. 2023, p. 11).

Measuring the nine individual 'planetary boundaries' under a single umbrella is not only scientifically interesting but also rhetorically powerful because it creates a narrative to interpret human actions through definable markers of unacceptable impacts. The boundaries framework strongly argues that crossing one or more boundaries likely will lead to significant changes and tipping points that threaten the human future. In other words, these nine systems are proxies for environmental stability. In turn, weaving these systems into a single narrative allows us to form judgments about the planet's stability as a human home: "[t]hese boundaries define the *safe operating space* for humanity with respect to the Earth system and are associated with the planet's biophysical subsystems or processes. Although Earth's complex systems sometimes respond smoothly to changing pressures, it seems that this will prove the exception rather than the rule" (emphasis added, Rockström et al. 2009a, p. 472). Such a story can be grasped by a popular audience beyond the scientific community, as seen by Rockström and Klum's (2015) highly visual account (*Big World, Small Planet: Abundance within Planetary Boundaries*). And, the framework gives a clear justification for further scientific work for measuring human impacts on global scales. Numerous researchers continued exploring this framework, including updates to the framework in 2015 and 2023 (Richardson et al. 2023; Rockström and Klum 2015; Rockström et al. 2023). For scientific and lay audiences, the 'safe operating space' narrative can be a warning rather than a disinterested assessment.

Some of the power of this story comes from the fact that it relies heavily on the cross-cutting juxtaposition of safety and risk. Because the boundaries are "densely interconnected" (Lade et al. 2020), "we do not have the luxury of concentrating our efforts on any one of them in isolation from the other" (Rockström et al. 2009a, p. 474). Some impacts might otherwise be within the safe boundary, but they will reach a tipping point in response to the transgression of a different boundary. If we look at each area of environmental change as separate, we overlook how earth systems interact and potentially reinforce each other, changing the planet as a whole (Richardson et al. 2023). However, this also opens the framework to criticism: much of the 'planetary boundaries' discourse acknowledges the need for an interconnected modelling of different strands of information, but this does not adequately draw on all disciplines and forms of knowledge to make its case for action. In particular, disciplines that focus on human meaning and ethical understanding are not fully leveraged.

This criticism becomes clear when seeing how the balance between safety and risk is predicated on the fear of uncertainty in the face of a risk-filled future. Uncertainty

is a fundamental part of the rhetoric of the 'planetary boundaries' discussion—and this uncertainty extends past the focus on technical quantifiability. Though scientific in outlook and methodology, the 'planetary boundaries' framework nonetheless leads us to ask more existential questions: how can we approach the hospitable nature of the planet in a way that allows us to understand the ongoing material possibility and peril of the human world? And how do we culturally, emotionally, and ontologically process such potential planetary precarity? Researchers exploring the 'planetary boundaries' framework do not fully acknowledge these as fundamental questions, but they are implied throughout their work. After all, planetary stability is not a given.

Another way to put this is that the 'planetary boundaries' framework confronts a sense of 'radical uncertainty'. In their work on climate and environmental change, Geoffrey Heal and Bengt Kristöm (Heal and Kristöm 2002) explain that there are issues of both scientific and socio-economic uncertainty. Drawing on this, theologian Jan Jorritt Hasselaar identifies a third level of 'radical uncertainty', which is a more fundamental uncertainty. Underlying scientific and socio-economic uncertainty, radical uncertainty stems from the basic, lived experience of the human condition itself (Hasselaar 2020, pp. 227–28). Hasselaar's idea of radical uncertainty is indebted to Hannah Arndt, which isperhaps why it suggests one of the reasons that the planetary boundaries discussion has captured the imagination of so many researchers—the crisis being explored by the discussion is a challenge to the human condition itself.

If the boundaries discussion uncovers a sense of radical uncertainty (not just scientific and socio-economic uncertainty), it is because *we require, and yet are unable to know, our planetary home—at least through science alone*. And the scientific measurement of our 'safe operating space' continues to push us deeper into crisis. Already in 2009, the researchers judged that three of the seven boundaries had been surpassed.

