

CONFUCIAN ENVIRONMENTAL ETHICS, CLIMATE ENGINEERING, AND THE “PLAYING GOD” ARGUMENT

by *Pak-Hang Wong*

Abstract. The burgeoning literature on the ethical issues raised by climate engineering has explored various normative questions associated with the research and deployment of climate engineering, and has examined a number of responses to them. While researchers have noted the ethical issues from climate engineering are global in nature, much of the discussion proceeds predominately with ethical framework in the Anglo-American and European traditions, which presume particular normative standpoints and understandings of human–nature relationship. The current discussion on the ethical issues, therefore, is far from being a genuine global dialogue. The aim of this article is to address the lack of intercultural exchange by exploring the ethics of climate engineering from a perspective of Confucian environmental ethics. Drawing from the existing discussion on Confucian environmental ethics and Confucian ethics of technology, I discuss what Confucian ethics can contribute to the ethical debate on climate engineering.

Keywords: climate engineering; Confucian environmental ethics; hubris; the “playing god” argument

The burgeoning literature on the ethical issues raised by climate engineering, that is, the idea of “deliberately alter[ing] the climate system to counter climate change” (IPCC 2013, 27), has explored various normative questions associated with research and deployment of climate engineering as well as examined a number of responses to them (see, e.g., Jamieson 1996; Gardiner 2011; Preston 2012, 2013; Hamilton 2013). While researchers have noted that the impacts of climate engineering are expected to be global, and thus the ethical issues from climate engineering will also be global in nature, much of the discussion proceeds predominately within the ethical frameworks that originated in the Anglo-American and European traditions, which presume particular normative standpoints and understandings of the human–nature relationship.¹ For example, in

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exploring the questions of justice in climate engineering, Svoboda et al. have discussed theories of justice such as John Rawls's (and Rawlsian), Ronald Dworkin's, Amartya Sen's, and the desert-based theory of distributive justice, but have neglected other theories of justice in non-Western ethical traditions (Svoboda et al. 2011). As the current discussion on the ethical issues raised by climate engineering is dominated by the ethical frameworks in the Anglo-American and European traditions, it is clearly limited because it has yet to engage with other ethical traditions. The failure to engage with other ethical traditions not only implies that the current discussion is far from being a genuine *global* dialogue, which ought to take into account different cultural values; it also entails that the insights from other ethical traditions on the ethical issues raised by climate engineering are missing in the discussion. Indeed, Mike Hulme (2014) argues that the question of climate engineering is more fundamentally about what kind of *world* we want to live in. Accordingly, we need a *global* ethics of climate engineering that acknowledges the importance of different ethical traditions, and we must extend the discussion to include the ethical frameworks in other ethical traditions as well. This article sets out to address the lack of intercultural exchange in the ethics of climate engineering by exploring climate engineering from the perspective of Confucian environmental ethics.

Confucian scholars have already (re-)constructed alternative accounts of environmental ethics and ethics of technology from the Confucian tradition.² The ethical frameworks and the views of the human–nature relationship offered by them are particularly relevant to the ethical debate on climate engineering, as climate engineering could be understood as a form of *human intervention on nature* (with *technology*), and different understandings of the human–nature relationship will prompt different normative judgments toward climate engineering.³ The Confucian tradition, therefore, could provide an alternative perspective on the ethical issues raised by climate engineering. Drawing from the existing discussion on Confucian environmental ethics and Confucian ethics of technology, I explore what Confucian ethics can contribute to the ethical debate on climate engineering. More specifically, I focus on the Confucian understanding of the human–nature relationship and its implication to the ethics of climate engineering. To lay the groundwork for the discussion, I begin with a brief overview of the Confucian anthropocosmic environmental philosophy, where the Confucian notion of the human–nature relationship and its normative significance are explicated. I then revisit the question of moral permissibility of climate engineering in relation to the argument from hubris and “playing god,” and reflect on it from a Confucian perspective. In doing so, I also illustrate some ethical considerations raised by Confucian (environmental) ethics with regards to climate engineering.

