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A leap of Green faith: the religious discourse of Socio-Ecological Care as an Earth system governmentality

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ABSTRACT

The Anthropocene is fundamentally altering concepts of human agency and responsibility in the governance of the Earth system. These concepts are paramount in discussions about governing deliberate interventions into the global climate – often referred to as ‘climate engineering’. Reflections on what it might mean for humanity to ‘play God’ by controlling the climate have brought religious knowledge to bear in these discussions. Using climate engineering as a paradigmatic example of human interventions which may come to define the Anthropocene, this paper presents a sociology-of-knowledge discourse analysis of interviews with environmentally active multi-faith leaders and scholars. Showing how green religious discourse provides a blueprint for a *governmentality of Socio-Ecological Care (SEC)*, the paper argues that religious knowledge has a role to play alongside other global systems of knowledge in reconceptualising the *who, what, why and how* of responsible and sustainable Earth system governance in the Anthropocene.

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1. Introduction

In the Anthropocene, no longer is humanity a ‘spectator of a natural drama to which we have to adapt’ (Biermann & Lövbrand, 2019, p. 1). Rather, humans are increasingly being cast in the dual roles of puppets and puppeteers in a post-natural production. Humanity is not only posited as having a dominant impact on global environmental processes, it is also increasingly vulnerable to the agency of the Earth system with which it is inextricably connected. These conceptual shifts have resulted in a range of new challenges for global environmental governance. Do existing understandings of objects, subjects, rationales, modes and instruments of environmental governance still apply in a world increasingly of our own making? How are concepts of human agency and responsibility in governing the coupled socio-ecological Earth system being redefined?

In seeking answers to these questions, recent work has shown that a range of knowledges are involved in the reconceptualisation of environmental governance in the Anthropocene (Lövbrand et al., 2020; Nikoleris et al., 2019). One type of knowledge which has been highlighted as having played a key role in reshaping understanding of the relationship between humanity and the non-human world is Earth System Science (ESS) (Lövbrand et al., 2009; Uhrqvist & Lövbrand, 2014). As Lövbrand et al. puts it;

by advancing the ‘coupled human and ecological system’ as a new analytical category, Earth System Science is not only offering a novel way of seeing and conceptualising the interplay between nature and society: A new political space for government intervention is also in the making, an Earth system governmentality. (Lövbrand et al., 2009, p. 11)

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However, the mechanistic understanding of the ‘Earth as an engine’ inherent to some branches of ESS, with humanity correspondingly being cast as ‘engineers’, has been criticised for embodying an optimistic view of human control – which may result in the perpetuation of technocratic or neoliberal governance modes unsuitable for dealing with complex global environmental governance challenges (Hamilton, 2018). As ESS evolves, its stated ‘grand challenge’ is ‘to achieve a deep integration of biophysical processes and human dynamics to build a truly unified understanding of the Earth System’ (Steffen et al., 2020, p. 54). Bringing broader types of knowledge into the conversation has been posited as a way to expand understandings of socio-ecological systems as governable domains, grapple with the moral and ethical implications of humanity’s role as Earth-shaping agents, and provide alternative epistemological and ontological foundations for Earth system governance in the Anthropocene (Brondizio et al., 2016; Lövbrand et al., 2015; Steffen et al., 2020).

This paper focuses on *religious knowledge* as a relevant lens through which the Earth system may be rendered ‘thinkable and governable’ (Gordon, 1991). As global systems of knowledge and practice, world religions provide resources that societies have historically drawn upon to understand moral and ethical questions related to humanity’s role in and responsibility towards nature (Clingerman & O’Brien, 2016; Koehrsen, 2021; Roltson, 2006). Therefore, it is argued that ‘religion has a role to play alongside other forms of knowing in any environmental discussion’ (Clingerman & O’Brien, 2016, p. xviii). This with especial regard to discussions about deliberate human interventions into the Earth system. One such case is ‘climate engineering’ – proposals for the deliberate large scale manipulation of the planetary environment to counteract anthropogenic climate change by either removing carbon dioxide from the atmosphere and storing it, or by changing the reflective properties of the Earth (i.e. by injecting aerosols into the stratosphere) to reduce warming (Shepherd, 2009). The idea of CE has been deemed akin to ‘playing God with the climate’, and as such is a ‘social, cultural, and ethical issue that requires humanity to marshal its deep moral, religious and spiritual resources as it ponders the appropriate response’ (Tirosh-Samuelson, 2018, p. 50). It has been highlighted that thinking about CE through a religious lens can help humanity reflect upon its understanding of itself and its responsibility in the Anthropocene (Jenkins, 2016). There have therefore been calls for the inclusion of religious knowledge in the discussion and development of climate engineering governance (Clingerman & Gardner, 2018; Clingerman & O’Brien, 2014; 2016).