Throughout this discussion, there is an underlying realization that *we live in a world on edge*. This requires transformation. However, the social and cultural factors that create transformative possibilities do not yet have any systematic influence on the assessment of the framework. Biermann and Kim comment, "By design, their assessment effort was science-driven . . . Input from civil society groups, for example, was not systematically sought after, even though all planetary boundaries might suggest political action with profound consequences for national and global governance" (Biermann and Kim 2020, p. 499). And so, while scientific researchers focused on 'planetary boundaries' acknowledge the normative dimensions of the conversation, relevant fields are not involved in deepening the discussion. Unfortunately, the knowledge used to create and assess the boundaries is condemned to be provisional and partial because it does not draw on fields in the humanities and social sciences that aid in value creation, ethics, narrative, and cultural understanding.

We can see numerous examples of how this limitation already impoverishes the planetary boundaries discourse. To give one example: after the initial conceptualization of a 'safe' system (that is, maintaining biophysical stability), more recent assessments have recognized the need to expand this to include justice (Biermann and Kim 2020; Raworth 2012; Rockström et al. 2021a, 2021b; Gupta et al. 2021; Kashwan et al. 2020; O'Neill et al. 2018; Steffen et al. 2015; Brand et al. 2021). This began with Raworth's proposal of 'donut economics' (Raworth 2012), which envisioned the need for material safety and the equity of basic human needs. Living in the 'donut' is one way of introducing justice and equity into an otherwise thin conception of the prerequisites of human flourishing. However, what is considered in new calls for 'safe and just' boundaries continue to neglect fields that critically study the meaning of conceptions of justice and flourishing. For as philosophers Hickey and Robeyns (Hickey and Robeyns 2020) point out, justice is generally contested—it does not have a settled definition. In turn, there is not a consensus as to what planetary justice might mean. What is more, Hickey and Robeyns point out that the ethical question of justice is logically prior to the legal one. Unfortunately, the definitions of justice given in relation to the 'planetary boundaries' framework are typically thin, instrumental, and focused on legal issues. As of yet, ethical presuppositions or underlying meta-narratives

are not discussed in detail in the 'planetary boundaries' discourse. At most, the scientific community investigating the 'planetary boundaries' framework attempts to position their work in the context of the precautionary principle, without much nuance or critique.

The 'planetary boundaries' discourse attempts to point policy and society toward an interpretation of the material impacts of human activity in the face of risk and uncertainty. Even though the concept of boundaries appears to be about scientific data, its real power is found in how it constructs a vivid story to make judgments about the alignment between, on one hand, human global impacts and, on the other, the values human actions represent. And so, the foregoing discussion raises a new question: how can the rhetoric of 'planetary boundaries' *motivate* confidence that the current status does not define the future, and thus foster the transformation of human practices?

## 3. Finding Faith in Our Operating Space

What is needed in the planetary boundaries' discourse are tools to enrich the narrative it promotes. After all, Rockström and others argue that a 'safe' Earth requires looking beyond the science toward the human story, saying "[w]e need to address the root causes, rather than the symptoms: our relationship with nature and the causes of unsustainable investments, production, and consumption that would lock us into our current destructive pathways" (Rockström et al. 2021a, p. 1209). This requires a step beyond the mere adoption of the precautionary principle. Instead, *any discussion of 'a safe operating space' cannot be a neutral scientific assessment, but requires a narrative framework that weaves together the humanities and the sciences*.