Two caveats are in order before proceeding to an overview of Confucian environmental ethics. First, the Confucian tradition has been subjected to different, and often conflicting, interpretations from its early history to the present, and thus it is more appropriate to speak of Confucian traditions than *the* Confucian tradition. Here, it is not my aim to defend a particular account of Confucian (environmental) ethics but to initiate a discussion of the ethics of climate engineering from a Confucian perspective. To this end, I will attempt to provide a *least* contested account of Confucian environmental ethics and the Confucian human–nature relationship that is consistent with major interpretations of Confucian ethics. Second, the ethics of climate engineering is multidimensional, that is, normative questions associated with research and deployment of climate engineering could be about its nature, decision-making procedures, consequences, and so on, and it is beyond the scope of this article to address *all* of them (see, e.g., Preston 2013). Since my aim is to offer an alternative perspective to the ethical debate on climate engineering, thereby facilitating an intercultural exchange on the topic, I will focus on only one type of questions where Confucian environmental ethics is most pertinent, namely the questions arising from the human–nature relationship.

CONFUCIAN ANTHROPOCOSMIC ENVIRONMENTAL PHILOSOPHY: A PRIMER

Tu Weiming, one of the leading scholars of contemporary Confucianism, characterizes Confucian (environmental) philosophy as an *anthropocosmic* philosophy, which takes human beings to be “an integral part of the ‘chain of being’, encompassing Heaven, Earth, and myriad things [but, at the same time, distinguished by their] intrinsic capacity of the mind to ‘embody’ (*t’i*) the cosmos in its conscience and consciousness” (Tu 1985, 132).⁴ In the Confucian anthropocosmic worldview, human beings are both immanent and transcendent, that is, they are concrete, living beings, and yet strive to transcend themselves to unite with Heaven with their endowed capacity (Tu 1989, 102–07; also see Tu 1998, 2001). Hence, like other anthropocentric environmental philosophy, Confucian environmental philosophy focuses on human values, but it is nonanthropocentric because the ground for those values goes beyond human beings. The Confucian anthropocosmic worldview is best captured by the following passages in *The Doctrine of the Mean* (*Zhongyong*) and *Mencius* (*Mengzi*):

Only those who (are) absolutely sincere can fully develop their nature. If they can fully develop their nature, they can then fully develop the nature of others. If they can fully develop the nature of others, they can fully develop the nature of things. If they can fully develop the nature of things, they can assist in the transforming and nourishing process of Heaven and Earth, they can thus form a trinity with Heaven and Earth. *The Doctrine of the Mean* 22 (Chan 1969, 107–08)

To fully apply one's heart is to understand one's nature. If one understands one's nature, then one understands Heaven. To preserve one's mind and nourish one's nature is the means to serve Heaven. *Mencius* 7A1 (Van Norden 2001, 149)

If human beings *can* partake in the development of the nature of others, the nature of things, and in the transformation and nourishing of nature, or even in the formation of a trinity with Heaven and Earth, it follows that human and nature are not situated in two separated ontological realms.⁵ Similarly, the capacity to understand nature through understanding oneself entails an awareness that human and nature belong to the same epistemological realm. In short, the passages in *The Doctrine of the Mean* and *Mencius* assert the ontological and epistemological continuity between human and nature, that is, Heaven and Earth.

The quoted passages are important in reconstructing a Confucian environmental philosophy, as they highlight the normative ideal in Confucian philosophy, that is, *the unity of humanity and heaven* (*tianren heyi*). The normative ideal of the unity of humanity and heaven requires a careful explication, however. Particularly, it should not be understood in terms of assimilation between human and nature. Instead, it should be understood with the Confucian notion of harmony (*he*), which is *the* normative standard in Confucian thought, and the distinction between harmony and disharmony plays a similar role to the distinctions between right and wrong, good and bad, and success and failure in Confucian philosophy (Li 2006, 588).