Using the case of climate engineering (CE) as a paradigmatic example of deliberate human interventions which may come to define the Anthropocene, this paper contributes to investigating how religious knowledge could contribute to the reconceptualisation of governing the Earth system. Using a Sociology of Knowledge Approach to Discourse (SKAD) and the conceptual lens of governmentality, I analyse a series of interviews with *environmentally active multi-faith representatives* to map how religious knowledge may contribute to re-conceptualising the *who, what, why and how* of CE governance and global environmental governance more broadly. In the following sections I first outline my methodological approach before presenting and critically discussing the results of my analysis, showing how religious knowledge may provide the ‘discursive blueprint’ for a new variant of Earth system governmentality which I call *Socio-Ecological Care (SEC)*. I conclude by highlighting the potential for synergies between religious discourse and wider bodies of knowledge, arguing that religion – given its significant role in shaping how societies engage with environmental governance – can play key role in rethinking global environmental governance in the Anthropocene.

2. Methodological approach: discourse through the lens of governmentality

The governmentality concept I use as a heuristic lens to structure my discursive analysis is a system of thinking about the nature and practice of governing which; (a) is underpinned by a principle form of knowledge, (b) is linked to a particular governance rationale (*why*), (c) shapes particular governance objects and subjects (*what* and *who*), and (d) makes the development of specific governance modes and instruments (*how*) thinkable and practicable (Foucault, 2008 [1978]; Gordon, 1991). Governmentalities ‘define both the objects (what should be governed) and nature (how they should be governed) of governing, in effect rendering reality governable through the collecting and framing of knowledge’ (Bulkeley et al., 2007, p. 2736).

Discourse analytical approaches have proven to be particularly suitable to mapping the emergence of governmentalities because they seek to interrogate the discursive and social constitution of (environmental) problematisations as governable (Bulkeley & Strippel, 2014, p. 248).

The Sociology-of-Knowledge Approach to Discourse (SKAD) that forms the basis of my methodological approach conceptualises discourses as underpinning systems of knowledge which shape understandings of why governance is necessary, what is to be governed, by whom, and how. SKAD offers a discourse analytical methodology which lends itself to tracing the emergence of governmentalities, as it posits a constitutive link between discourse and governance, emphasising that social objects, subjects and relations are contingent and co-constituted through discursive structures that render some knowable and governable and others not (Boettcher, 2020; Leipold et al., 2019). SKAD thus offers a ‘theory-methodology-methods package to examine the discursive construction of realities in social relations of knowledge’ by systematically reverse-engineering discursive structures underpinning a pool of individual utterances (Keller, 2018, p. 29).

My data pool of individual utterances consisted of transcripts of 20 interviews I carried out with faith leaders and religious scholars about CE governance. The interviewees were sourced based on three criteria: (1) They identified as belonging to and/or being an expert on a world religion, (2) they were environmentally active, and, (3) they had previously engaged with the topic of CE. The interviewee pool included members of Christian, Muslim, Jewish, Buddhist, Hindu, and Neo-Pagan religious communities in the USA., the UK, Germany, Indonesia, Turkey, Sweden, Nepal, Chile, South Africa and Belgium.¹ Each interview was structured around a series of open-ended questions focusing on identifying religious understandings of humanity’s relationships with the non-human environment and how they may relate to the idea of deliberate, large-scale human interventions into global systems via CE approaches.

I systematised the anonymised interview transcripts through a process known as ‘open coding’, inductively organising the discursive elements identified in the transcripts into categories with the help of the qualitative text analysis program MAXQDA. Using the elements of the governmentality concept as a heuristic lens to guide the search for recurring rules by which discursive elements were related, I created a map of discursive structures shaping governance *objects (what) subjects, speakers (who), rationales (why), modes and instruments (how)*.