To be transformative, the story of a safe operating space and planetary boundaries must not only describe uncertainty and risk, but equally promote a new, ethical form of interpreting human impact on the planet. Already we see this impulse for transformation as an undercurrent in the 'planetary boundaries' discourse. Radical uncertainty, justice, the political grounds for resource use, and the possibility of new sustainable practices, can lead to the conclusion that science alone will not provide an adequate discussion of our earthly, material boundaries. As Diaz et al. recommend, "Reversal of recent declines—and a sustainable global future—are only possible with urgent *transformative* change that tackles the root causes: the interconnected economic, socio-cultural, demographic, political, institution, and technological indirect drivers behind the direct drivers" (emphasis added, Díaz et al. 2019, p. 1327). Put simply, the conversation surrounding planetary or earth system boundaries has primarily focused on the sphere of science and policy, but something is missing. Specifically, the 'planetary boundaries' discussion is a yearning for an experience and practice of hope. It asks: in the midst of uncertainty and risk—the threatening, unknown narrative of the future offered through scientific measurement—is there any *promise* for the future?

For the purposes of the present argument, religious hope is the trust and desire for a sought-for future, which for religious communities often includes renewal and reconciliation. In some cases, this reconciliation is eschatological in orientation, while other traditions focus on a transformation of the present through acknowledgment of a horizontal transcendence. The present argument will focus on examples of Christian hope. For Christians, the idea of hope prominently features elements of soteriology and eschatology. The focus on hope is longstanding, from the early Church and scriptural traditions (cf. van den Heuvel 2020), through the last century and the influence of Jurgen Moltmann's *Theology of Hope* as a signpost for post-World War II theology (Moltmann 1993). For millennia, Christian hope has been a key means through which faith is open to the promise of an eschatological future. Indeed, as one of the three theological virtues, hope is prominent as a form of practice amidst environmental change (Thompson 2009; Stuart 2020). While the story of climate change, loss of biodiversity, and human overconsumption can otherwise fall into 'easy despair' and fear, faith contributes a possibility of a call to action and hope in response to the 'unacceptable present' (Conradie 2013). Indeed, the examination of planetary boundaries

has eschatological and soteriological elements, which suggest analogues to the structure (though not the theological content) of Christian hope.

When attempting to understand the possibility and promise of hope, theology and ethics bring something to the table. These fields focus our attention on interpretive resources, which interrogate meaning and understanding in the midst of environmental change (Clingerman 2015). In the present case, religious reflection offers something that has been otherwise missing in the discussion: a constrained, qualified hope that is needed to embark on the 'urgent transformational change' that Diaz and others recommend. That is to say, what 'planetary boundaries' and Christian ethics share is the need to find a balance between despair and hope, what might be characterized by Rebecca Solnit's phrase "hope in the dark" (Solnit 2016).

By reflecting on examples of how theology and ethics structure hope, scientific researchers will find examples of an ethically rich, conceptual bridge that reconciles dire warnings ("we have crossed six boundaries, each of which is essential for the sustainability of human life and society") with the desire to use scientific information to spur transformational change. Christian theology, like the 'planetary boundaries' framework, requires hope that, in spite of the several challenges we face, we can change our relationship with our world and each other. But this hope must be tempered by our uncertainty, and the state the planet is in. Christian communities—like secular ones—might not fully appreciate the complex nature of hope, even if their intellectual traditions invite this reflection. But as shown below, Christian hope involves trust, desire, and a motivation to participate in a possible future.

Hope is essential for interpreting the meaning of a 'safe operating space', but it is important to raise a caveat: religious studies scholars often warn against assuming that religious communities or theology can disproportionately influence public perception of 'green' issues. Furthermore, I do not suggest that religious communities will spearhead transformational change once talk of 'planetary boundaries' is 'translated' into theological language. More bluntly stated, the argument is not that we must pray to remain within a safe operating space, but rather that religious traditions can offer robust models of how hope can rhetorically balance a desire for a transformed future in the face of crisis.

