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An anticipatory regime of multiplanetary life: on SpaceX, Martian colonisation and terrestrial ruin

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ABSTRACT

In recent years, the aerospace engineering corporation SpaceX has been a vocal – and perhaps the foremost – contributor to the recent repopularisation of a discourse proposing the colonisation of Mars. This discourse has been intensively generative: SpaceX's press releases regularly command prominent headlines in the news; the social media posts of Elon Musk, SpaceX's CEO, invariably attract thousands of replies; and a lively meme culture further amplifies what Musk himself has described as a mission to 'make life multiplanetary' – an imagined future in which humans have 'occupied' Mars. Such speculations about the future can be understood as 'anticipatory regimes' in which some notional, wished-for possibility is legitimised through historical narratives and inflected with the anxieties and hopes of the present. For SpaceX, this has involved assuming the inevitability of terrestrial ruin while mobilising a powerful discourse of great men and scientific endeavour embedded in the logics of colonial and capitalist expansion. This anticipatory regime occupies a prominent and generative position in net culture, but it also functions to obscure other possibilities for meaningful alternatives and urgent action in the here and now. To pursue the mission to make life multiplanetary is to marginalise urgent, vital discussions concerning colonial reckoning, environmental reconciliation, and the redistribution of extreme wealth disparities.

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Introduction

The summer of 2021 was characterised by a set of converging crises of the Anthropocene: the now-steady pattern of record-breaking climate crisis events, from 'heat domes' to disastrous floods, and the continuing Covid-19 pandemic, where the race to mass-vaccination in the Global North proceeded largely at the expense of those in the Global South (Heyd, 2021). Against

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these urgent and planetary-scale issues, the spectacle of the so-called 'billionaire space race' appeared dissonant in its macho-individualism. Richard Branson, Jeff Bezos, and Elon Musk spearheaded the competition to achieve world-firsts in space, representing both a performance of the might of private capital and a fairly explicit attempt to add their names to the historical grand narrative of Man's supposed mastery of space. In this sense, as technical and architectural materialisations of their patrons' 'power and glory,' the spaceships of Virgin Galactic, Blue Origin and SpaceX respectively can be understood as baroque sculptures for the twenty-first century (Deleuze, 1992, p. 28).

Yet, the billionaire space race was not merely an aesthetic event. Its apparent incongruity masked a rhetorical relation to the abovementioned fissures of the Anthropocene. For instance, on his return from space, Bezos remarked that he was reminded of the fragility of Earth against the vastness of space. This remark evokes the so-called 'overview effect,' a fundamental shift in perspective that some returning astronauts feel after witnessing the relative smallness of the planet in its solar frame (White, 2014; Valentine, 2016). Elsewhere, Elon Musk, SpaceX's CEO, has frequently stated that the diverse expansion of the company spaceward works toward the ultimate goal of a human colony on Mars (SpaceX, 2021a). This so-called 'multiplanetary life,' he has argued, is a necessity for the survival of humanity: the colonisation of Mars thus is framed by Musk as an existential task, one which must be completed before war, climate collapse, an interstellar meteor, or some other apocalyptic scenario ends life on Earth as we know it (Musk, 2017).

Such propositions have been widely reported in the mass media and lauded by global financial institutions, attracting several notable headlines that characterise Musk as *the* powerful disruptive force in contemporary global technocapitalism.[1] In late 2021, the *Guardian* reported on Morgan Stanley's prediction that SpaceX could make Elon Musk the world's first trillionaire (Neate, 2021); and shortly after this, *Time* magazine bestowed upon Musk their annual 'Person of the Year' award. This decision reproduces an enduring rationale that evokes 'great man' theories of history that have traditionally centred the agency of white wealthy men from the Global north: *Time* claimed they selected Musk 'for creating solutions to an existential crisis, for embodying the possibilities and the perils of the age of tech titans, for driving society's most daring and disruptive transformations' (Felsenthtal, 2021). In an article that echoes many of the talking points in Elon Musk's speeches about Mars, the World Economic Forum argued that for 'the safety of our descendants and to reach humanity's full potential, we must become a multiplanetary species' (Reuter, 2021). Given the centrality of SpaceX (and Elon Musk personally) to the popular narrative of space exploration in the news media and net culture more broadly, it is worth critically examining what exactly is at stake in their particular vision of the future.