The Confucian notion of harmony refers to the balancing of different things, and the mutual complementation of acceptance and rejection (Yu 2010). In his discussion of the notion, Yu Kam-por points out that three types of analogy are often used in Confucian texts to explain the notion of harmony—the cooking analogy, the music analogy, and the health analogy (Yu 2010, 18–20; also see Li 2006). Harmony is achieved in those activities when various elements involved are coordinated, where the coordination requires each element to fulfill their role(s), to relate to other elements in an appropriate manner, and not to dominate other elements, and the outcomes of the coordination are always greater than the sum of its parts. What is significant in the coordination, that is, the balancing of different things, is the creative dynamics generated by different things complementing and supporting each other, which is regarded by Confucians to be essential to (human) flourishing. In this respect, the Confucian notion of harmony presupposes difference and diversity; without them there will not be creative dynamics. Accordingly, harmony needs to be distinguished from assimilation or sameness (*tong*). In effect, sameness is considered by Confucians to be detrimental to human flourishing, as *The Analects* (*Lunyu*) 13.23 notes that “[t]he gentleman harmonizes, and does

not merely agree. The petty person agrees [i.e. seeks sameness], but he does not harmonize" (Slingerland 2003, 149).

In the Confucian notion of harmony, difference and diversity are to be accommodated by the idea of the mutual complementation of acceptance and rejection, that is, by "appropriate[ing] what is acceptable in what is objectionable and denounc[ing] what is objectionable in what is acceptable" (Yu 2010, 23). This idea is grounded on the recognition of the irreducible complexity of the real world, and the rejection of a decontextualized (or, absolutist) view of the right and the good. So construed, harmony has to be achieved by taking into account various considerations in a *concrete* situation, and since concrete situations are seldom fixed and static, achieving harmony requires a continuous effort. Harmony thus should be conceptualized as a process, that is, harmonization (Li 2006). The operational dimension of harmony has also been formulated by Cheung Tak-sing et al. (2003, 2006) via the notion of *zhongyong* rationality, which is characterized by (i) an objective "to find an optimal point of balance between extremes" (Cheung et al. 2003, 115), and (ii) an agent who "view oneself as embedded in a social system, and therefore to see things holistically and in social terms" (Cheung et al. 2003, 116). Following Yu (2010) and Cheung et al. (2003, 2006), the Confucian notion of harmony (or harmonization) can be viewed as a call for an optimization *of* and *in* a concrete situation, in which different values considered and various roles are taken into account.

Since the normative ideal of unity of humanity and heaven in Confucian environmental ethics, understood in terms of harmony, requires human and nature to fulfill their role(s), to relate to each other in an appropriate manner, and not to dominate the other, identifying the role of human and nature is central in articulating an account of Confucian environmental ethics. Although the Confucian anthropocosmic worldview takes humans and nature to be in an ontological and epistemological continuum, sharing the same ontological and epistemological origin does *not* mean that humans and nature have the *same* moral status. Yu (2005) rightly argues that human and nature have different moral status and different roles in Confucian thought. Particularly, he points out that Confucians regard *only* human beings, but not nature, to have moral capacities. As such, *only* human beings are capable of moral deliberation. Yu also notes that while nature provides the background for life and growth, nature is not considered to be intrinsically good or moral in Confucian thought. For example, *the Doctrine of the Mean* states that "[g]reat as heaven and earth are, men still find something in them with which to be dissatisfied" (Chan 1969, 100).

Since nature lacks moral capacities, it is up to human beings to realize the potential moral value(s) of nature, and to intervene in the processes of nature when they are unacceptable from a *moral* point of view. Indeed, it can be argued that the unity of humanity and heaven can only be achieved when human beings fulfill their role of moral decision-making

and intervene in the processes of nature when intervention is required. The *active* role of human beings to realize moral values is stated more explicitly in *The Analects* 15.29, that is, “[h]uman beings can broaden the Way—it is not the Way that broadens human beings” (Slingerland 2003, 185). For nature’s lack of moral capacities, and for human’s role of moral decision-making and assisting nature, human beings can be viewed as “co-creator[s] of the universe. As a co-creator, the paradigmatic human is an initiator, a participant, and a guardian of the universe” (Tu 1993, 53).