More scientifically-minded researchers might be suspicious of whether the boundaries proposal requires normative humanistic disciplines like religious studies, theology, and ethics. This suspicion might be tempered by recognizing that these fields are well-versed in contributing to the conceptual, emotional, and embodied elements of narratives that challenge our sense of human action and meaning. As ethicist Willis Jenkins writes, "religion-trained scholars can sometimes help other disciplines explore worlds with strange relations and otherwise ways of being people" (Jenkins 2024, p. 16). That is to say, religions are frameworks of relationships as well as senses of meaning which can enrich other disciplines. With this perspective in mind, theological and ethical viewpoints can interpret 'planetary boundaries' not merely as a catalogue for different indicators of human impact on the planet, but as a concept that attempts to gather separable material assessments into a coherent narrative for understanding global environmental change (it should be noted that the planetary boundaries framework does not have a strong teleological and mythic structure, making it quite different than—and in many ways conflicting with—the 'Universe Story' framing some religion and ecology scholars advocate).

A portrait of whether we have overstepped the boundaries of our home planet beckons us toward emotional and moral assessments, not merely technical and scientific responses, and this is something religious traditions have experienced. For Christian theologians, the overarching theme of faith is to see promise in the midst of human fallibility and salvation in the brokenness of the world. In other words, Christian theology gives an example of the human search for hope in the face of radical uncertainty—precisely the type of uncertainty we see underlying the scientific attempt to align scientific measurements with the hospitality of the planet. Such a comprehensive theological narrative proposes models that can be

adapted to illustrate how exceeding our bounds in the global environment requires a response envisioned through *the narrative structure of hope in the face of threatening despair*.

It is also important to note that theologically-informed environmental discussions are not without criticism. For instance, theologian Michael Northcott points out that the Christian sense of hope is not always welcomed in environmental contexts. He notes that some have accused Christian hope as being a cause of environmental problems, insofar as "the idea of progress in human development, and hence economic, material, and technological progress, are genealogically linked with the Christian hope of creating the Kingdom of God on earth" (Northcott 2020, p. 216). Any investigation of religious hope needs to adopt an attitude of humility and suspicion, lest it become blind, prideful, or oppressive.

If the nine planetary boundaries are interconnected stories of radical uncertainty, then, theological discussions suggest a model of hope that other disciplines are less equipped to offer. When scientific or socio-economic assessments of the 'planetary boundaries' are faced with the radical uncertainty of overstepped boundaries, the response is too often somewhat rudimentary and unreflective—at times, little more than implying that our impacts are 'good' or 'bad', right' or 'wrong', 'sustainable' or not. In contrast, ethical and theological approaches provide narrative forms that create a means to dwell on the hope within crisis. For hope is a religious response to the despair and grief we feel at the overwhelmingly dire state of the environment, Dalton and Simmons (2010) explain, and so environmental theologies have the work of transforming social imaginaries via hope. Such hope is not unbounded or infinite. If the 'planetary boundaries' are in truth a story about radical uncertainty, theology and ethics can suggest how to practice narrating this story through *qualified* hope.

Before narrowing in on specifically religious elements of hope, we first should show how a narrative can leverage a sense of hope without requiring a specifically theological lens. For instance, Leslie Head helpfully suggests five dimensions in the concept of hope in the face of environmental change (Head 2016, pp. 76–80), which all rest on the fact that hope is an embodied practice. First, hope is embodied in ways that are similar to the embodiment of melancholy and grief. This partly explains why hope, grief, and mourning are paired together in environmental studies. Second, hope allows one to be open to new possibilities and offers a space for action. Third, hope can reframe our world, but it can only do so by creating a rupture that allows space for a new possibility to emerge. In other words, hope relies on 'generative moments', which might be good or bad. In this rupture, violence and grief can become catalysts for something new. Fourth, Head acknowledges that hope is found in non-linear situations, and therefore is always at risk of failure. Hope does not guarantee successful outcomes for the new possibilities it opens to us. Finally, the act of hope has a lot in common with being a practice and an experiment. Head explains this with reference to Annemarie Mol's conceptualization of the messiness and provisionality of hope through verbs like 'tinkering', rather than assigning hope as something with a clear structure or telos.