The intensification of big tech corporations' interest in outer space has garnered some scholarly interest in Science and Technology Studies (STS) in recent years. Tutton (2021), for instance, has examined the 'sociotechnical imaginary' of life on Mars, and its elaboration and amplification through the propositions of Musk and SpaceX. Sunday Grove's work similarly engages with anticipation, referring to an 'anticipatory reason' that can 'craft and steer populations favourably toward socio-technical solutions in times of political and ecological crises' (2021, p. 5). Zooming out from the specificity of Mars, we might see these narratives as part of a more generalised technoscientific episteme: Adams, Murphy and Clarke's (2009) analytic of the 'anticipatory regime,' for example, can help us examine configurations of power and knowledge that legitimise corporate speculations about the future, and structure how the future might be known and constructed.

This article contributes to these debates in STS concerning corporate space exploration by adopting a Foucauldian analytic of discourse and power to examine SpaceX's vision of multiplanetary life (Dickens and Ormrod, 2007; Valentine, 2012; Messeri, 2016; Hunter and Nelson, 2021; Sunday Grove, 2021; Tutton, 2021). We ask: what does SpaceX mean by 'making life multiplanetary'? Furthermore, how is this imaginary of multiplanetary life discursively constructed, and how does it serve the corporation's interests in the present? To form a response to these questions, we refer to Adams et al.'s (2009) concept of the 'anticipatory regime' and Anderson's (2010) conceptual vocabulary of *styles*, *practices*, and *logics* of future-making. Specifically, we examine the precautionary, pre-emptive, and preparatory forces expressed through a range of discursive objects mobilised by SpaceX to describe and illustrate their imagined Martian colonisation. For example, these include social media posts and public speeches from Elon Musk, concept diagrams of possible future Martian settlements from the SpaceX media centre, and merchandise available to purchase from SpaceX's online store. Through bringing these disparate objects together we describe how they collectively function as material inscriptions of an anticipatory regime of multiplanetary life, working to produce a particular future within which the individual in the present can locate themselves and their future actions.

We begin by briefly examining the concept of the 'anticipatory regime' in relation to scholarship on the sociology of outer space (Adams *et al.*, 2009). We then map out our analytic approach, which combines Foucauldian theories of power and discourse with the aforementioned work on anticipatory regimes. The core discussion will show how SpaceX's plans for Martian sequestration mobilises a discourse of teleological scientific endeavour that is historically embedded in the logics of colonial and capitalist expansion, proffering spectacle while obscuring other relevant responses to the aforementioned threats posed within the Anthropocene.

Anticipatory regimes and imagined futures

Adams et al. describe the anticipatory regime as a 'moral economy in which the future sets the conditions of possibility for action in the present, in which the future is inhabited in the present' (2009, p. 249). Anticipation is understood here as an ambivalent force that simultaneously works upon diverging affective registers to produce forms of life immanent to particular socio-political environments. The authors write that in neoliberal capitalism in particular:

> As much as speculative finance has become both a dominant mode of capital accumulation, spawning its own material and discursive effects of disaster prediction, anticipation has become a common, lived affect-state of daily life, shaping regimes of self, health, and spirituality. (p. 247)

Regimes of anticipation thus operate as temporal orientations that situate subjects in affective dispositions of hope, fear, and expectant action.