3. Results and discussion: an emerging governmentality of SEC

My analysis revealed that multi-faith religious knowledge may provide the ‘discursive blueprint’ of a novel variant of Earth system governmentality: *Socio-Ecological Care (SEC)*. The discursive elements of SEC shift the focus away from a mechanistic, technocratic understanding of Earth system management and towards ethical environmental governance in world in which humanity is only one part of an interconnected,

	Subjects (Who)	Rationales (Why)	Objects (What)	Mode (How)	Instruments (How)	Speakers (Who)
Governmentality of Socio-Ecological Care (SEC)	Humanity as part of an interconnected, socio-ecological whole	Governance to create collective, relational norms (care, balance)	Approaches suited to maintaining/restoring eco-systemic balance (cooperating with vs. controlling nature)	Participatory collaboration within a subsidiary structure of systemic interdependence	Open dialogue, participatory decision-making processes	Bridge-builders, moral narrators, voice of the weak

Figure 1. A discursive blueprint for an Earth system governmentality of Socio-Ecological Care.

socio-ecological whole. The elements of this system of thinking about the nature and practice of governance are underpinned by a *relational logic*, which focuses on reciprocal relationships between interconnected human and non-human nature, making new governance *subjects and speakers, rationales, objects, modes and instruments* thinkable and practicable (see [Figure 1](#)). In the following sections, I describe the discursive construction of each of the individual elements of this emerging governmentality, and critically discuss how they may help rethink existing concepts in global environmental governance.

3.1 Subject positions: humanity between benevolent domination and socio-ecological interconnection

The idea of CE gives humanity a glimpse into an imagined future where it accepts its role as an Earth-shaping agent. Building on the recognition that humanity has long been unintentionally modifying the global climate through its use of fossil fuels, CE can be seen as a way to embrace this agency, and move on to internationally intervening to counterbalance some of the damage caused. From a religious perspective, would CE then be the ultimate hubris, or a culmination of humanity's responsibility to shape creation? How is human agency in relation to the non-human world being constituted? What discursive subject positions are available for humanity within the religious sphere of the debate on CE governance? My analysis identified three distinct subject positions being offered to humanity by religious discourse: *Benevolent Dominator*, *Responsible Steward* and *Part of an Interconnected Whole*, as outlined in Supplementary Table 1.

The *Benevolent Dominator* subject position constitutes humanity as a powerful co-creator or vice-regent with specific responsibilities. Based on the understanding that humanity is the most intelligent being on Earth, and the only one with the ability for self-reflection, this subject position affords humans a position of power relative to 'nature', which is something separate from humanity over which it can and must exercise domination in order to fulfil its destiny and prosper. This hegemonic understanding of human agency in relation to non-human nature makes deliberate intervention into Earth systems a logical continuation of humanity's God-given right and responsibility to shape their environments. Failure to exercise that responsibility could even be seen as a sin. Humans are thus seen as:

Managers, as people who are supposed to take control and subdue the Earth and all its harshness, and to rule over it. And so climate engineering is an extension of that call. So if that is our task, we'd better make sure that we do that well, and therefore, a failure to take up that responsibility is simply a form of sloth. So, that's a kind of theological legitimization of climate engineering. It's not one that I warm to, I need to say immediately, but that is certainly one version of the story that you find around. (CH18)

As the above quote illustrates, although present in religious discourse, this understanding of humanity's role in relation to non-human nature was consistently reproduced as a negative subject position by interviewees. Associated with older interpretations of Abrahamic religions, the *Benevolent Dominator* subject position was posited as embodying outdated, linear, hierarchical and mechanistic understandings of human agency in natural processes which have contributed significantly to causing environmental harm.

In contrast, the *Responsible Steward* subject position was much more diversely represented in the data pool. In this understanding humanity is God's trustee on Earth. As one interviewee put it;

Human being[s] are the maintainers or the guardians on this Earth. With that, it means that we are given trust by God to maintain, to take care of the planet, that means all his creation. So, we're not the sole controller of everything, but then we are maintaining to ensure what I mentioned earlier about the limits, not to transgress the limits, to maintain and to care for all His creation. (MU14)

This speaker position makes deliberate interventions into Earth systems thinkable – if it were a way for humanity to fulfil its God-given responsibility to protect and care for the planet. While some variants of the *Responsible Steward* subject position – those focusing on precaution, balance and care – were reproduced as a positive subject position, others were reproduced negatively due to the dualism and inequality implied between humans – as having God-given rights and agency – and the rest of passive non-human life on Earth. Interviewees of multiple faiths emphasised that this hierarchical dualism goes against the idea 'that

there's a relationship of one level of equality between humanity and the natural world' (HI6) and implies that 'we somehow think of ourselves as an ecologically segregated species' (CH18).