I have summarized the major concepts in the Confucian anthropocosmic environmental philosophy, that is, the Confucian anthropocosmic worldview, the normative ideal of unity of humanity and heaven, and the role of human and nature in Confucian philosophy. There are several lessons to be drawn from the discussion. To begin with, human intervention in nature—even if large-scale—is *not* always morally impermissible. Since nature lacks moral capacities, the workings of it will not always be morally acceptable. Accordingly, human beings have to make *moral* decisions in response to the works of nature whenever it is required. In effect, Cecilia Wee (2009) has shown that Mencius is in support of the taming and mastery of nature for human well-being. She refers to Mencius’s rendition of the story of the Sage Kings:

In the time of Yao, the waters over-flowed their courses, inundating the central states. Serpents occupied the land, and the people were unsettled. In low-lying regions, they made nests in trees. On the high ground, they lived in caves. The History says, “The deluge warned us.” “The deluge” refers to the flooding water. Yü was directed to regulate the waters. *Yu dredged out the earth and guided the water into the sea, chasing the reptiles into the marshes.* The waters flowed out through the channels, and these became the Jiang, Huai, He, and Han rivers. The dangers to people having been eliminated, birds and beasts harmful to humans were destroyed, and only then were humans able to live on the plains. *Mencius* 3B9 (Van Norden 2001, 130–31; my emphasis)

Wee argues that the passage illustrates Mencius’s view on the moral necessity to conquer and overcome nature when it fails to provide for human beings. Yet, care must be taken not to misinterpret Wee’s argument (and Mencius’s rendition of the story) as an argument in favor of human *exploitation* of nature. Indeed, Wee carefully distinguishes between “taming” and “mastering” nature from “plundering” nature, where taming and mastering nature is to “[bring] under one’s control as much of nature as is conducive to human well-being (without thereby seeking to plunder and destroy needlessly the natural world)” (Wee 2009, 366).

Here, I agree with Wee that human intervention in the processes of nature being morally permissible—or, indeed, human intervention being morally necessary when the works of nature are morally unacceptable—does not imply that *all* forms of human intervention are morally per-

missible, or that Confucian environmental philosophy warrants human exploitation of nature. There are at least two ways to counter the worry over human exploitation of nature available to the proponents of Confucian environmental philosophy. For instance, it should be noted that human well-being is not to be understood narrowly in terms of *material* well-being in Confucian thought; human well-being (or, more precisely, human flourishing) is a morally loaded concept intimately connected to human virtues. Accordingly, one can counter the worry about human exploitation of nature by demonstrating it is detrimental to the development of human morality and is damaging to one's *moral* well-being because it promotes human vices such as irresponsibility, wastefulness, and greed. In effect, the importance of moral well-being is already in play in Mencius's story. In the story, the failure of nature leads to human beings "making nests in tree" and "living in caves," and consequently human beings are no different from birds and beasts. Given the moral significance of the human–animal distinction in Confucian morality (Møllgaard 2010), Yu's intervention in the processes of nature in Mencius's story is as much about people's moral condition as it is about their material condition.

An alternative reply to the worry over human exploitation of nature is to pay closer attention to the Confucian anthropocosmic worldview. Recall the discussion on the Confucian anthropocosmic worldview: although Confucians consider only human beings to have intrinsic values, human beings are nonetheless viewed as belonging to something greater than human beings, for example, the unity of humanity and heaven. In this respect, there remains a clear normative standard in guiding and governing the human sphere, for example, harmony. So construed, human beings are far from free to intervene in the processes of nature merely to satisfy their wants and desires.

Moreover, it is worth reasserting the interconnectedness of humans and nature in Confucian thought, and reminding ourselves that human intervention in nature is only *one* part of the story of acting upon nature's failure. More specifically, nature's failure should not to be dissociated from human's moral failure. This viewpoint is clearly included in Mencius's story of the Sage Kings:

After Yao and Shun passed away, the Way of the sages decayed. Cruel rulers arose one after another, destroying homes to make ponds, so that the people had nowhere they could rest. They made people abandon the fields so that they could be made into parks, so that the people could not get clothes and food. Evil doctrines and cruel practices also arose. As parks, ponds, and marshes became more numerous, the birds and beasts returned. *Mencius* 3B9 (Van Norden 131)

Nature's failure is deemed to have its root in human moral failure, that is, the rise and prevalence of cruel rulers. In other words, Confucians are

not unaware of human's moral failure that is behind, or goes along with, the failure of nature. In effect, they argue that when human intervention in the processes of nature is not aimed at human (moral) well-being, for example, making ponds and parks, it will result in disharmony in society, and with nature, and thus is morally dubious. When nature's failure is caused by human's moral failure and the disharmony it causes, human's moral failure too has to be addressed when addressing nature's failure.