The anticipatory regime is but one part of a conceptual vocabulary which has been elaborated in recent years by STS scholars aiming to map and analyse the technopolitics of speculative futures. For instance, in *Dreamscapes of Modernity* (2015), Jasanoff and Kims develop the concept of the 'sociotechnical imaginary,' which Sismondo succinctly describes as public 'infrastructures of imagining and planning futures' (2020, p. 505). This frame resonates with Richard Tutton's work (2021), who contributes a critical account of Silicon Valley's multiplanetary visions as 'in thrall to opposing futures of sociotechnical optimism and Anthropocenic pessimism' (Tutton, 2021, p. 417). Messeri and Vertesi (2015) use the term 'sociotechnical projectory' to refer to the intense discursive labour performed on the part of the proponents of space exploration programmes, which seek to justify continued capital investment and public in monumental engineering projects, amidst the delays and challenges typically incurred through them. Crucially, even if these proposed missions to space fail, such projections remain as guiding lights for other actors to aim toward. This relates to the concept of the 'technoscientific imaginary,' which can draw attention to the moral imperatives often used to discuss technological developments, and which bind together communities of scientists, scholars, industrial actors, governments, and publics around shared goals and beliefs (Marcus, 1995).

Combined with the concept of the anticipatory regime, Anderson's (2010) analytic tripartite of 'styles, practices, and logics' (discussed in more detail below) will help this article identify the discursive patterns that articulate a given political imaginary of the future and will allow us to contextualise its material implications in current and past relations of power. In this regard, we follow Dickens and Ormrod's assertion that 'our imagination as regards to possible human futures in space is the product of hegemonic relations' (2007, p. 75). Similarly, Hunter and Nelson contend that Earth and outer space are not discrete domains of power, but rather are 'deeply interconnected

by flows of meaning and matter that interrelate through zones of designation such as orbital space' (2021, p. 229).

As Deudney argues, the capacity for humanity to imagine different futures is 'integral, not antagonistic, to scientific and technological progress' (2020, p. 105). However, there is the question of who gets to imagine the future, and whose imaginaries are afforded the privileged status as representing a normative, popular understanding of 'progress' – the answer to this being a limited cast of characters typically limited historically to extremely wealthy white men from the Global North.

Nevertheless, alongside political imaginaries which envisage outer space as a new *frontier* for capital expansion (a point we will discuss in detail later), the cosmos has also long functioned as a zone of political possibility for progressive and emancipatory social movements seeking respite from hostile and repressive hegemonic relations. For Shukaitas, the popular imaginary of space, articulated through 'stories, myths, and artistic forms,' also allows for the composition of 'a terrain of possibility that operates as an outside to the world as is' (2009, p. 99). The emancipatory potential of this terrain of possibility, he argues, is particularly explicit in Afrofuturist and feminist visions of cosmic travel, in which the violence of earthly racial and gender injustice can be escaped through the creation of new planetary worlds.

Infrastructural inequities

Whether this voyage to new terrains of possibility is a conceptual or literal journey to a new planet, infrastructure functions as one crucial politicised site in which the link between the present and familiar to the imagined and otherworldly is materially negotiated. Whether in science fiction or in the recent media spectacle of the 'billionaire space race,' the spaceport stands out as an immense feature of possible space exploration: a symbolic and technical infrastructural bridge between Earth as it is today and some hoped-for future. While transport infrastructure tends to fade into the background as a consequence of its everyday banality, the spaceport belongs to that class of infrastructure that is distinctly and self-consciously monumental, engendering an experiential response which David Nye (1994) describes as the 'technological sublime.' Sammler and Lynch argue that 'the spaceport is performative, linking political economic models, technological systems, and cultural imagination in an ongoing production of the present-future of offworld access' (2021, p. 709). In the United States in particular, it has also historically served as a symbol of American technological hegemony, enabled and amplified by a link between public finance and private spheres of capital, state bureaucracy and the lean disruptive corporation (Parker, 2009).