The final subject position, *Part of an Interconnected Whole*, was the most commonly and positively reproduced in the data pool, emphasising that humanity is 'just one part of the manifestation of a divine whole' (HI7), that 'humans are just part of this network of relationships [...] there is a sense that for all of those, the Earth is a sacred being, that it is alive' (PA20). While there are differences between humans and non-human nature, this is a difference of kind rather than an essential difference. So,

while there is a functional difference between a human and a whale, and an insect outside and a tree outside my window, they're all part of the same divinity. So all are deserving of the same respect [...] It's all seen as one part of interconnected divinity around us. (HI7)

This subject position focuses on the interconnected character of an Earth system which encompasses all of creation. Humanity is not separate from nature, but rather part of it, 'related to everything' (CH10). The 'whole' that humanity is part of is organically interconnected – a body, a family, a congregation of creation, a web of life. And the question is then 'what is our role within ecosystems [and] biotic systems? It is about the place and the role, the vocation of human beings within Earth's systems' (CHR18). From this embedded perspective, humanity can imagine 'treating that natural world not just as an 'it', as a thing, as a place to get resources from, to suck dry, but [...] as a living being, as an integral entity or an integral being with different components' and correspondingly, 'it's a totally different way in which I will now work on making decisions that are going to affect that creature and, of course, affect me' (MU15).

In this understanding, deliberate human intervention into the Earth system could only be undertaken with respect and care, because;

whatever we do will have consequences and impacts for the whole creation. We learn that the creation is not composed of many different small ecosystems, but it is one big ecosystem. If you interfere in one part of the system you can't say what the impact will be on the other parts of the world. So we have to be very careful and see what the rhythms of this creation are. (CH19)

These three subject positions offer humanity contrasting ways to conceptualise their agency and responsibility when considering deliberately intervening into the Earth system. From the *Benevolent Dominator* subject position, such interventions may be a logical manifestation of humanity's right and responsibility to control the non-human environment to perpetuate human development and prosperity. From the *Responsible Steward* position, deliberate intervention may be part of humanity's responsibility to maintain and care for the non-human environment to ensure it can sustain future generations. Finally, from the *Part of an Interconnected Whole* subject position most commonly reproduced by interviewees, humans are themselves part of the holistic, organic entity into which they would be 'intervening'. From this *relational perspective*, CE would only be thinkable if undertaken with reflexive humility, care and respect, taking the existing rhythms of complex living systems into account.

3.2 Rationales: care, balance and humility in CE governance

Mapping the rationales for why CE governance is needed that were being reproduced by the interviewees further highlighted this relational logic. The three key rationales that emerged were: *Responsibility of Care*, *Maintaining Balance*, and *Ensuring Humility*, as outlined in Supplementary Table 2.

Emphasising the inherent interconnectedness of the Earth system, the unique ability of humans to be able to recognise their complex reciprocal relationships with non-human life on Earth, and the correspondingly expanded concept of (self)responsibility that this recognition implies, the *Responsibility of Care* rationale calls for governance to ensure that all deliberate human interventions into Earth systems are governed according to ethics of responsibility and care:

I'm responsible not just for me personally, not just for the human beings with whom I interact in the social environment, but also for all forms of life [...] So we need to create a different ethic – ethics of care, ethics of responsibility, which is

connected to ethics of sharing, ethics of collaboration, ethics of consultation, and focuses not on domination, but on help. (JE8)

Rather than preventing human intervention into ‘natural’ systems per se (which is impossible given the entanglement of human and non-human systems), the *Maintaining Balance* rationale posits that governance is needed to prevent humanity from overstepping critical thresholds in complex systems by perpetuating or instigating ‘exploitative’ relations with the non-human environment through the use of CE:

Humans cannot live without causing disruption to the natural world, that’s inherent. And that’s why there’s this teaching, which is: okay, how do you maintain that balance, knowing that we’re always causing disruption? [...] We always are, and we can’t avoid that. So, with that understanding, climate engineering is just another way that we’re going to be disrupting the natural world, but how do we minimise that as much as possible? (HI6)

The *Ensuring Humility* rationale emphasises that the purpose of governance is to ensure that humanity’s tendency towards hubris is constrained, and that human relations with (and within) Earth systems remain humble. Drawing upon religious narratives about the moral risks of humans assuming that they know too much, or are capable of complete control, this rationale underscores that recognition that humanity is just one part of a web of socio-ecological relationships should inspire humility in governing Earth systems:

What I think would be a better alternative, would be to corroborate with the Earth’s natural processes. [...] Having some humility, because we are human, made out of the dust of the Earth, and we need that humility in making decisions about how to support recovering from or moving away from climate change. (CH11)

These rationales offer alternatives to strategic and functional rationales for CE governance identified in other spheres of the CE debate, which posit that the purpose of CE governance is relative power and responsibility balancing within international climate politics, and/or primarily about problem-solving, risk management, and cost-benefit implementation (Boettcher, 2020). By bringing relational, ethical perspectives to the forefront, rationales of *responsibility of care, balance and humility* have potential relevance for re-conceptualising governance of human interactions with the non-human environment more broadly, and CE governance specifically.

