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ARTICLE

Hans Jonas and Sophocles on the ethics of the Anthropocene

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Abstract

What, if anything, is new about the ethical demands that the Anthropocene places on human action? We refer to this question as *the* Anthropocene question, since only an ethics that provides a precise answer to that question is properly an ethics of the Anthropocene. While scholars in the environmental humanities have addressed the Anthropocene question, we bring this question to normative theory. To this end, we put forward a critical reading of Hans Jonas's 1979 *The Imperative of Responsibility*, in which he develops normative principles on the basis of a historical diagnosis of novelty. Recent developments in scholarship on 5th-century B.C.E. Athenian tragedy allows us to challenge Jonas, who at crucial points misdiagnoses and overstates this novelty. Using Jonas's work as an exemplar of a complete ethics of the Anthropocene, we highlight the importance of principles for ethical deliberation: an ethics for the Anthropocene needs not only principles for action, but also principles for how to deliberate on action. Criticizing Jonas's and more recent views that democracy is unfit for the Anthropocene, we show that 5th-century Athenian tragedy was a sophisticated democratic practice of deliberation of the sort that is required for the Anthropocene.

Keywords Anthropocene · Hans Jonas · Normative theory · Precautionary principle · Democracy · Greek tragedy

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The Anthropocene, a term originally introduced by earth scientists, designates the historical era in which human action has become one of the decisive forces shaping the earth's climate and ecosystems (Crutzen, 2006). Though not without its detractors (Malm & Hornborg, 2014), the term has been taken up far beyond the natural sciences to designate a profoundly new historical period (Chakrabarty, 2009; Bonneuil & Fressoz, 2017).

What, if anything, is new about the ethical demands that the Anthropocene places on human action? The core premise of this article is that only an ethics that provides a precise answer to this question, which we describe as *the* Anthropocene question, is properly an ethics of the Anthropocene. In this article, we build on our respective backgrounds in classics and political theory to bring the Anthropocene question to normative theory.

While some have argued that the prospect of catastrophe makes all ethics superfluous (Scranton, 2015; Hamilton et al., 2015, p. 8), scholars working in the environmental humanities have led the way in exploring the Anthropocene question. These scholars tend to identify ethical challenges raised by the new spatial and temporal dimensions of human impact on the planet, but do not theorise these in terms of normative principles. With regard to the spatial dimensions, theorists have mentioned the inadequacy of state-centric accounts of justice, as well as identifying new ethical demands in relation to the non-human environment and, indeed, the planet (Bennett, 2010; Zylinska, 2014; Latour, 2017). Emphasizing the temporal extension of human impact, other defining features concern our impact on future people (Yusoff, 2013) and pervasive uncertainty about the trajectory of the planet (Morton, 2013, pp. 99–133). These features, in turn, raise new challenges for ethical deliberation (Tsing, 2015; Haraway, 2016; Ghosh, 2017).

Normative theorists have, of course, addressed the topic of human impact on the planet (Gardiner et al., 2010; Moellendorf, 2012; Shue, 2014). The complex distribution of duties to future generations that mark the Anthropocene is by now the subject of an extensive ethical literature that highlights the complex geopolitical, historical, intergenerational nature of responsibilities for private individuals, states and global governance alike (Cripps, 2013; Gosseries and González-Ricoy. 2016; Caney, 2021; Hickey, 2021). Notably, however, normative theorists have not engaged with the historical dimension of the Anthropocene question; even when the Anthropocene question is posed, it is not answered with reference to the history of ethical and political thought (Kelly, 2019; Charbonnier, 2021). This failure to historicise raises the risk of underestimating novelty and simply appending the term 'Anthropocene' to traditional frameworks, considerations, and modes of argument (Dryzek and Pickering, 2019, pp. 12–17) or failing to acknowledge insight to be gained from established modes of theorising (Bargués et al., 2024).

In short, while many scholars of the environmental humanities address some version of the Anthropocene question, they do not seek to develop normative principles to guide human action; on the other hand, normative theorists fail to historicize the Anthropocene properly and rarely if ever give the Anthropocene question the attention it deserves. Accordingly, there is a pressing need to develop normative theorizing premised on an answer to the Anthropocene question.

In fact, there is one thinker who has attempted this task, the German-Jewish philosopher Hans Jonas. In his *The Imperative of Responsibility* (1979), among the first publications to theorize what we would now call the Anthropocene, Jonas develops a new, post-Kantian ethics through a diagnosis of historical novelty. As Jonas argues:

> Modern technology, informed by an ever-deeper penetration of nature and propelled by the forces of market and politics, has enhanced human power beyond anything known or even dreamed of before. … The altered nature of human action, with the magnitude and novelty of its works and their impact on man's global future, raises moral issues for which past ethics, geared to the direct dealings of man with his fellowmen within narrow horizons of space and time, has left us unprepared (Jonas, 1984, p. ix).

The ethics that Jonas believes is needed is decidedly Kantian in its ambition to develop normative principles to guide human action. In the absence of such principles, Jonas believed, humanity risks falling prey to 'a nihilism in which near-omnipotence is paired with near-emptiness, greatest capacity with knowing least for what ends to use it' (Jonas, 1984, p. 29).

Although Jonas's work has been interpreted in relation to the ethical and philosophical dimensions of the Anthropocene in passing (Blumenfeld, 2023, p. 162), we find in his work a profound analysis of what ethical demands human impact on the planet places on action. Beyond situating Jonas in contemporary debates, however, we also develop our own ideas by undertaking a critical reading of Jonas's project of developing normative principles on the basis of a historical diagnosis. We focus on three closely-related sub-questions concerning the Anthropocene: (i) What genuinely new facts about human action characterize today's context of deliberation? (ii) What new ethical principles do these facts imply? (iii) What new practices of deliberation are needed to act on those principles? We show that Jonas's answers to these questions constitute an ambitious and compelling, though not infallible, attempt to answer the Anthropocene question (Table 1), and we seek to build on them ourselves.