Infrastructure can thus be best understood in terms of the relations and practices it makes material through the processes of its design, development, and

maintenance (Leigh-Star and Ruhleder, 1996). These processes are encumbered by a panoply of resistances posed, for example, by environmental, social, economic, and technical circumstances. Blok et al. note that '[infrastructures] are negotiated through friction; they break down and need maintenance; they rely on socially learnt conventions and they leave parts of the landscape unnamed, unnoticed, and unvalued' (2016, p. 7). It is through these frictions and conventions that a politics of access emerges, raising the question of how individuals are unequally permitted to participate in infrastructures, speculative or otherwise (Winner, 1980; Woolgar and Cooper, 1999). For Ruha Benjamin (2019) this problem of 'engineered inequity' is a common effect of technological and infrastructural advancements. '"Efficiency" and "progress",' she writes, are invoked 'as the lingua franca of innovation,' even while quietly producing new possibilities for configuring the (im)mobility of individual citizens at greater scales and faster temporalities (Benjamin, 2019, p. 72).

The figure of the engineer is afforded a privileged position in anticipatory regimes, not only in the ways in which they propose future solutions, but in how they diagnose inefficiencies and formulate problems in the first instance. In this sense, power can be understood as it operates through the technical discourse in which a given problem is framed, and across the solution presupposed by the disciplinary perspective of the engineer. In other words, it concerns the ways certain institutions, individuals, and instruments are understood to be capable of articulating the 'problem,' the terms it is expressed through, and what makes the proposed future resolution a compelling, legitimate, and even exciting prospect.

Engineering the frontier

In the face of the earthly threats that SpaceX use to articulate the necessity of future life on Mars, which we discuss below, this future has also been presented as an economic or biological necessity by eminent public scientists, such as Carl Sagan (Sagan, 1997). Dickens and Ormrod (2007) propose the term *outer spatial fixes* to describe the economic logics in play here, manifesting as ventures that expand territorial possibilities for plundering resources and inventing new commodities and services. For proponents of space exploration, outer spatial fixes ostensibly serve as a means to resolve the increasingly apparent contradictions within terrestrial circuits of capital amidst dwindling finite material resources. The implications of this for global flows of capital is further explored in the more recent work of Deberdt and Billon (2023), who examine the 'extractive spatialities' of outer-space mining and the terrestrial 'enclaves' in which the access to and distribution of mined minerals is negotiated.

On an existential level, Martian expansion is also characterised as a vital imperative of 'civilization' (Slobodian, 2015), with popular science texts often unfortunately repeating these essentialist tropes as human 'destiny' (Kaku,

2019). Elsewhere, Robert Zubrin, founder of the Mars Society (which advocates for Martian colonisation) and ally of Elon Musk, posits the settlement of Mars as part of a longer lineage of human achievement and historical narratives of progress. In a speech made at NASA in 2014, Zubrin states:

> I ask any American 'What happened in 1492?' They'll tell me: 'Well, Columbus sailed in 1492', and that is correct, he did. But that is not the only thing that happened in 1492. In 1492 England and France signed a peace treaty. In 1492 the Borgias took over the papacy. In 1492 Lorenzo de Medici, the richest man in the world, died. If there had been newspapers at the time […] those would have been the headlines – not this Italian weaver's son taking a bunch of ships and sailing off to Nowhere. But Columbus is what we remember. (The Mars Society, 2021).

These remarks, while bombastic, are callous and ignorant of the indigenous inhabitants of North America – merely 'Nowhere' prior to European settlement. Yet, they imply the mission to Mars should be above all else in the rollcall of human concerns. According to Valentine, this turn to historic narratives of white settler colonialism and human exploration is part of a broader pattern in the discourse of space-settlement advocates, who seek to 'ground' and 'contextualise' the speculative visions of life beyond Earth 'by analogising and indexing terrestrial historical events and processes' (2016, p. 512). Similarly, Sage situates this as part of a 'far older geopolitical project': that is, 'the production of American identity defined in terms of the transcendence of limits, whether technological, economic, spiritual, or territorial' (2014, p. 153). While these narratives are used to index a new age of discovery of colonial violence, its underlying logic is also materially reproduced in the terrestrial siting of space infrastructures. Looking at the locations of spaceports around the world, Klinger highlights how their distribution 'follows colonial geographies of extraction, sacrifice, and risk,' requiring the seizure of territory that 'must first be *made empty* of people' (2021, p. 677, emphasis ours).