Head's description does not explicitly tell us how religions and faith commitments enrich the understanding of hope for both individuals and communities. Nor does Head's view explain why hope ought to be qualified when investigating environmental change. While the conceptualization and function of hope is not the exclusive domain of religious communities, beliefs, or practices, religious faith aligns each of the five facets Head points out with a more fundamental interpretation of meaning. Many religions weave each of these five elements together through a 'trans-contextual' narrative (a narrative that is inclusive of, and yet transcends, partial, 'little' narratives that are embedded within a specific context). For example, the Christian tradition interprets 'possibility' as a sense of the future in the face of uncertainty and the 'tinkering' of hope, because Christian faith emphasizes the intersection between the possibility of hope and the brokenness of humanity and the world. Thus, Christianity often positions hope through a trans-contextual narrative that frames the uncertain present through human fallibility and the embodiment

of redemption (Clingerman and Ehret 2013). This trans-contextual narrative uncovers the ambiguity of being human in the world: a 'qualified hope' that stands between risk and promise, emergency and possibility.

## 4. The Boundaries of Qualified Hope

Christian religious reflection provides a narrative model of qualified hope, through which the 'planetary boundaries' framework can bridge its dire scientific warning and its desire for transformation. For the present purposes, 'qualified hope' means an expression of hope that is tempered or chastened by uncertainty and contingency. It is a hope that depends on an "if . . ."—"we have hope for the world, *if* we have the courage to act to remain within planetary boundaries . . ." The qualifier is not a foregone conclusion but instead is a recognition of our fallibility weighing on us as we seek human flourishing.

This section will summarize a few examples of theologically-framed, qualified hope in the face of crisis. The examples below are illustrative, not exhaustive, but suggest an interesting dynamic: each author suggests a form of qualified hope through which to understand the human relationship with our world. That is to say, these authors do not attempt to offer an unfettered, unconstrained, or unqualified sense of hope for the future, but rather a tentative hope that embraces uncertainty, risk, and existential threat. For each author, adding qualifications to a sense of hope makes sense. The story of climate change, loss of biodiversity, and human overconsumption can fall into 'easy despair' and fear, but faith also contributes a possibility to create a call to action and hope in response.

A more optimistic example of a qualified, theologically-informed hope is offered by theologian Cherice Bock (2016). Bock argues that faith and theology should "move from a space of critical alienation to one of critical hope, and for many pastors and people of faith to move from a space of uncritical hopefulness into critical hope" (p. 12). Bock emphasizes the need for a *critical* hope, influenced by Paolo Freire's liberative pedagogy. Bock's definition of critical hope consists of a double movement. On one hand, it is a hope that is built on a critique of ". . . our own complicity in the sociopolitical structures of our time", (p. 13), but does not remain there, lest this critical evaluation leaves us in a space of fatalism and despair. On the other hand, critical hope is an enactment of Christian hope; it is as a process oriented toward the future, through which we overcome our failures and seek reconciliation. Bock's ecotheology of critical hope is a theological practice that acknowledges the world's brokenness and suffering in the midst of climate change and also provides the steps that can be taken to create the world as it should be.

While Bock relies on the work of Freire to develop an ecotheology of critical hope, O'Neil Van Horn suggests that we respond to environmental change through a theopoetics of 'dark hope' (Van Horn 2019), which relies on Catherine Keller and Paul Tillich. Van Horn envisions dark hope in a way that is more conceptual than Bock's critical hope. If Bock highlights hope as a practice of reconciliation, Van Horn attempts to draw out hope as a contemplative call away from our normal modes of thinking. According to Van Horn, "Dark hope lures toward the possible, toward imagining a world that 'could yet be' in the face of the possibility of 'no longer being'" (p. 279). Like Bock, this view of hope acknowledges the temporality of hope, seeing hope as a lens for viewing the possible future. Unlike Bock, Van Horn says that this future is possible only as 'dark' insofar as there is uncertainty, unpredictability, and 'un/knowing' about the actual future that will arrive. This requires attempting to see what future transformations an opaque world might hold. Dark hope, then, is the creation of possibilities in the midst of our own limitations: "A dark hope is not a blind hope nor a nullification of hope. It is a re/vocation of hope—not a withdrawal, but a reorientation of its *vocare*, its call" (p. 283). Van Horn's hope for environmental thought rests in a sense of doubt, which is a response to poetically approaching the cloudiness of the future in the midst of crisis.