Our critical reading has two primary objectives. From a historical perspective, we challenge and improve Jonas's diagnosis of novelty. Recent developments in scholarship on 5th-century B.C.E. Athenian tragedy allow us to challenge Jonas's misdiagnoses and overstatements regarding the novelty of the present situation, since these stem from misunderstanding previous eras of profound novelty. Most crucially, Jonas uses Greek tragedy to exemplify the ethical order that must be left behind. In this, Jonas was mistaken. But that is in itself something positive: since tragedy itself responded to uncertainty and novelty in precisely the ways that Jonas thinks we need to, tragedy also offers valuable tools for developing an ethics of the Anthropocene.

Second, we also pursue an agenda-setting objective for contemporary normative theory. By distinguishing between the three aspects of novelty (i-iii) that Jonas's work addresses, we showcase what a complete ethics of the Anthropocene could look like, with Jonas's work providing an exemplar. Doing so highlights the importance of practices of ethical deliberation, a point which is often neglected: an ethics for the Anthropocene needs not just principles for action, but also principles for how to deliberate on action. Focusing on the nature of principles for deliberation, we also

contribute to recent debates over the Anthropocene and the legitimacy of democratic rule (Mittiga, 2021; Fritsch, 2023; White, 2024). Jonas believed that democracies would find it hard to meet these ethical standards, but as we show, Athenian democracy already had a practice of deliberation for collective reflection on novelty, uncertainty and catastrophe. That practice was tragedy.

The article is structured as follows. After demonstrating why Jonas should be considered Jonas a thinker of the Anthropocene, we engage critically with Jonas's account of the context of deliberation, ethical principles, and practices of deliberation, respectively, that are proper to the Anthropocene. Each of these three topics is addressed in its own section.

Table 1 Three sub-questions of the Anthropocene question

Sub-questions	Answers
Context of deliberation (what makes the Anthropocene new?)	The specific set of facts about human action and the circumstances in which we act that shape what is an appropriate ethics
Ethical principles (why should these new features inform the ethics of the Anthropocene?)	Foundational normative assumptions that form the basis for ethical deliberation about our responsibilities
Practices of deliberation (how should we act on the new principles set out in light of the new feature of the Anthropocene?)	Social practices of deliberation that allow us to meet our responsibilities

In the section devoted to the context of deliberation proper to the Anthropocene, we critically evaluate Jonas's view of what features make the Anthropocene a fundamentally new era for ethics. We demonstrate that while Jonas is right to insist that an ethics for the Anthropocene needs to take profound novelty and uncertainty into account, due consideration of the historical context shows that Jonas is wrong to suggest that these features, which were characteristic of 5th-century B.C.E. Athens and have been closely related to the genre of tragedy, are new characteristics of contemporary human action. Instead, Jonas's most compelling account of what is new concerns the temporal extension and the magnitude of the effects of our actions, which make deliberation on their moral significance profoundly difficult.

The following section turns to Jonas's account of ethical principles to set out what new ethical demands Jonas takes these features of the context of deliberation to imply. That section studies Jonas's famous principle of responsibility, self-consciously modeled on Kant's categorical imperative: 'Act so that the effects of your action are compatible with the permanence of genuine human life' (Jonas, 1984, p. 11). We emphasize its close similarity to the precautionary ethics that informs recent empirical work on the boundaries of the earth system (Rockström et al., 2009, 2023), and thereby further develop our critical reading of Jonas's project to ground ethics in an answer to the Anthropocene question.

In the final section, we turn to our agenda-setting and contemporary objectives by interpreting Jonas's account of novel duties for how to deliberate. Jonas's diagnosis of the ethical predicament of the Anthropocene brings into sharp focus the practical, rather than fundamentally ethical, obstacles toward deliberating on how to act in the face of human impact on the planet. Jonas believed that, confronted with these new challenges, democratic government would no longer be adequate, leading him to favor autocratic rule. Building on our arguments that novelty and uncertainty are not new but were characteristic of the 5th-century B.C.E. Athens where tragedy flourished, we explore the institution of Athenian tragedy as a set of practices that allow individuals to act on Jonas's two principles in both a collective and a democratic way. Criticizing the view, expressed both by Jonas and more recent authors, that democracy is unfit for the Anthropocene, we show that tragedy embodies a sophisticated democratic practice of deliberating on novelty, uncertainty and catastrophe.

Hans Jonas and the Anthropocene

Hans Jonas's acute awareness of the novelty of human impact on the planet led to him to articulate and seek to answer the question of what, if anything, is new about the ethical demands that this impact places on human action. Although the current sense of the term 'Anthropocene' only entered circulation after his death, we will argue that Jonas can still be read as a theorist of the Anthropocene.

Born in Germany in 1903, Jonas wrote his dissertation under the supervision of Martin Heidegger and alongside Hannah Arendt and Herbert Marcuse. Forced to flee the Nazis in 1933, his mother's death in Auschwitz precipitated his break with Heidegger (Jonas, 2003). From 1955 onwards, Jonas taught at the New School for Social Research in New York City. Despite the deep scar that the Holocaust left on his life and the impact of the Cold War, Jonas's ethical thinking identifies a new type of threat to humanity: the slow-moving exhaustion of the planet Earth. As he writes at the start of his *The Imperative of Responsibility: In Search of Ethics for the Technological Age*, first published in German in 1979, the hardest 'threat to counter' is one that is 'slow, long-term, cumulative', namely, 'the peaceful and constructive use of worldwide technological power, a use in which all of us collaborate as captive beneficiaries through rising production, consumption, and sheer population growth-that poses threats much harder to counter' (Jonas, 1984, p. ix). Not having any such term as 'Anthropocene' at his disposal, Jonas consistently describes our new era as the 'technological age'.