The *responsibility of care* rationale also adds a new discursive model of responsibility to those previously identified in the CE debate (Matzner & Barben, 2020). In contrast to the ‘responsibility to manage the planet’ pattern identified by Matzner & Barben in the science/policy sphere of the debate, which lacks an underpinning norm and an entity to which humanity is accountable, the relational responsibility model present in religious discourse is based on the *ethic of care* and posits that humanity is responsible to both themselves (as part of a socio-ecological whole), and to God (as embodied in all creation on Earth), to care for the Earth system (see Figure 2).

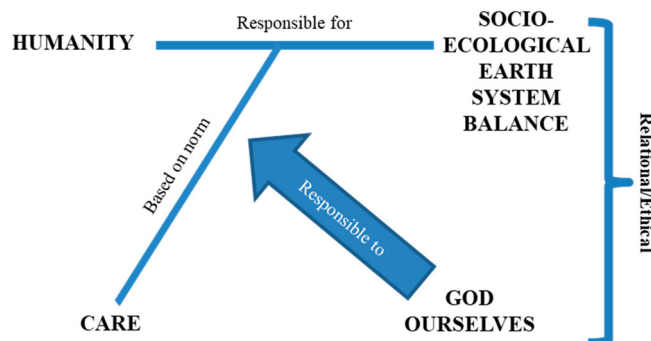


Figure 2. A relational, care-based model of Earth system responsibility (adapted from: Matzner & Barben, 2020).

3.3 Objects: CE as fix vs. cure, control vs. collaboration

The relational logic is further evident in two ways in which CE is being constituted as an object of governance within religious discourse: *External differentiation* of what constitutes CE as a lump category based on the dichotomy ‘fix’ versus ‘cure’, and *internal specification* of different types of CE based on those that ‘control’ nature versus those that ‘collaborate’ with nature (see Supplementary Table 3).

In externally differentiating CE as a lump category for governance purposes, the interviewees focused on the understanding that CE is a ‘fix’ to mask a deeper-seated problem – namely that of humanity having disrupted the relational balance within the Earth system. In contrast, responsible behaviour such as mitigation and/or economic reform which deal with underlying imbalances in socio-ecological relations are conceptualised as the real ‘cure’ for the underlying causes of climate change:

This [CE] is not addressing the root causes of the problem. The root causes, lay in our greed, our collective greed. They lie in our ignorance and also, our whole disregard and disrespect for nature. (BU1)

Governing CE as a lump category in an interconnected world is correspondingly an exercise in ensuring that technological hope cannot be used as an excuse to avoid doing that needs to be done – i.e. restoring balance in socio-ecological relationships – to address the underlying causes of climate change:

[...] it's [CE] not an easy fix and it's often used to say, "We don't need to do the difficult things, because there's another solution just down the road". And I feel that that the biggest danger, then, is a political one, rather than a technological one. The biggest danger is that it will stop us doing the things we need to do, because, obviously, in five years another person says, "Oh, well, my successors will be able to fix things, they'll have the technology by then." (CH5)

When internal specifying different types of CE approaches for governance purposes, the interviewees focused on a division between approaches which attempt to perpetuate human control over nature, and those that attempt to collaborate with the web of socio-ecological relations that make up the Earth system:

Anything that is an attempt to increase biodiversity and the health of ecosystems as a whole would be seen more positively [...] you're supposed to be working with the Earth. Listening to her, working with her, in relationship to all other species and creatures and ecosystems. Whereas they would see some scientific and technological solutions as being separate from the Earth. (PA20)

Governance of specific types of CE would then involve assessing each approach according to how it affects existing (and future) relations within the global socio-ecological Earth system:

So that any kind of development to add to the implementation of such CDR technology would be done properly with the right motivation and considering the needs of nature, considering the needs of the humanity, considering the needs of future generations. (BU1)

These categorisation and classification criteria based on the relational implications of CE within the interconnected socio-ecological Earth system differ from economic (i.e. cost-effectiveness) and political (i.e. ability to help achieve political climate targets) criteria which often define CE as an object of governance in the scientific, political and industrial spheres of the debate (Boettcher, 2020). By expanding the range of criteria for defining and assessing specific CE approaches, the relational perspective may thus provide a way to integrate a wider range of knowledges into decision-making on CE governance.