Zubrin's speech demonstrates how this indexing can also be directed at the present from an imagined future-historical vantage point. He argues:

> 500 years from now, people are not going to remember which faction came out on top in Iraq, or Syria, or whatever […] but they will remember what we did to make their civilization possible. (The Mars Society, 2021).

While this is a gross belittlement of the violence and trauma of these conflicts, rendered insignificant, even unmemorable, on the larger stage of 'civilization's' expansion, later sections will show how similar tropes of historic scientific doctrines of discovery are very much still operative within the discursive formation of Martian settlement channeled by SpaceX today. Indeed, the epistemic *emptying* – including depopulation, depoliticisation, and dehistoricisation – of spaces is an important rhetorical and material process in the production of speculative utopias, whether on Earth or Mars.

Accordingly, this paper builds upon critical research which shows how the cosmos has been used to project hopeful visions that reflect, and entrench, the contingent aesthetic, political and cultural milieus of their articulation (Finney, 1987). Returning to Tutton (2021), the discursive foundations for the contemporary sociopolitical imaginary of multiplanetary life have an extensive history. He highlights how species revival on Mars is a long-standing trope in science-fiction, tracing its expression in both Russian Cosmism and in the more recent exploits of Silicon Valley. Similarly, Nicole Sunday Grove (2021) shows how governments, such as the United Arab Emirates, invoke the colonisation of Mars as a site of rebirth, through which the cosmic entrenchment of authoritarian political rule can ensure human survival after ecological catastrophe. Visions of celestial expansion can thus be productively examined in relation to the 'earthly regimes of power' from which they emerge (MacDonald, 2007, p. 610). In the next section, we will introduce Foucault's (2002b) concept of the discursive formation to provide the theoretical grounds upon which such regimes of power can be empirically studied and critically interpreted.

Discursive formations and anticipatory analytics

In the discussion published as Truth and Power, Foucault (1980) states that power 'needs to be considered as a productive network which runs through the whole social body, much more than as a negative instance whose function is repression' (p. 119). For Foucault, power 'traverses and produces things, it induces pleasure, forms knowledge, produces discourse' (p. 119). In another interview, Foucault emphasises the latticed qualities of power as 'a more-or-less organised, hierarchical, coordinated, cluster of relations' (p. 198). Elsewhere, he writes of the mutually constitutive effects of power and knowledge, which in their interplay have the capacity to legitimise and normalise certain discursive claims, rendering them authoritative and taken for granted as 'true' (p. 225). Power and knowledge are codified to a greater or lesser formal extent, in practices, institutions, documents, technical instruments, architectural designs, habits, and norms, encompassed within the various imaginaries discussed above. These heterogenous elements, illustrative as opposed to exclusive, operate across and through discourse. Foucault's concept of the 'discursive formation,' outlined in *The Archaeology of Knowledge* (2002b), offers a conceptual rubric to analyse the systems which configure these elements into the said, and unsaid, and which rule the domains of the known and the (in)articulable.