The philosophical nature of Van Horn's 'dark hope' fits well with Brian Treanor's call for a 'deep' or 'twilight hope', which emerges in the context of what he calls 'melancholic joy' (Treanor 2021). Treanor's view of hope is not limited to the context of environmentalism

(the subtitle of his book is 'on life worth living', expressing well where he sees the need for a qualified hope to be), but it is clearly associated with Treanor's ongoing work in environmental philosophy. Treanor offers a way to mediate the differences found between Bock and Van Horn, emphasizing hope to envision a future in light of a reformed, chastened sense of joy. Hope, in this context, is not in contrast with despair, but has a relationship with it.

Treanor's deep hope is not desire or wish fulfilment. Instead, Treanor says that deep hope is "an expression about and affirmation of the value of being" (p. 78). Such a hope is not easily found, especially because we usually think of hope as focused on receiving something in the future. Thus, he acknowledges that "our situation may admit the possibility of joy—moments of happiness before the curtain falls—it seems to preclude hope, insofar as hope is oriented toward the future and in the future the curtain will, inevitably, fall. Hope depends on a future that is uncertain in many respects but, disturbingly, least uncertain with respect to loss, suffering, death, dissolution, and the other horseman of despair, which number well more than four" (p. 73). Rather than thinking of hope in superficial ways, we require a hope 'in the dark' (quoting Solnit): a hope that is (1) an assertion of both what we see and who we are, (2) a non-calculative, risky wager, (3) connected to the transcendent (pp. 78–86). Such a deep hope is intransitive, says Treanor; it is without an object, but rather is an existential mood (p. 75). Treanor takes Solnit's idea of 'hope in the dark' one step further by embedding it within a sense of spirituality (though not a Christian theological commitment, per se) and philosophical hermeneutics. Treanor's view of hope reorients us to see time in ways different than Bock and Van Horn, focusing on us living in the present.

A fourth example of qualified hope is the work of theologian Miguel De La Torre. De La Torre's work is not centrally focused on environmental issues, but rather economic liberation and the marginalized. Challenging the influence of Moltmann on Christian views of hope and history, he advocates for an inversion of a simplistic, unreflective hope by calling for Christians to 'embrace hopelessness'. Why hopelessness? Because "[w]e live under a constructed history perpetuating a false justification of oppressive structures geared on privileging one group over against others. In the midst of overlapping unjust structures and the intersection of racism, classism, ethnic discrimination, sexism, heterosexism, and all the other ideologically based 'isms' imaginable, a sense of hopelessness grips the soul as realization of the depths of oppression makes solutions appear simplistic" (De La Torre 2017, p. 2). In other words, "Hope, as a middle class privilege, soothes the conscience of those complicit with oppressive structures . . ." (p. 5). As frequently pointed out above, hope is closely tied to both the past and future. Yet many of our histories are not neutral, but profoundly exclusionary. In turn, those who are erased from the past are excluded in the present and future. De La Torre makes explicit the politics of hope by forcefully pointing out that those who have no future cannot partake in hope.