3.4 Modes and instruments: governance between technocratic management, principled guidance and participatory collaboration

The relational logic underpinning the religious sphere of the CE governance debate shapes a positive governance mode that focuses on relational *collaboration and participation* in governance development, as well as subsidiary practice from the local to the global (see Supplementary Table 4). The call for interaction between many perspectives in governance discussions and decisions is based primarily on the idea of shared rights. Building upon religious understanding that all living things are equally part of the same creation, they, therefore, should have the same right to decide about things that affect their lives. It follows that decision-making

on CE should be inclusive, deliberative, and participatory, taking as many (human and non-human) perspectives into consideration as possible:

You need to have Surah. Surah means the idea of consultation [...] And I think that the idea of having, in any room, the idea of “where are those one million species, how are they being represented in this conversation?” We need to take consultation for them. And you may say, ‘you’re crazy, trees don’t talk’. Actually, they do talk, trees do worship God, but we don’t know how they worship God. But I think we can get an inkling of what trees would like in the future. For sure, they don’t like to be chopped down and not replaced. So, I think that there has to be consultation by those of us who are human, and for all the stakeholders represented, “From the least of these,” as Christ said, to the most powerful. (MU15)

This relational mode of governance focuses on the quality of the process of governance development, rather than prescribing the morally correct outcomes of such decision-making processes. This focus on process is informed by the understanding, echoed in virtue ethics, that practices and process are key to developing habits that can help humanity to become the kind of people who can make responsible decisions (Hursthouse, 1999). As one interviewee pointed out, while religious tradition and virtue ethics cannot tell humanity concretely what they should do about CE governance, ‘what it tells us is, here’s what it means to train yourself to be the kind of person who could be trusted to make a decision like that’ (CH10). In this line of thinking, inclusive deliberation and open dialogue are not just means an end, but rather learning processes which may facilitate virtuous, responsible decision-making behaviour.

Concretely, this mode of participatory collaboration may be translated into CE governance instruments such as deliberative forums of relevant stakeholders on all decision-making levels, linking the local to the global according to the principle of subsidiarity:

On the larger scale, there has to be ways to make decisions that have input for people who are affected, and of course we’re all affected by geoengineering decisions. But that includes - and really is most important for - the people who are bound to be impacted the most. And how can we do that? I think [via] local decision-making. There’s a concept called subsidiarity, where decisions are made locally first and you only go to the next level of region and perhaps state or nation, you go to the other level when those decisions don’t - can’t have as much impact. For instance, human rights or climate change, or climate engineering, let’s say that, climate engineering, that you can’t just decide on a local scale. So then you’d have to go up higher. But you have input from regions, from smaller associations of people who can actually impact decision-making at a small scale, and then have it move up to the larger scale. (CH11)

The positive governance mode of *Participatory Collaboration* is contrasted within the religious sphere with two other CE governance modes: *Technocratic Management* and *Principled Guidance* (see Supplementary Table 4). *Technocratic Management* is linked to an expert (scientific) management governance mode in which decisions are made according to a utilitarian cost/benefit logic, based implicitly on a consequentialist ethic. It would correspondingly involve multilevel, expert-driven instruments for the regulation of CE activities based on the expected cost/benefit of their outcomes. The *Principled Guidance* mode is based on alternative mode of hierarchical steering with an implicit deontological ethic, in which top-down decision making - via instruments such as codes of conduct, international guidelines or agreements - on interventions into socio-ecological systems would be made according to universal principles derived from ethical and/or religious knowledge (i.e. ‘protect the most vulnerable’ or ‘do unto others as you would be done by’).

Both of these governance modes were reproduced negatively within the religious sphere. The *Technocratic Management* mode was associated with perpetuating the logic of anthropocentric, utilitarian domination over the non-human environment. The *Principled Guidance* mode was posited as impracticable, given that universal ethical norms or moral principles that may guide top-down governance of interventions into the socio-ecological Earth system have not (yet) been established, and it is unclear how such principles would be weighed against each other. However, religious knowledge is advanced as one possible resource for the development of these shared global governance principles (see below).

3.5 Speaker positions: roles for religious knowledge reproducers in CE governance

Religious discourse provides social actors with *active speaker positions* through which they can authoritatively adopt roles in the development and practice of CE governance. These differ from the speaker positions offered

to other major social actor groups engaged in the debate – scientists and political actors. Other analyses have identified that scientific and political discourses constitute *functional* and *strategic* speaker positions such as *Responsible Information Provider* (providing unbiased scientific information to improve the understanding of the risks and benefits of CE and thus inform the development of governance) and *Strategic Planner* (engaging in long-term strategic societal and environmental planning to inform CE governance goals) (Boettcher, 2020). In contrast, the religious discursive structure offers social actors several *relational* speaker positions focusing on establishing and maintaining relationships between knowledges and perspectives: *Moral Narrator*, *Bridge Builder*, and *Voice of the Weak* (see Supplementary Table 5).