The idea of the Anthropocene reflects a major advance of 20th-century science, namely, to think of the earth itself as a complex system, one which can be shifted into a different state by human action (Rockström et al., 2009; Bonneuil & Fressoz, 2017). If the effects of human action remain small, the earth system accommodates change and stays in the safe operating space associated with the Holocene. However, growing greenhouse gas emissions, nitrogen deposition, biodiversity loss, the introduction of novel entities and other major perturbations may push the earth out of its current state, permanently damaging the system's ability to accommodate human life. Introduced by the atmospheric chemist Paul Crutzen in 2000, the concept com-

bines the words *anthropos* ('human being') and *kainos* ('recent, new') to designate a new epoch after the Holocene, in which human civilization had played out until then (Crutzen, 2006). For Crutzen, that era ended in the early 1950s with the accelerated used of fossil fuel and artificial fertilizers. In subsequent work, he came to define the new era as one where 'the human imprint on the global environment has now become so large and active that it rivals some of the great forces of Nature in its impact on the functioning of the Earth system' (Crutzen, 2006).

Although the *Imperative of Responsibility* appeared only in 1979, it builds on Jonas's lectures beginning from the 1950s, precisely when Crutzen identifies the start of the Anthropocene (Jonas, 1984, p. ix). Jonas's ethics is motivated by a recognition that '[t]hresholds may be reached in one, direction or another, points of no return, where processes initiated by us will run away from us on their own momentum and toward disaster' (Jonas, 1984, p. ix). Among other things, Jonas called attention specifically to 'the so-called green-house effect', through which 'the happy-go-lucky feast of a few industrial centuries could be paid for with millennia of altered terrestrial nature' (Jonas, 1984, p. 190). These passages thus leave little doubt that Jonas's concern is not merely the environmentalist's worries about pollution, acid rain or radioactive waste, but rather a profound recognition that human life impacts the very conditions of life on the planet. It is for this reason that we feel comfortable characterizing Jonas as a thinker of the Anthropocene.

While Jonas thus identifies the novelty of the Anthropocene, his ethical interpretation of its novelty is not always easy to distil from his text; his views resist easy summary and are at times expressed in ways that have limited their academic reception (Schmidt, 2013). These issues are nowhere as clear as in his account of classical antiquity, which we take to be at heart of his answer to the Anthropocene question. In critically assessing his views, our objective in the next section is to develop what we take to be the most promising version of Jonas's answer.

Context of deliberation

What new facts about human action characterize today's context of deliberation? Reflecting on the so-called 'Ode to Man' in Sophocles' *Antigone*, Jonas characterizes the context of deliberation of the past as one where 'the human condition, determined by the nature of man and the nature of things, was given once for all', where 'the human good on that basis was readily determinable', and where, accordingly, 'the range of human action and therefore responsibility was narrowly circumscribed' (Jonas, 1984, p. 1).

Jonas at times thus suggests that human action in antiquity was not fundamentally new relative to previous ways of life; that its outcomes were typically well-understood and easy to predict; and that, accordingly, agents would typically know the normative significance of their actions. On this account, the distinctive features of the Anthropocene are therefore profound novelty and uncertainty. We argue that any ethics that is suitable for the Anthropocene should indeed take these features into account, but that appropriate consideration of scholarship on 5th-century Greece and Athenian tragedy makes clear that they are by no means new. Instead, Jonas's more

promising account of today's context of deliberation concerns the ways in which the temporal extension and the magnitude of the effects of our action hinder ethical deliberation.

Antiquity

Jonas's engagement with Greco-Roman antiquity centers around his reading of the so-called 'Ode to Man', the first choral stasimon of Sophocles' *Antigone*. This celebrated song explores the remarkable nature of the human, emphasizing in particular our mastery over the earth and the animal kingdom, as well as distinctively human skills and technologies such as speech, construction and medicine.[1] The final stanza highlights the importance of law and religion, which define the boundaries of acceptable human behavior.

On Jonas's reading, the 'Ode to Man' serves as the paradigm of what could be described in contemporary terms as a Holocene mindset: a point in history where human action is not seen to change nature fundamentally. In the Ode, Jonas sees a world where:

> for all his boundless resourcefulness, man is still small by the measure of the elements … He cannot harm them by carving out his little kingdom from theirs. They last, while his schemes have their short-lived way. … All this holds because before our time man's inroads into nature, as seen by himself, were essentially superficial and powerless to upset its appointed balance (Jonas, 1984, p. 3).

For Jonas, the 'Ode to Man' thus expresses a context of deliberation where human action cannot fundamentally change the extent to which the planet supports human life. In turn, this timelessness of basic planetary conditions informs Jonas's observation that at this time, knowledge about the human condition and the ethical criteria that applied to action were deemed to be essentially timeless:

> The good and evil about which action had to care lay close to the act, either in the praxis itself or in its immediate reach, and were not matters for remote planning … Proper conduct had its immediate criteria and almost immediate consummation … Ethics accordingly was of the here and now … The good man was the one who met these contingencies with virtue and wisdom, cultivating these powers in himself, and for the rest resigning himself to the unknown (Jonas, 1984, pp. 4–5).

Because humanity's predicament was unchanging and the planetary consequences of human action were relatively easily foreseen, deliberation depended essentially on cultivating individual moral excellence to meet the contingencies one faced.

[1] Among the vast literature on the 'Ode to Man' see esp. Segal (1964), Segal (1981, pp. 152–206, esp. p. 441 n.4). Billings (2021, pp. 172–184) provides an up-to-date bibliography.

Jonas develops this discussion by advancing what we take to be three theses concerning the context of deliberation of the Anthropocene. The first concerns *epistemic uncertainty*: a new gap has opened up between our knowledge and our abilities. What is new to the Anthropocene, as Jonas puts it, is that '[k]nowledge… becomes a prime duty beyond anything claimed for it heretofore, and the knowledge must be commensurate with the causal scale of our action' (Jonas,1984, p. 7). Elsewhere, Jonas puts it even more forcefully: 'extrapolation from presently available data will always, in certainty and completeness of prediction, fall short of the causal pregnancy of our technological deeds' (Jonas, 1984, p. x).