De La Torre's call for hopelessness is not a form of nihilism but an attempt to illuminate the conditions of marginalized people and offer a way to empower themselves. Hopelessness, he argues, should not be romanticized, but should push us to take up a liberative praxis that says 'f*ck it' in the face of chaos and oppression (p. 149ff.). Elsewhere, he develops this idea through an ethics *para joder*, or a liberative movement, where the disruptive trickster breaks oppressive rules out of love, not spite, to trick the dominant powers as an act of surviving. De La Torre goes so far as to say, "In a very real sense, Jesús is a holy *joderon* (a holy screwer)" (De La Torre 2015, p. 161). In his discussion of hopelessness and the need for liberative disruption, De La Torre's explanation of the political nature of hope—and, specifically, issues of equity, exclusion, and marginalization—is an essential correction to the frequently individualistic and apolitical conversation on religion, hope, and the environment.

The examples given by Bock, Van Horn, Treanor, and De La Torre show how Christian religious reflection offers forms of qualified hope in the face of environmental crisis. In each case, hope is complex, ambiguous, and yet open to the future. For Bock, critical hope is the acknowledgement of our complicity and a practice of reconciliation. Van Horn sees

'dark hope' as a vocation of contemplation in the midst of environmental change. Treanor sees twilight hope as an acceptance of our flaws in encountering the world on the way toward the promise of a fuller affirmation of being. And De La Torre challenges us with the need for a political, liberative hopelessness as a vehicle to move us through both hope and despair.

Through these examples, what can we conclude about faith—and Christianity in particular—and the need for a qualified hope in the face of the radical uncertainty of our earthly boundaries? Foremost, each author shows how the practice of hope does not deny the precariousness or brokenness of the present. Indeed, each takes seriously the temporality of hope and the inevitability of dwelling in the present. Facing the finite presence means hope cannot be unbounded, ungrounded, or unqualified—and yet hope is still possible. By qualifying hope, each suggests that our desire for meaning does not presume that we can overcome catastrophe. Radical uncertainty humbles us and allows us to name the past and present crises in clear ways. Yet each author also illuminates an 'in spite of . . .' that culminates in the possibility of 'hope in the dark'. By creating this uneasy, yet (to borrow from Treanor) joyful, balance is meaningful, because it connects the political and social dimensions of practices of hope, fear, and despair.

## 5. Qualifying Hope for Our Safe Operating Space

The theologians and philosophers discussed above provide examples of how the Christian tradition amplifies and complicates Head's definition of hope in the face of environmental crisis. Together they illustrate how to interpret hope as a story of brokenness, crisis, reconciliation, and the (im)possibility of liberation. These examples of qualified hope caution us against an overreliance on the precautionary principle as a motivation to respond to the scientific assessments of planetary boundaries. These are facets otherwise missing in the 'planetary boundaries' discourse but assist in the development of a thicker description of what the lived experience of a 'safe operating space' can mean.

As a means to question 'planetary boundaries', 'qualified hope' is useful because of its narrative richness. As shown above, the 'planetary boundaries' framework is not exclusively a scientific endeavour, though it appears to be one on the surface. Its resonance and impact stem from the fact that it is a narrative creation. The call to action it seeks to convey makes sense only by uncovering the underlying story: humanity must find avenues of transformation because we live in a world on the edge and in the midst of radical uncertainty. The scientific framework itself does not (indeed, cannot) investigate or offer resources for understanding the existential depth or lived experience of this narrative. It requires a means of hope. In contrast to the inability of the framework to embody hope, embedding hope in stories is a skill for faith traditions like Christianity, which was formed by a dialogue between the stories and texts of the tradition that describe its meaning, the lived practices that embody its meaning, and the theological conceptualizations that analyse its meaning.