CLIMATE ENGINEERING AND THE "PLAYING GOD" ARGUMENT: A CONFUCIAN PERSPECTIVE

The brief account of Confucian environmental philosophy summarized in the previous section should provide some resources to engage in the ethical debate on climate engineering from a Confucian perspective. This section aims to examine the question of moral permissibility of climate engineering from a Confucian perspective, and thereby demonstrate what Confucian ethics can contribute to a *global* ethics of climate engineering. However, as I have already noted, the question of moral permissibility of climate engineering can be, and has been, framed in different ways, as the nature, decision-making procedures, and consequences of climate engineering are all relevant to its moral permissibility. For example, research and deployment of climate engineering can be viewed as morally impermissible for extrinsic reasons, that is, it could be morally impermissible because of its (potential) undesirable impacts, or because there is no decision-making procedure available to ensure them to be morally acceptable. Here, I shall only focus on a specific question concerning the human–nature relationship in climate engineering, namely the argument from hubris and “playing god,” which asserts human beings assume a morally wrong role in relation to nature. My focus on the argument from hubris and “playing god” because, I think, it is most pertinent to the Confucian environmental ethics; it is also because the topic showcases a distinct answer based on the Confucian human–nature relationship, which can enrich the *global* dialogue on the ethics of climate engineering.

Climate engineering, understood as an attempt to deliberately alter the climate system, is said to reflect a hubristic attitude—or, even an aspiration to “play god” (see, e.g., Jamieson 1996; Gardiner 2010; Hamilton 2013, 2014).⁶ For example, Dale Jamieson argues that climate engineering “fails to show respect for nature, and [continues the morally problematic] attempts to manipulate nature in order to make it conform to our desires rather than shaping our desires in response to nature” (Jamieson 2013, 534). The most explicit formulation of the argument from hubris or “playing god” in the context of climate engineering is offered by Hamilton (2013, also see 2014), who formulates the argument from “playing god” as (i) “the idea is that there are certain qualities that humans cannot and

should not aspire to, both because they are beyond us and because aspiring to them invites calamity” (2013, 178), and (ii) “[p]laying god entails humans crossing a boundary to a domain of control or causation that is beyond their rightful place. In this view, there is a limit to what humans should attempt or aspire to because the division between domains is part of the proper order of things” (2013, 178). So construed, engineering the climate is *morally* wrong because doing so implies human beings fail to recognize their own limitations, or because it is a trespass to nonhuman domains. Following Michael Sandel, Hamilton argues that climate engineering—or, more specifically sulphate aerosol injection⁷—reflects a “Promethean aspiration to remake ‘nature’ to serve our purpose” (2014, 179). At the heart of the argument from hubris or “playing god” is the human–nature relationship, that is, what is, and should be, the relation between human and nature, and what role(s) can, and should, human beings assume in relation to nature, or simply “what it means to be human” (also, see Clingerman 2014).

Yet, Hamilton’s appeal to the proper realm of human capacities seems to have little force from a Confucian perspective, because it presupposes a radical separation between human and nature (or God)—either ontologically, intellectually, or morally—arguing the fusion of human and nature to be fundamentally morally problematic. However, I have already pointed out that in the Confucian anthropocosmic worldview, human and nature is in an ontological and epistemological continuum, and, in effect, the normative ideal in Confucian thought is the unity of humanity and heaven. In short, Confucians do not subscribe to the radical separation of human and nature, which is the basis of this formulation of the argument.

This is, of course, not to assert that every person should aspire to god-like qualities—and, in this case, the capability to engineer the climate—but only to assert that an aspiration to those qualities need *not* be fundamentally wrong in the moral sense. Moreover, it is important to note that the unity of humanity and heaven is a moral ideal in itself, and such an ideal is to be achieved by a self-cultivation of virtues. In this respect, as long as the capability to engineer the climate is accompanied by human virtues, Confucians should have little concern about the charges of arrogance and recklessness often associated with various climate engineering strategies, because by definition a virtuous person will not be arrogant and reckless. For Confucians, the worry over arrogance and recklessness of climate engineering remains only to the extent that it is *not* accompanied by the self-cultivation of virtues. Of course, if a climate engineering strategy comes with significant (potential) undesirable impacts, for example, sulfate aerosol injection, it is unlikely that a virtuous person will agree to its deployment.