Jonas's second thesis concerns *normative uncertainty*. Beyond a narrowly epistemic uncertainty, Jonas also holds that what is distinctive about ethics in the 'technological age' is that it has become more difficult to foresee the normative significance of our actions. That significance not only depends on empirical knowledge, but also on a conception of the 'human condition': the nature of human beings and the natural world in which they operate. Jonas begins his book with the following claims, which frame his presentation of the 'Ode to Man':

> All previous ethics – whether in the form of issuing direct enjoinders to do and not to do certain things, or in the form of defining principles for such enjoinders, or in the form of establishing the ground of obligation for obeying such principles – had these interconnected tacit premises in common: that the human condition, determined by the nature of man and the nature of things, was given once for all; that the human good on that basis was readily determinable; and that the range of human action and therefore responsibility was narrowly circumscribed (Jonas, 1984, p. 1).

This in turn leads to a third thesis that lies behind the diagnosis of epistemic and normative uncertainty, the *profound novelty* of the ethical challenges of the Anthropocene. For Jonas, the most fundamental ethical challenge is that our actions are different from those of our historical predecessors, which means that we can no longer rely on the past as a guide for proper conduct. While Jonas is certainly right that 'the altered nature of human action…raises moral issues for which past ethics…has left us unprepared' (Jonas, 1984, p. x), he sometimes also makes the stronger claim that in the past, ethical knowledge was held to be simple and that what constituted good action was timeless: 'the best state, so it was thought, is also the best state for the future…since the criteria of a good order (of which durability is one) do not change' (Jonas, 1984, p. 15). The Anthropocene, Jonas argues, raises new ethical challenges because it confronts humanity with ethical questions for which the past contains no reliable answers: profound novelty leads to epistemic and normative uncertainty.

Recent scholarship makes it hard to maintain Jonas's claims concerning novelty. In fact, something like opposite was true: precisely this sense of profound novelty would have been familiar to Sophocles and others throughout the 5th-century B.C.E. – and had indeed begun to be perceptible even in the final third of the 6th-century

B.C.E.[2] As the status of the great authorities, the epic poets Homer and Hesiod, began to erode, new space opened up for a scramble of mythographers and historians, prophets and diviners, natural scientists and philosophers to stake their claims to knowledge and authority. The increasingly widespread adoption of writing began to have a profound impact on the way that knowledge, authority, and truth were conceptualized and asserted. A nascent tradition of what we would call natural science developed new theories about the workings of the natural world, replacing divine caprice with a universe governed by regular, intelligible principles; alongside this, a radical critique of knowledge and a new interest in language revolutionized ideas about what could be known and correctly expressed. In Athens, a series of far-reaching reforms made political, judicial, and other institutions markedly more democratic;[3] *isonomia*, equality before the law, and *isēgoria*, equality of political power, emerged as new political principles. Sophocles thus lived in a world characterized not by a 'stable equilibrium' but by deep and fundamental transformations which left few domains of Greek life unchanged. Indeed, the very text Jonas chooses, the 'Ode to Man', is itself often understood not only as an expression of 'the changeable human condition' (Dunn, 2007, p. 157) but precisely as a product of debates about the normative significance of the profound novelty experienced by inhabitants of 5th-century B.C.E. Athens.

Moreover, according to a highly influential view, the genre of tragedy emerged as a response to exactly this profound novelty and the normative uncertainty that arose in its wake (Gould, 1983; Vernant, 1988a, b). On this view, the fact that old norms, old codes of behaviour, old conceptions about the legitimacy and nature of law and political power no longer had the same purchase – and are even in tension or indeed direct conflict with new understandings of these things – is intimately linked with tragic form; in the arc of its plots and in the rapid-fire one-line debates of *stichomythia*, tragedy serves as a site for exploring the relationship between old norms and new, and staging a confrontation between them (Vernant, 1988a, b; Goldhill, 2012, pp. 56–80). Here, too, it is ironic that Sophocles' *Antigone* has served as the *locus classicus* for discussions of these topics (Hegel, 1975; Vernant, 1988a, b).

A similar point may also be made regarding epistemic uncertainty. In an obvious if perhaps superficial sense, tragedy is the genre that undermines *par excellence* the notion that human 'knowledge [can] be commensurate with the causal scale of our action'; most if not all protagonists in extant 5th-century B.C.E. tragedies suffer precisely because the opposite is revealed to be true. Here, too, the 'Ode to Man' offers a surprising basis for Jonas's claims: the apparently optimistic vision of human knowledge it offers is devastatingly undermined both by subsequent choral odes and by the remainder of the play (Linforth, 1961; Segal, 1981). Moreover, the themes and qualities foregrounded in the 'Ode to Man' have been widely seen to be embodied in the protagonist of Sophocles' subsequent play *Oedipus Tyrannus*, a play often read

[2] For the following paragraph, see esp. Buxton (1999), Lloyd (1979, 1987), Osborne (1997, 2018), Folit-Weinberg (2022, 65–112) for further bibliography.

[3] Though just when and how is a matter of dispute; for a useful overview of debates and a meta-historiography with bibliography, see Osborne (2006).

as the paradigmatic drama of epistemic failure (Knox, 1957; Buxton, 1980; Segal, 1981; Goldhill, 1986).

Magnitude of effects and scale

Contrary to Jonas's arguments, then, profound novelty, epistemic and normative uncertainty are by no means unique to the Anthropocene; because they are also characteristic features of the very 5th-century B.C.E. Athens that produced the 'Ode to Man', they cannot offer a satisfactory basis for answering the Anthropocene question. This is not to say, however, that Jonas is wrong to identify them as constitutive features of the context of deliberation characteristic of the Anthropocene. The crucial role of novelty and uncertainty in determining today's context of deliberation comes into view when we consider two further changes stressed by Jonas, which concern the magnitude of the effects and temporal extension of action made possible by 20th-century technology.