To study and delineate operative discursive formations in particular fields of experience, the political theorists Laclau and Mouffe (2014) argue that two key theoretical moves are necessary. The first maintains that discourse cannot be unified 'in the experience or consciousness of a founding subject' (2014, p. 95). This to say that the analysis of discursive formations cannot lead to a

singular point of origin. Here, power is explored as a force that is *expressed* through overlapping, relating, and perhaps contradicting, *intentionalities*. Power, as a result, is not something that is set into particular structures by particular actors to effect particular goals, but is something that is expressed by multitudinous and relating elements at once. Accordingly, the second key consequence of adopting this Foucauldian perspective is to necessarily affirm 'the *material* character of every discursive structure' (p. 94). Laclau and Mouffe write:

> The practice of articulation, as fixation/dislocation of a system of differences, cannot consist of purely linguistic phenomena; but must instead pierce the entire material density of the multifarious institutions, rituals, and practices through which a discursive formation is structured. (2014, p. 95).

This builds upon Foucault's (1982) assertion that discourse, while never being purely tractable, is 'controlled, selected, organised and redistributed by a certain number of procedures' (p. 52). Deleuze described this as a 'theatre of statements' (2006, p. 47). This descriptor is especially useful for us as it emphasises the way a discursive formation functions as a *performance* of rules which govern what is taken for granted, what is sayable, and how propositions become verifiable and acceptable as true. In particular, we avoid presenting SpaceX as *the* singular corporate actor *creating* the discursive formation under analysis. As stated above, the subject does not 'precede' a discursive formation just as 'an "age" does not pre-exist the statements which express it' (Foucault, 2002a, p. 42).

While the topics explored by Foucault himself are obviously at a considerable remove to the case study under scrutiny in this article, his theoretical frames productively map onto more recent interventions that seek to develop analytics of outer-space anticipation. Bringing these approaches together allows us to examine how an anticipatory regime of multiplanetary life is comprised of both the 'said' and the 'unsaid,' and how this modulates our capacity to imagine the future while delimiting possible action in the present.

Anderson's (2010) forms of anticipatory action – what he categories as styles, practices, and logics – are particularly useful for making this link between imagined futures and contemporary relations of power. 'Anticipatory action,' he writes, 'is now imbricated with the plurality of power relations that make up contemporary liberal democracies' (2010, p. 780). For Anderson, styles figure into this action by framing 'the future' within a particular field of statements, disclosing 'a set of relations between the past, present and future and self-authenticate those relations'; 'practices' provide affective and epistemic content to an imagined future; and finally, logics are a 'programmatic way of formalising, justifying and deploying action in the here and now' (p. 779).

Importantly, alongside identifying the type of future that SpaceX endeavours to make material, we will also identify the ways in which anticipation produces obfuscation and foreclosure – something Foucauldian scholar Tuomo Tiisala

(2021) has usefully termed 'topical exclusion.' For Tiisala, 'topical exclusion produces ignorance (about *x*) by directing *attention* (at *y*)' (p. 40). As such, mediatised modes of distraction, which we will identify in the various discursive objects and performances below, ought to be considered as part of newly uncovered 'strategies of power' (p. 26), which 'harness and produce ignorance' (p. 27) alongside, and often in conflict with, the generative functions of power/knowledge and anticipatory world-building. Correspondingly, the following sections will examine various related elements of SpaceX's public relations strategy surrounding its mission to colonise Mars.

A spacefaring civilisation

As the previous sections have argued, anticipatory regimes produce desirable futures toward which societies, and the individuals within them, can collectively strive. Multiplanetary life, however, has its bleak obverse in terrestrial ruin. As Tutton (2021, p. 421) notes, the boosterish visions of life on Mars are also 'haunted by pessimistic futures.' Such visions respond to the perceived shortcomings and dangers of the present, and must justify why, and how, the type of interventions being proposed are necessary for their amelioration. Accordingly, this section follows Tutton's proposition to identify the dialectic registers of anxiety and hope through which actors, like SpaceX, justify the mission to colonise Mars.