The *Moral Narrator* speaker position provides the discursive template for a governance role that focuses on telling moral stories, bringing historical moral knowledge to bear, and thereby helping humanity make sense of novel moral and ethical governance challenges. This speaker position affords religious knowledge reproducers the authority to offer narrative understandings about what is or should be important to humanity, and how to relate this to the ways in which emerging technologies (such as CE) and their interaction with socio-ecological systems should be governed. This speaker position is therefore associated with facilitating reflection upon what sort of vision(s) for an anthropogenic future humanity may find morally acceptable/desirable. Speakers fulfilling this role are not expected to provide definitive answers, but rather to help humanity develop a range of ethically-informed, big-picture governance narratives about human interventions into the Earth system:

We know we need work on climate engineering governance [...] Stories are absolutely essential because the work now is to tell people what we mean by climate engineering and help people start to think about how they would make decisions about it. And the people who are going to get on board that conversation with purely technical terms and charts and graphs are already in the conversation, and the people we desperately need in the conversation - a broader array of global citizens - are people who will understand this best when it is told in relatable stories, when it is told in the human terms that come from stories. So, I think good stories, thoughtful stories and stories that present genuine choices about how we interpret the world we live in and what we can do about it are the most important thing we've got to do right now (CH10)

The *Bridge Builder* speaker position provides a discursive template for governance roles that involve bringing people together, overcoming divides and promoting collaboration and cooperation in governance development and practice:

We – as religious people within the environmental movements - have this role of facilitating dialogue, of trying to keep the vision going to say, “why are we doing this altogether? Why do we need to be in this altogether? Why is this thing transcending all our small differences and conflicts and tensions and ego problems?” And that helps to unite - religion can be a very divisive thing and it has been used a lot to divide people, but it can also be a force to unite and to harmonise and to promote peace and to promote collaboration. (CH16)

In addition to facilitating dialogue between groups of social actors active in the CE governance debate, the religious discourse offers an additional speaker position, entitled *Voice of the Weak*, which affords religious actors a role in bringing underrepresented perspectives into CE governance development. Given their respected societal positions as carriers of moral and ethical authority, religious speakers may have access to processes where other, less authoritative voices would not be heard. This would allow (and perhaps require) them to speak on behalf of absent or marginalised groups in governance development and practice:

While the person who is in absolute need might not be able to get past that security guard, the person with the religious collar, he might be able to get into that corporate office building and say, “Thanks for letting me in. Now I've got something to say to you about all the other people who you didn't let in.” [...] the most vulnerable, those closest to the pain, they will not be allowed there. But if they're not allowed there, then maybe in a poor way, we can represent their interests at that table and hopefully change the conversation, as we're speaking about issues of governance that will be decided in those rooms. (MU15)

Based on the understanding that, in responding to global environmental challenges such as climate change in coupled socio-ecological systems, humanity is not just facing scientific, but also societal, political and ethical problems, these speaker positions allow religious social actors to authoritatively call for synergic relationships between different types of knowledge in deciding how to face these challenges.

4. Discussion & conclusion: a leap of (Green) faith towards global environmental governance?

As the above results have illustrated, green religious knowledge may provide the discursive blueprint for a novel system of thinking about the nature and practice of Earth system governance: a *governmentality of Socio-Ecological Care (SEC)*.

The governmentality of SEC expands the scope of thinking about the nature and practice of CE and global environmental governance in several ways. First, by providing the relational concept of *humanity as just one part of the living web of reciprocal relationships* that up make the Earth system, it adds a new *subject position* to enable humanity to reconceptualise its role in the Anthropocene, moving away from the concepts of planetary managers, or enlightened stewards of the Earth.

Secondly, the *rationales of responsible care* (of and by socio-ecological systems), *balance*, and *humility* underpinning this governmentality reinforce a relational perspective that may be central to developing more holistic, non-hierarchical and non-linear understandings of human responsibility and agency in global environmental governance. Specifically, the SEC may offer a new model of human responsibility for deliberate interventions into socio-ecological systems that goes beyond the technocratic model of responsibility for 'planetary management' previously identified in the CE governance debate (Matzner & Barben, 2020).