For Jonas, 'technology' appears as a shorthand for a range of new ways that human capacities are expanded through industrialization, capitalism, fossil fuels, modern agriculture, and other similar developments. It is because of these extensions of human agency that our actions have come to affect the earth system in ways that potentially undermine the very ability of humans to live there: 'No previous ethics had to consider the global condition of human life and the far-off future, even existence, of the race' (Jonas, 1984, pp. 7–8).

Because technology makes it possible that human action affects the conditions of life on the planet itself, humanity acquires new ethical responsibilities: 'the nature of human action has de facto changed, and … an object of an entirely new order — no less than the whole biosphere of the planet – has been added to what we must be responsible for because of our power over it' (Jonas, 1984, p.7). The changed nature of human action, not changes to the earth system per se (Hamilton, 2016; Chakraborty, 2024), gives rise to new ethical challenges and new kinds of uncertainty concerning what we ought to do.

Jonas claims that these new responsibilities require a fundamental rethinking of ethics. Jonas also identifies several ways that the novelty and uncertainty specific to the Anthropocene hinder us from meeting our ethical responsibilities. Many of these result from extended spatial and temporal scale: whereas in the past there was an immediacy between undertaking an action and seeing its consequences, the nature of climate change displaces the consequences of our actions into the future, sometimes the quite-distant future. As a result, potentially catastrophic but distant outcomes often escape our attention (cf. Gardiner, 2011). Moreover, reversing their 'biogeophysical impact' (Wallenhorst, 2023) may only be possible on a millennial timescale. As we saw, Jonas observes that, unlike 'past ethics, geared to the direct dealings of man with his fellowmen within narrow horizons of space and time' (Jonas, 1984, p. ix), today's ethics involves responsibilities to people we do not know and who may not yet have been born. In addition, Jonas emphasizes that 'that which is to be feared has never yet happened and has perhaps no analogies in past or present experience' (Jonas, 1984, p. 28). Finally, in contrast to a nuclear war, human impact on the planet takes shape through the incremental effects of many individually actions. This cumu-

lative impact of individual actions is discontinuous, meaning that for long periods of time the impact of these actions can build up until we reach 'points of no return, where processes initiated by us will run away from us on their own momentum and toward disaster' (Jonas, 1984, p. ix).

New technologies, and obstacles to meeting the responsibilities they impose on us, combine to form a novel and profoundly challenging context of deliberation. These factors thus provide a starting point for answering the Anthropocene question; they are not yet an answer to the question of what moral requirements are fundamentally new – that is, they provide only a part of Jonas's answer to the Anthropocene question.

Ethical principles

We now turn to the second part of Jonas's answer, which takes the form of a new foundational moral principle, the principle of responsibility. In its most pithy formulation, it requires that one: '[a]ct so that the effects of your action are compatible with the permanence of genuine human life', or, alternatively, '[a]ct so that the effects of your action are not destructive of the future possibility of such life' (Jonas, 1984, p. 11). Reading Jonas in light of his project of answering the Anthropocene question helps clarify the exact content of the principle, which has been subject to a range of interpretations (Whiteside, 2006; Schmidt, 2013; Coyne, 2020).

Jonas's principle of responsibility is typically interpreted as a precautionary principle, which demands that human action should be geared toward avoiding a specific catastrophic outcome (Sandin et al., 2002; Gardiner, 2006; Steel, 2018). Rather than pursuing outcomes that are optimal in some regard (justice, for example), precautionary action aims to avoid catastrophically bad outcomes. As the philosophical literature on precautionary principles makes clear, however, the intuitive idea of precaution requires considerable clarification. For one thing, there is not one 'precautionary principle', but rather a family of distinct ethical principles. Moreover, some principles of precaution are indeed irrational, assigning undue weight to potential threats or leading to paralysis potentially prohibiting any action that can be expected to have bad outcomes (Sunstein, 2005). By specifying its content appropriately, however, a precautionary principle can be tailored to a specific context of deliberation to pre-empt irrational and paralysing prescriptions.

A well-specified principle has the following four-fold structure: 'If there is (i) a threat, which is (ii) uncertain, then (iii) some kind of action to avert it (iv) is the correct course of action' (Sandin et al., 2002). Each of the elements (i)-(iv) needs elaboration for a precautionary principle to be action-guiding: (i) What kind of threat does it apply to? (ii) What level of evidence is required that the threat might occur? (iii) What action should take place? And (iv) What is the deontic status of its requirement? By specifying (i) and (ii), we can avoid irrationality and paralysis; the threat should be sufficiently large to warrant action, and the degree of evidence required should be subject to a minimum threshold. By specifying (iii) and (iv), we can ensure that the deontic requirements of any given principle are proportionate to the outcomes at stake.

Accordingly, we should ask: What is the precise content of Jonas's precautionary principle, if indeed he articulates one? Some of Jonas's formulations risk assigning an irrationally high weight to specific threats. The principle's simplest statement asserts that 'the prophecy of doom is to be given greater heed than the prophecy of bliss' (Jonas, 1984, p. 31). As he formulates his main insight in the Preface to the English edition of *The Ethics of Responsibility*:

> [A]n imaginative 'heuristics of fear', replacing the former projections of hope, must tell us what is possibly at stake and what we must beware of. The magnitude of those stakes, taken together with the insufficiency of our predictive knowledge, leads to the pragmatic rule to give the prophecy of doom priority over the prophecy of bliss (Jonas, 1984, p x).

It is hard to find a well-defined class of actions in such formulations. Instead, Jonas's statement pertains to all actions that could have negative consequences for the quality of life of future generations, implying paralysis.

Jonas invokes a clear notion of precaution when he argues that '[n]ever must the existence or the essence of man as a whole be made a stake in the hazards of action' (Jonas, 1984, p. 37). This statement and others like it suggest the following strict principle: If (i) an action has human extinction (ii) as a possible outcome, then (iii) abstaining from that action is (iv) required. Recent commentators have typically zeroed in on this interpretation of Jonas's principle as it offsets concerns about irrationality: human extinction would be catastrophic, and avoiding any action that could have that outcome makes intuitive sense (Whiteside, 2006, pp. 195–208; Coyne, 2020, pp. 149–152). It also offers a clear response to concerns about indeterminacy and paralysis: we have a good idea what actions could lead to human extinction (Liu et al., 2018).