To examine how this justification functions within a 'theatre of statements' (Deleuze, 2006), we have selected a range of discursive objects within SpaceX's mediatised discourse of Martian colonisation. We first examine public statements delivered by Elon Musk; secondly, the designs of SpaceX's rockets; thirdly, the digital concept imagery of SpaceX's Martian base; and finally, two t-shirts available for purchase on the SpaceX store. The rocket, concept imagery and merchandise have been collected through SpaceX's official website and thus are understood as formal representations and expressions of the corporation's brand identity. We have also analysed content posted to social media, including imagery posted to SpaceX's official Flickr account and posted by Elon Musk on his verified Twitter account. Combined, these objects are significant in that they very publicly set out key terms, phrases, and imagery that we argue articulate important features of an anticipatory regime of multiplanetary life. Consequently, we examine these objects in terms of the discursive tropes they mobilise to produce anxiety and hope, while also exploring how they 'disclose a set of relations between past, present and future,' which 'prepare for' and 'pre-empt' a form of Martian colonisation with SpaceX at its centre (Anderson, 2010, pp. 778–779). Equipped with this empirical and theoretical perspective, we show how this attempted positioning reveals the ways in which power is inscribed through the styles, practices, and logics that materialise anticipatory regimes in the present.

In a online interview at the Mars Society annual convention in October 2020, Elon Musk outlined three potential human extinction events that building a 'self-sustaining city on Mars' could insure against (The Mars Society, 2020). The first is 'nuclear Armageddon […] World War Three,' the second an ecological catastrophe such as a 'super-volcano or comet [hitting Earth],' and a final possibility of demise where humans 'might just self-extinguish.' These three threats, Musk admits, are 'just risks,' yet for him they play a crucial role in establishing the existential necessity of the SpaceX colonising mission. As such they can be understood as what Anderson describes as contributing to a particular 'logic' that justifies this particular future of Martian colonisation, at the expense of other possible futures in which seeking the solace of another planet is not the only safeguard against these perceived threats. It is possible to also imagine, for instance, that concerted efforts toward nuclear disarmament could scale down the danger of World War Three; stabilising ecological thresholds could create more hospitable, and lasting, environments to live within; or erasing obscene global wealth disparities might reduce the likelihood of humanity self-extinguishing.

While fear and anxiety are recurring feature of this logic, 'hope' also becomes a powerful affective register in a 'style' that connects historic narratives with SpaceX's imagined future (Anderson, 2010). 'Making the future present,' as Anderson states, 'becomes a question of creating affectively imbued representations that move and mobilise' (2010, p. 785). The Mission Mars page on the SpaceX website is headed with an apt quote from Musk that explicitly attempts to move and mobilise:

> You want to wake up in the morning and think the future is going to be great – and that's what being a spacefaring civilization is all about. It's about believing in the future and thinking that the future will be better than the past. And I can't think of anything more exciting than going out there and being among the stars. (SpaceX, 2021a)

Here we can identify an affective register of excitement that pervades SpaceX's anticipatory regime. 'Hope' is explicitly and implicitly configured through tropes of historic imperialism – albeit an account of imperialism that is sanitised, with its historic violences and their contemporary echoes remaining unsaid. For SpaceX, becoming a 'spacefaring civilization' has connotations with both prideful national expansion and universalist myths of teleologic scientific discovery. For example, SpaceX rationalises its ventures by drawing upon characteristically American geopolitical discourses, re-articulating aims to dominate the space agenda since the 1960s (McCurdy, 2011), while exalting what Linda Billings has called the older 'enduring American values of pioneering, progress, enterprise, freedom, and rugged individualism' (2007, p. 484). In doing so, they also centre a specifically American history of space exploration, reifying and reproducing a technopolitical hegemony inscribed in popular

culture imaginaries of both the frontier and science fiction (Cirac-Claveras, 2022).