With regard to Hamilton’s appeal to the rightful place of human beings, I have also noted that Confucians are not necessarily against large-scale

human intervention in the processes of nature. In effect, due to nature's lack of moral capacities, Confucians believe that human beings *ought* to intervene in nature when it fails from a moral point of view. When the climate engineering strategy is aimed to address nature's failure and promote human *moral* well-being, or to harmonies with nature, Confucian should have no qualm because they believe it is human beings' role to assist in transforming and nourishing nature.

Yet, one should bear in mind that the role to assist in transforming and nourishing nature should be reserved *only* to those who are deeply virtuous (see, e.g., *The Doctrine of the Mean* 22), and it is *not* the case that every person has, or can have, this role. Since there will not be many deeply virtuous persons in reality, those who genuinely have, or can have, the role to engineer the climate will be extremely limited. In reality, therefore, it is doubtful that Confucians will agree to engineer the climate. Moreover, it is also useful to note that Confucians are unlikely to be open to *every* climate engineering strategy, as the moral permissibility of a climate engineering strategy will also be determined by the normative standard in Confucian (environmental) ethics, that is, harmony. To reiterate, harmony (or harmonization) requires human beings and nature to fulfill their role(s), to relate to each other in an appropriate manner, and not to dominate each other. As such, a climate engineering strategy will only be morally permissible when it enables people to fulfill their role(s), to relate to nature in an appropriate manner, and not to dominate it. In short, Confucians will be in favor of those climate engineering strategies that complement and support the climate system, and against those which attempt to replace the climate system.

To summarize, Confucians have a different view on the moral permissibility of climate engineering in relation to the argument from hubris or "playing god." Their major concerns are (i) the self-cultivation of virtues alongside climate engineering research and deployment, (ii) whether one is virtuous enough to direct a climate engineering strategy, and (iii) whether the climate engineering strategy in question is harmonious.

Before closing, Confucians' mindfulness of human's moral failure behind, or along with, nature's failure should be recapitulated, as it has a significant implication for the consideration of climate engineering. Here, Stephen Gardiner's (2010) characterization of the urge to use climate engineering strategies to address the problem of climate change as a form of moral corruption is particularly relevant. He argues that the inclination toward climate engineering as an answer to the problems of climate change signifies a form of moral corruption because it allows us to ignore and dismiss the more fundamental moral responsibility in the context of climate change, namely the responsibility to change our behaviors and lifestyle that contribute to climate change, and therefore climate engineering is morally problematic. The Confucian perspective I

have presented should broadly agree with Gardiner's analysis. Given the interconnectedness between nature's failure and humans' moral failure, Confucians should agree that it is insufficient only to address the former without also addressing the latter. In other words, the consideration of climate engineering, as a solution to the problem of climate change, will *always* be in conjunction with other measures attending to human (moral) behaviors.⁸

CONCLUDING REMARKS

To reiterate, the aim of this article is to explore the ethics of climate engineering from a Confucian perspective. The reason behind this exercise is to illustrate the fact that non-Western ethical traditions might respond to the ethical issues raised by climate engineering differently due to their unique normative standpoints and human–nature relationships. In this respect, the current discussion in the ethics of climate engineering can learn much from exploring other ethical traditions. More importantly, their values and insights ought to be taken more seriously as climate engineering touches on the fundamental question concerning the future of our *world*, which is shared by people of different cultures. This is not to assert that *all* values and insights from *every* ethical tradition must be incorporated for the ethics of climate engineering to be truly global; however, they should at least be acknowledged and reflected upon in the discussion.

In this article, I have attempted to contribute to the *global* ethics of climate engineering by exploring the question of moral permissibility of climate engineering in relation to the argument from hubris and “playing god” from a Confucian perspective. It is, of course, only *one* of the many questions in the ethics of climate engineering. A more comprehensive response to the ethical issues raised by climate engineering from a Confucian perspective requires scholars to draw from other areas of Confucian thought, for example, Confucian ethics, Confucian political philosophy, and so on. For example, the discussion on normative issues about the decision-making procedures and about the distribution of benefits and harms of climate engineering will benefit from the works on the Confucian understanding of consent and public participation (see, e.g., Wong 2013) and its view of (distributive) justice (see, e.g., Angle 2012; Chan 2012; Cline 2014). The present article is far from providing a *full* account of Confucian ethics of climate engineering, but hopefully it will provide an entry for a more comprehensive response from a Confucian perspective and an impetus for a *global* dialogue on the ethics of climate engineering.