Reduced to this strict formulation, however, Jonas's principle of responsibility fails to meet his ambition of setting out a new ethics for the Anthropocene. Human extinction is unlikely to result from gradual environmental degradation.[4] If we apply this standard, a high level of CO_2 emissions could go together with adaptation, resulting in a largely unlivable planet, but not the extinction Jonas fears. Unlike what he suggests, it may be true that 'the dangers which threaten the quality of future life are in general the same as those which, magnified, threaten survival itself', but it does not follow from this that 'avoiding the ones is a fortiori avoiding the others' (Jonas, 1984, p. 40). Because actions that really threaten human extinction are quite rare, the strict precautionary principle has a limited application. Notably, Jonas rules out such a narrow interpretation when he writes that his ethics is meant to cover the 'slow, long-term, cumulative … use of worldwide technological power', which he takes to be more dangerous and central to his project than 'the insanity of a sudden, suicidal atomic holocaust, which sane fear can avoid with relative ease' (Jonas, 1984, p. ix, cf. p. 202). Accordingly, when it comes to catastrophic outcomes, we must distinguish those actions that result in human extinction from those that permanently decrease the quality of human life.

[4] See e.g. Kemp et al. (2022) on catastrophic scenarios associated with climate change.

For Jonas's principle genuinely to claim to answer the Anthropocene question, it should cover the entire scope of the new ethical demands placed on human action. Such a formulation would prohibit not only those actions which threaten human survival itself but also those that threaten the quality of future life on the planet. A broader reading of the principle of responsibility has considerable textual support in Jonas's claims that our actions should be compatible with 'the permanence of genuine human life'. This formulation suggests that we should interpret Jonas's principle of responsibility as requiring that: (i) If an action has permanently reducing the ability of the planet to sustain human life (ii) as a possible outcome, then (iii) abstaining from that action is (iv) required. Today's earth system sciences provide an upper and lower boundary estimate of threshold values for the earth system (for example, atmospheric CO_2 concentration) beyond which the ability of the planet to support human life can be permanently damaged (Rockström et al., 2009, 2023). Such 'planetary boundaries' or 'safe earth systems boundaries' specify that class of actions more precisely: Acting in accordance with the permanence of genuine human life requires not crossing planetary boundaries.

Specified in this way, Jonas's precautionary principle could be thought to provide the most basic principle for ethical deliberation in the Anthropocene. Its prescription of avoiding a grave harm irrespective of its probability of occurrence is an apt starting point for a context of deliberation characterized by great novelty and uncertainty (where, by definition, no probabilities can be attributed to catastrophic outcomes). There are, of course, further questions this principle raises. More fundamentally, one may ask whether ethical principles are of any use at all in a context of ethical deliberation marked by a high degree of epistemic uncertainty (Vallor, 2016, 2024). Clearly, Jonas's precautionary ethics is just one among other legitimate possibilities. Importantly, however, the principle's focus on damage to the conditions of life for future generations responds directly to the features of the Anthropocene that are genuinely novel. Accordingly, the principle of responsibility articulates an actionable and, crucially, new ethical demand; by doing so, it provides a crucial starting point for Jonas's answer to the Anthropocene question.

Practices of deliberation

While the principle of responsibility characterizes a fundamental new ethical demand, it is only one part of Jonas's answer to the Anthropocene question. In fact, Jonas's emphasis on new individual and collective practices of deliberation, points that are not often acknowledged, represents his most important agenda-setting contribution to contemporary normative theory. Jonas identifies two new duties for how to deliberate: first, a duty to have an imaginative encounter with catastrophe, and second, a duty to summon the emotions appropriate to such a catastrophe, especially fear. By showing that Jonas wrongly infers from these duties the superiority of an authoritarian political system, we also contribute to recent debates over the Anthropocene and the legitimacy of democratic governance. Building on our discussion in 'Context of Deliberation' above, we show that 5th-century Athenian tragedy, and especially

Sophocles, provides a model for how to fulfill Jonas's two duties without abandoning democracy.

An authoritarian Anthropocene?

The principle of responsibility appears in Chapter One of the *Imperative of Responsibility*. After introducing it, Jonas also considers how to act on humanity's new moral duties and how to find out how to act on it. Since our moral obligation is to ensure that catastrophic human impact does not happen, he argues, we need new practices to overcome new and profound obstacles to deliberation.

The core of Jonas's view on how to deliberate consists in two duties of deliberation. The first he refers to under the rubric of '[v]isualizing the long-range effects of technological enterprise'. In fact, this amounts to a duty of imagination: since the catastrophic risks we face are now fundamentally different to those of the past, we cannot rely on our experience of past catastrophes by must instead 'creatively imagine' the catastrophes proper to the Anthropocene (Jonas, 1984, p. 27). Because our imagining these catastrophes will not 'arise on its own', Jonas argues, they must therefore be 'intentionally induced' (1984, p. 27). To this end, he expresses hope in 'the infant science of ecology', which on his view should include not only the natural scientist who studies the physical impact of human action on nature, but also 'the economist and engineer, the city planner and transportation specialist, and so forth' (Jonas, 1984, p. 185).