Thirdly, by shifting the perspective from a bird's eye view of the Earth as a machine, and rather providing humanity a way of looking up and out from a position within an interconnected, socio-ecological whole, this governmentality rethinks what *object* is to be governed: Actions and approaches that focus on working *with* existing (and future) relations *within* the global socio-ecological Earth system are differentiated from those which attempt to externally control or 'fix' the system.

Fourthly, the relational, non-hierarchical logic of this system of thinking about the nature and practice of governance, in turn, makes thinkable and practicable governance *modes and instruments* which are *bottom up*, *situated*, *participatory*, and involve the integration of a range of knowledge types. Religious discourse could thus contribute to discursive blueprints for future architectures that enable the epistemological pluralism needed to adequately address democratic socio-ecological governance at the planetary scale (Mert, 2019).

And lastly, this governmentality offers discursive *speaker positions* through which religious social actors may authoritatively engage in development and practice of CE governance, and global environmental governance more broadly, *as moral narrators, bridge builders*, and by giving *voice to the underrepresented*.

Comparing the results of my analysis to wider literature points to fruitful synergies between this religious 'system of thinking about the nature and practice of governing' the Earth system and complementary bodies of knowledge. The discursive structures being reproduced by religious social actors share similarities with the system critical discourse of climate justice and civic environmentalism identified as becoming increasingly relevant in global climate governance (Bäckstrand & Löwbrand, 2016; Biermann & Kalfagianni, 2020), with both calling for changes in knowledge/power dynamics to integrate marginalised voices into environmental governance.

The results presented here reflect trends similarly highlighted by theology and religion studies' scholars towards 'overcoming anthropocentrism and transforming the nature/culture divide into a symbiotic and inter-dependent relationality' in multiple world faiths (Conty, 2021, p. 224). Within political theory, religious discourse may also reinforce an emergent concept of 'global green civilisation' which connects the 'microlocal with the full planetary' and 'offers comprehensive guidelines for sustainable human habitation with the New Earth' (Deudney & Mendenhall, 2016, p. 63). It further shares similarities with wider post-humanist-post-modern scholarship which brings to the forefront 'a sense of organic connectedness with nature', calling for the dissolution of epistemological dualism and prudence in attempts to dominate nature (Cudworth & Hobden, 2013; Fremaux & Barry, 2019, p. 174).

The religious focus on the responsibility of care as a rationale for governance also resonates with care-based approaches within the fields of global environmental justice (Schlosberg, 2007) and global feminist ethics (Held, 2005; Tronto, 2015). Such approaches emphasise that global governance informed by an ethic of relational and responsible care is more likely to pay attention to and prevent potentially harmful shifts in socio-ecological relations (McLaren, 2018; Preston & Carr, 2018; Tronto, 2015).

The relational logic underpinning the religious sphere of the CE debate may further be complementary to an emerging approach to integrating different valuations of human/non-human-nature relations into ecosystem service and sustainability governance – as exemplified by the United Nations' Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) assessment processes (Díaz et al., 2015). The concept of care has been posited as a key component of a relational approach to governing socio-ecological relations, emphasising that a 'focus on care-directed interactions between humans and nature can complement science-based management measures with practices of care that are rooted in culture, tradition, religion, or personal relationships' (Jax et al., 2018), and as such, 'may be conducive to the development of more nuanced, ethical and effective pathways to sustainability' (West et al., 2018).

The governmentality of SECbeing constituted within environmental religious discourse therefore resonates strongly with concepts being put forward by varied bodies of academic knowledge engaged with the reconceptualisation of global environmental governance. Religions are deeply imbedded social systems of knowledge and practice with local to global reach, and have historically shaped how societies engage with global environmental governance (Rothe, 2020). The emerging green synergies of diverse religious traditions which may be turning towards a more relational, care-based understanding of humanity's role in the world therefore have the potential to bolster complementary systems of global knowledge in facilitating a 'leap of (green) faith' towards reconceptualising the *who, what, why and how* of responsible and sustainable Earth system governance.

Note

1. The initial interviewees were sourced through the *GeenFaith* network, and were asked to suggest further interviewees. Given that the topic of CE is only beginning to be discussed within religious communities, the number of interview partners available was limited. While the group of interviewees is not taken to be necessarily representative of their respective religious communities, nor of all world religions writ large, it does constitute a representative cross-cut of the religions which have so far engaged publically with the topic of CE.

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Ethics declaration

The authors declare that the research meets ethical guidelines and adheres to the legal requirements of the study country.

Informed consent declaration

The authors declare that all interviewees provided written informed consent.

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