What happens when we join together the radical uncertainty of scientific information with the qualified hope of theology for transformative, lived possibilities of the 'planetary boundaries' discussion? First, theological and ethical assessments of qualified hope offer a blueprint for enriching scientific understanding through ethical and cultural reasons for seeking justice. While researchers bring forward the political and social need to include justice in the discussion of 'planetary boundaries', we often leave unanalysed the reason we *seek*—we thirst for and desire—justice. Thinking about hope *and* its limits is a precondition to understanding *why* justice is an imperative, and why a thin conception of justice shackles our discussion. Without the ambiguous reading offered by qualified hope, the conversation is limited to policy mechanisms and the precautionary principle, instead of a more robust definition that sees justice as transformational and ethically-oriented. As one example, Kashwan et al. argue that the boundaries framework would be more successful if there was a prioritization of the poor in its analysis of our 'operating space'. This becomes richer by incorporating the language and the liberative praxis of Bock and De La Torre, who

present a strong and resonant narrative on the need to be inclusive of the marginalized and oppressed in fundamentally different ways.

Second, theologically-oriented reflections qualify uncritical hope in order to acknowledge and understand the lived dimensions of being human in a fractured world, defined by imperfections and ever-threatened by conflicting values and interpretations of meaning. Creating a 'safe operating space', therefore, must be constructed in and by human differences. Although Rockström et al. suggest that "[t]o address the wicked nature of the global problems requires first setting a shared and just value system about how to address these problems" (Rockström et al. 2021a, p. 1210), this is contrary to a sense of qualified hope. What is more, the 'planetary boundaries' framework was not undertaken by first identifying a shared value system. In fact, it would be quickly apparent that there is not an objective, shared value system. The religious narratives discussed above conclude that what seems an obstacle to transformation is the inevitability of conflicting and ambiguous values. Yet, as we have seen through the examples of qualified hope above, what is necessary is not to claim a single shared value system, but to recognize that conflicting values are the cause of breached planetary thresholds and are the preconditions for a renewed human existence. To respond to any call to action about planetary boundaries means pursuing a transformation that deepens diverse values and ultimate concerns.

In other words, hope has a focus on fostering our ability for restraint. Northcott makes an important point when he suggests that, contrary to seeing hope as absent in the dystopian interpretations of human action upon the world, we ought to see how it focuses us on human restraint and "a preparedness to give space to other creatures so they recover a measure of agency and formative influence on habitats and places" (Northcott 2020, p. 224). More fundamentally, the sense of hope that emerges from Christianity (and other faith traditions) is one that focuses on redemption and the union of all creatures with each other, and with the Creator.

Finally, this discussion of hope challenges the scope of what we envision as a 'safe operating space' in the world. An insight into the 'planetary boundaries' framework is the attempt to study the world as a single whole with many interwoven dialogues. The interweaving of little narratives into a new perspective defines the scope of hope of humanity being on the earth. That is not to say humanity ought to see itself as an exclusively planetary species. Discussion of 'global' or 'planetary' earth systems are human concepts to explain a certain view, but human understanding should also be a local affair—our stories make sense only by interrogating both the parts and the whole of the story, so to speak. Thus, as Joanna Zylinka argues, humanity as a species uses the twin practices of ethics and storytelling in order to tame the world, since "... the majority of the processes of the so-called 'world', (or, indeed, the 'universe') across different scales unfold outside and beneath both human agency and human consciousness, in ways that we can at best describe with mathematical equations but that we cannot ever obtain a 'total' picture of" (Zylinka 2014, p. 78). The planetary side of things keeps our embeddedness in the world in check, and the manifestation of hope in local settings serves to grasp a "sense and taste for the infinite", in the words of Friedrich D.E. Schleiermacher.

Overall, qualified hope is a corrective to viewing overstepped boundaries and radical uncertainty through despair or nihilism. Otherwise missing from the discourse, the sense of qualified hope is a bridge for transforming the 'planetary boundaries' discourse. For as Solnit explains, hope is a doorway, and "[w]alls can justify being stalled; doors demand passage ... To be hopeful is to take on a different persona, one that risks disappointment, betrayal ... Other times that tale of gloom seems to come from the belief in a univocal narrative, in the idea that everything is headed in one director, and since it's clearly not good, it must be bad" (Solnit 2016, pp. 23–24).

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