The second duty, which follows closely from the first, is an affective or emotional duty; Jonas describes it under the rubric of '[s]ummoning up a feeling appropriate to what has been visualized' (Jonas, 1984, p. 28). Jonas's core insight – amply borne out in the intervening decades – responds to the points observed above, namely, that the specific risks of the Anthropocene are too distant in time and causal proximity to our actions, too vast in scale, and too abstract to inspire or motivate us to act with the same urgency that traditional threats do. As a result, we need to undertake extra measures to condition ourselves emotionally so that we act with the same urgency as we would in situations where the consequences of our own actions are immediately visible and affect us directly. This requires 'purposely making room…in our disposition' for the emotions summoned by what we imagine. This in turn creates the need for a 'deliberate attitude' that 'must be cultivated; we must educate our soul to a willingness to *let* itself be affected' by catastrophes in the future. That is:

> bringing ourselves to this emotional readiness, developing an attitude open to the stirrings of fear in the face of merely conjectural and distant forecasts concerning man's destiny – a new kind of *éducation sentimentale* – is the second, preliminary duty of the ethic we are seeking…we are obliged to lay ourselves open to the appropriate fear (Jonas, 1984, p. 28).

On Jonas's view, then, generating the will to act in accordance with the principle of responsibility requires first, having an imaginative encounter with catastrophe, and then second, allowing, indeed conditioning, ourselves to feel the sense of fear appropriate to what we have imagined; it is this emotional force which will impel us to act.

Only by adhering to these principles can we ensure 'our highest duty', namely, 'to see that responsibility itself is not stifled' (Jonas, 1984, p. 107).

Reflecting on what would be required to act on these duties, Jonas's account turns notoriously bleak.[5] In an infamous section titled 'The advantage of total governmental power', Jonas enumerates 'the advantages of autocracy as such', suggesting that an authoritarian state such as the Soviet Union is better equipped to meet the challenges of the Anthropocene because 'decisions from the top, which can be made without prior assent from below, meet with no resistance (except perhaps passive) in the social body and, given a reasonable dependability of the lower echelons, are assured of implementation' (Jonas, 1984, p. 146). Turning to Plato, Jonas is tempted by autocratic deception concerning the true costs of environmental action: 'Perhaps this dangerous game of mass deception (Plato's 'noble lie') is all that politics will eventually have to offer: to give effect to the principle of fear under the mask of the principle of hope' (Jonas, 1984, p. 149).

As unattractive as Jonas's authoritarian turn may seem, some aspects of his reasoning are difficult to contest. In Jonas's view, in addition to lacking the benefit of 'total government power', democratic governance suffers from the disadvantage of incentivizing short-term modes of thinking (Jonas, 1992, pp. 99–101). Capitalism, meanwhile, operates on the basis of profit-motives, which Jonas thinks are unlikely to respond adequately to the risks of the Anthropocene (Jonas, 1984, pp.145–146). Merely to reject Jonas's pessimistic conclusion is thus to fail to take sufficiently seriously the momentous challenge to liberal democracy that emanates from the Anthropocene (cf. Mittiga, 2021).

Tragedy as a democratic alternative

So is there a way that we can navigate novelty and uncertainty in the face of planetary boundaries within a democratic system? We think that the observations made above offer the basis for a more optimistic outlook. As we saw, the 5th-century B.C.E. was a time when profound novelty engendered epistemic and normative uncertainty in Athens, and the institution of tragedy is often seen as a means of responding to these features, especially normative uncertainty. In what follows, we explore how tragedy also offered a distinctively democratic framework within which Jonas's two duties regarding the practices of deliberation could be met.[6]

In fact, nearly all critical discussions of tragedy focus on features central to Jonas's two duties. Drama has long been seen to hold a specially privileged grip on the imagination of the spectator insofar as it is the medium that most powerfully presents human action before the eyes of the viewer (the word 'theater' means 'a place for viewing/seeing/beholding'). Where other forms of artistic representation such as epic

[5] On Jonas's authoritarianism, see especially Wolin (2001, pp. 120–129), Whiteside (2006, pp. 95–101), and Coyne (2020, pp. 145–172). However, not all readers of Jonas's last interview in Der Spiegel (1992) are likely to conclude that he favors a 'dictatorship of the saviors of humanity' (Wolin, 2001, p. 128). For a more favorable interpretation, Dineen (2014).

[6] For another return to 5th -century B.C.E. Athens in the service of finding unexpected ways to solve the problems of the Anthropocene – with a similar interest in institutions and practices of deliberation – see also Schlosser (2020).

poetry use words sung by a poet to stimulate the imagination of the audience, drama, the performance of human action onstage, quite literally places the imagined world of the story before the eyes of the audience; it is one thing to hear about Oedipus blinding himself, and entirely something else to see someone dressed as Oedipus appear before you with a gory depiction of bloodied eye-sockets.[7] Drama is thus the quintessential medium, and the theater the quintessential site, where immediate, vivid imaginative encounters occur. What is more, tragedy is the form of drama where catastrophes, rather than other kinds of action, are presented. Attending tragic drama in the theater – attending the representation of imagined catastrophes in the place of seeing and beholding – thus fulfills in exemplary fashion the deliberative practice of having an imagined encounter with catastrophe.

A similar point might be made with respect to the power of tragedy to produce emotions, especially pity and fear, which has always been seen as one of its most fundamental features. An episode recounted by Herodotus, a contemporary of Sophocles, illustrates the point vividly. When an early tragedian depicted an event from the recent historical (rather than distant mythical) past, the sack of the city of Miletus, the entire theater 'burst into tears' (Hdt. 6.21), and a huge fine was levied against him for presenting a catastrophe that touched the Athenians, close allies of the Milesians, too personally. Since the 5th-century B.C.E., the emotion of fear has also been identified alongside pity as the other characteristic emotion of tragedy (Halliwell, 2011; Munteanu, 2011, pp. 37–51); in *The Republic*, Socrates identifies its capacity to generate emotions as 'the most serious accusation' against mimetic poetry such as drama (Pl. *Rep*. 10.605c–606d), while Aristotle's celebrated definition of tragedy in the *Poetics* accords emotions a constitutive role in tragedy insofar as tragedy 'accomplishes, through pity and fear, the *katharsis* of such emotions' (Arist. *Poet*. 1449b27–28).[8]