ACKNOWLEDGMENT

This work was conducted at the Institute for Science, Innovation and Society and Oxford Uehiro Centre for Practical Ethics as part of the Climate

Geoengineering Governance Project (<http://geoengineeringgovernance.org>) funded by the UK Economic and Social Research Council (ESRC) and the Arts and Humanities Research Council (AHRC)—grant ES/J007730/1. An early version of this article was presented at the Inaugural Workshop for the UK-China Network on Climate Ethics. The author wants to thank Catriona McKinnon, Dominic Roser, Holly Lawson-Smith, Shi Jun, and other participants at the workshop for insightful comments. The author also thanks Mark Coeckelbergh and the anonymous reviewers for their suggestions to improve the manuscript.

NOTES

1. For instance, there is no mentioning of *any* non-Western ethical tradition in Preston's (2013) comprehensive review of the ethics of climate engineering, and the same is true in the works of Jamieson, Gardiner and others. Hamilton (2013) did briefly mention Confucianism (and Daoism), but quickly denied its significance to the ethical debate on climate engineering in China.

2. Some recent examples of Confucian environmental ethics include Tao (2004), Fan (2005), Hourdequin and Wong (2005), Wee (2009), Kuo (2011), Nuyen (2011), and Kassiola (2010, 2013). For recent examples of Confucian ethics of technology, see Wong (2012), Wang and Zhu (2012).

3. Surely, the Confucian view(s) on the values of technology (and the uses of technology) will affect the normative judgments towards climate engineering. However, the Confucian view(s) on the values of technology calls for an in-depth analysis of its own. This article will only focus on the Confucian understanding of the human–nature relationship and its implications for the ethical debate on climate engineering.

4. Fan Ruiping (2005) has argued that the term “anthropocosmic” is “too obscure, ambiguous, and imprecise” for grounding a Confucian environmental ethics. He proposes the Confucian environmental ethics should be characterized as a “cosmic-principle-oriented weak anthropocentrism,” in which *only* human beings have intrinsic values, but they are animated and governed by cosmic principles in Confucian thought. For Fan, the ground for human values is cosmic principles. Also see Nuyen (2011, 561–65).

5. It can be argued that the ontological continuity between human and nature is not explicitly stated in the quoted passages. However, a more explicit statement of the ontological continuity between human and nature can be found in Zhang Zai's *Western Inscription (Ximing)* and in Cheng Hao's *Complete Works of the Two Chengs, Surviving Works (Er-Cheng quan-shu, I-shu)*: “Heaven is my father and Earth is my mother, and even such a small creature as I finds an intimate place in their midst. Therefore that which fills the universe I regard as my body and that which directs the universe I consider as my nature. All people are my brothers and sisters, and all things are my companions” (*Western Inscription*, Chan 1969, 497). “The man of *ren* [benevolence] regards Heaven and Earth and all things as one body. To him there is nothing that is not himself” (*Complete Works of the Two Chengs, Surviving Works*, Chan 1969, 530).

6. For an overview of various climate engineering strategies, see Vaughan and Lenton (2011), Harrison and Hester (2014).

7. Sulfate aerosol injection is one of the climate engineering strategies, which attempts to cool the climate by injecting sulfate aerosols into the lower stratosphere.

8. One might even argue that Confucians believe that resolving humans' moral failure alone is sufficient. Xunzi states:

If the fundamental works are neglected and expenditures are extravagant, then Heaven cannot make you wealthy. If your means of nurture are sparse and your actions are infrequent, then Heaven cannot make you sound in body. If you turn your back on the Way and act recklessly, then Heaven cannot make you fortunate. And so, although floods and drought have not yet come, you still will go hungry. Although heat and cold are not yet pressing, you still will become sick. Although aberrations and anomalies have not yet come, you still will have misfortune. *Xunzi* 17 (Hutton 2001, 260)

In the passage, Xunzi emphasizes human's (moral) misbehaviors as the *actual* cause of the problem. In other words, the priority should be given to changing human's (moral) behaviors.

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