Tragedy, understood as a part of a practice of deliberation, is inextricably connected to Athenian democracy in two ways. The first concerns tragedy's profoundly communal, civic nature. Jonas's discussion of imagination and emotions makes no mention of whether the deliberative practices he prescribes are to be undertaken as personal experiences or something else. But 5th-century B.C.E. tragedy was a communal experience that occurred in a public space: spectators sat in the Theater of Dionysus alongside roughly 15,000 attendees, the largest gathering of Athenian citizens on the calendar. Moreover, the Great Dionysia, the state-sponsored festival when tragedies were performed, was a distinctly civic affair. The seating arrangements within the theater seem to have constructed a map of the Athenian citizen body, and citizens were likely seated by 'tribe' (which determined political, military, and other civic service), thereby displaying the city as a city to and for itself (Winkler, 1990; Goldhill, 1997). Several rituals performed before the tragedies created an expressly civic frame; these included a rare gathering of Athens' top political leaders to perform libations, and, very likely, high-profile recognition of citizens who had undertaken special deeds on behalf of the city. These rituals thus framed the ensuing explo-

[7] This is, of course, a rough summary of the distinction between mimesis and diegesis; for the relationship between mimesis, drama, and imagination in Plato, see esp. Grethlein (2020), Halliwell (1995, 2002, pp. 72–97) and Woodruff (2008).

[8] For further discussion, see e.g. Rorty (1992), Nussbaum (2001) and Munteanu (2011, pp. 238–250).

ration, fundamental to so many tragedies, of how the collective of the democratic *polis* should incorporate individuals who embody norms and values of an earlier time (Seaford, 1994; Goldhill, 2000) – of how, that is, the democratic city should respond to profound normative uncertainty and change. The institution of 5th-century B.C.E. Athenian tragedy thus appears to have been specially organized to emphasize that citizens attended tragedies as citizens, and watched and responded emotionally to the encounter with catastrophe alongside their fellow citizens.

The second point concerns the relationship between tragedy and democratic Athens' chief political institutions, the Assembly, where citizens spoke and voted for motions, and the Law Court, where citizens served on juries. Scholars have detailed pervasive similarities between the assembly, the law court, and the theater, especially their shared atmosphere of agonistic debate and the way all three construct the democratic citizen as 'a listening voting member of a collective audience', (Goldhill, 2012, p. 38). Not for nothing did Plato coin the term 'theatrocracy' (Pl. *Laws* 701b).[9]

Sophocles' penchant for staging audienceship underscores this point further. The plays of Sophocles are distinctive for the frequency with which a third character (whose invention is often attributed to Sophocles) watches silently as two other characters converse, debate, or lament (Easterling, 1997; Goldhill, 2012, pp. 39–55), as if putting the audience on stage. This has a double effect. On the one hand, these scenes force the audience in the theatre to confront its own processes of observing, deliberating on, and acting in response to what it sees, encouraging critical self-reflection by holding a mirror to the nature of spectatorship as such. On the other, it implies that the audience, too, is always potentially subject to the same tragedies that befall the characters on stage who fail to deliberate and act correctly (Goldhill, 2012, pp. 11–38, 39–55). In view of the role of the democratic citizen as a spectator of speeches, a voter in the assembly, and a juror in the law court, Sophoclean tragedy may thus be seen as a format for developing an essential skill-set of the democratic citizen. By seeing how others see, respond emotionally to, deliberate upon, and ultimately act in response to the suffering and catastrophes of others, the audience gains experience in seeing, responding emotionally, deliberating, and acting in sophisticated, critically self-aware and self-reflexive ways: the actor acts and suffers onstage so that the audience may learn to act differently in the great civic deliberations they undertake in real life.

Conclusion

In this article, we have sought to the answer the Anthropocene question: what, if anything, is new about the ethical demands that the Anthropocene places on human action. Our strategy relied on a critical reading of Hans Jonas's *Imperative of Responsibility* from the perspective of contemporary classical scholarship, showing how normative insight into the Anthropocene requires historicism, but also how this his-

[9] Plato's critique of tragedy's ability to play a positive normative role in a democratic context is brought to the fore most recently in (Balot, 2024). Plato's critique, and Balot's reading of it, highlights the significance of much deeper assumptions about human psychology in shaping aspects of this question.

toricism can generate fundamental normative claims. Criticizing Jonas's claim that the 20th-century raises profoundly new ethical challenges as a result of its novelty and uncertainty, the absence of which he wrongly diagnoses in Sophocles' *Antigone*, we argued that the distinctiveness of the Anthropocene should instead be situated in the temporal and spatial extension of human action, which creates a new duty to avoid permanent damage to the ability of the planet to support human life. Having thus clarified what genuinely new facts about human action characterize today's context of deliberation, we examined what new ethical principles these facts imply, focusing on Jonas's principle of responsibility; we interpreted Jonas's principle of responsibility as requiring that we abstain from actions that threaten the quality of future life on the planet, a principle we interpreted as a type of precautionary principle closely aligned with 21st-century conceptions of planetary boundaries. Following Jonas, however, and in light of his fears about inaction in the face of environmental degradation, we turned to his account of the practices of deliberation required to act on the principle, settling on the importance of a duty to have an imaginative encounter with catastrophe, and a duty to summon the emotions appropriate to this encounter. We rejected Jonas's claim, however, that such duties require giving up on democracy; observing that 5th-century B.C.E. Athenian tragedy was itself a response to profound novelty and epistemic and normative uncertainty, we observed how the institution of 5th-century B.C.E. Athenian tragedy meet Jonas's two duties of deliberation within a civic, democratic frame – and does so remarkably well.

This final point is worth reflecting on. Today, movies such as 'Don't Look Up' and novels such as Kim Stanley Robinson's *The Ministry for the Future* might be thought to offer similarly vivid encounters with catastrophe. There is a crucial difference, however, between watching such a movie at home (or even in the cinema) and watching it within the frame of the democratic institutions of 5th-century B.C.E. Athens – not to mention the level of the human species (Dryzek & Pickering, 2019). This gap shows us what it is we lack today – and leads the way toward thinking about how we can find a new and comparable set of deliberative practices in the 21st-century.

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