Interestingly, this retrieval of American frontier expansionism and cosmic Cold War militarism turns upon significant corporate actors as well as nation-state agencies. This emphasises, once again, the continued salience of a particular form of present-day privatised infrastructural efficiency, which corresponds with the historical trends of geopolitical neoliberalisation observable in the past four decades or so (Mirowski, 2014). Indeed, as explained in the discussion of the spaceport above, having ownership over the infrastructures which support everyday life also affords the delimitation of the spatial and temporal possibilities of that life, as well as who is permitted to participate in its fruition (Hunter and Nelson, 2021) (Figure 1).

Secondly, the settlement of distant lands in the name of market expansion and scientific progress is an enduring feature of epistemic colonisation (Harding, 2009), aligning grand narratives of Western empire with the domination of objectified 'out-there' places (Sarukkai, 1997). However, as Webb explains, this objectification was not always one that advanced an enforced domination of presence. In fact, the prevalent theme of the planet as 'island' to be protected from cosmic 'contamination' was one possible trajectory purveyed in some enclaves of Cold War American science (Webb, 2021, p. 398). Of course, we do not find this trajectory in the contemporary anticipatory regime of multiplanetary life. Rather, we encounter narratives that evoke glorious historic voyages of discovery, ostensibly in the name of expanding human

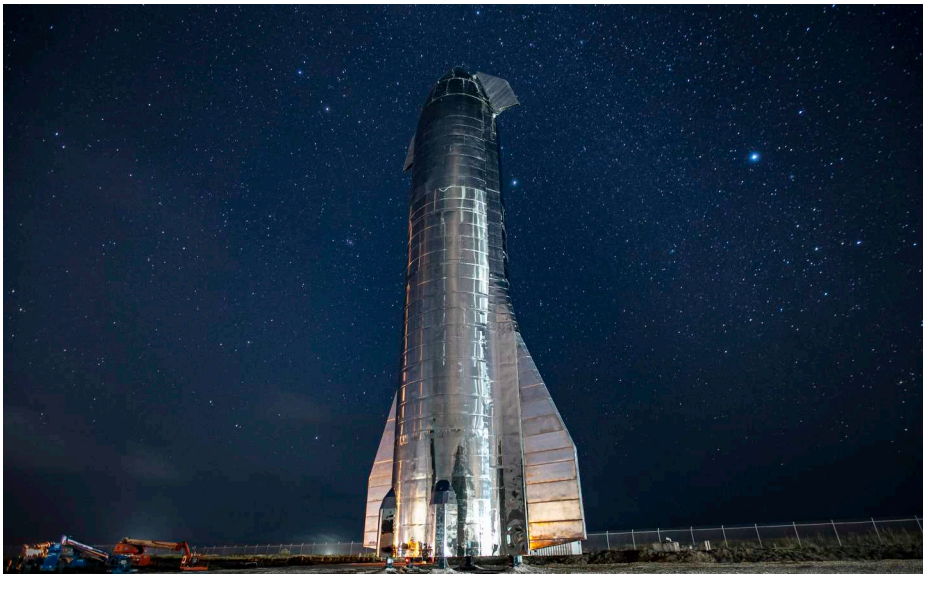

Figure 1. *A nighttime photograph of the first Starship test vehicle* (SpaceX, 2019a). https://www.flickr.com/photos/spacex/48953946911/. Issued under a CC BY-NC 2.0 DEED license.

civilisation writ large. In their contemporary manifestation, these narratives feature an exclusive cast of white men of extreme wealth, and largely from the Global North, as its key protagonists.

These tropes are evident in Robert Zubrin's Mars Society speech at NASA in 2014, where it was claimed:

> If we do what we can do in our time to establish that little Plymouth Rock settlement on Mars, then 500 years from now there will be new branches of human civilization on Mars and I believe throughout nearby interstellar space. (The Mars Society, 2021).

Here, Zubrin builds upon an image of the heroic settler 'transcending limits' and overcoming the inanimate Nature of new territories and beyond for the imagined good of 'human civilization' (Sage, 2014). Mary Terrall (1998) reveals such ideas to be persistent in imaginaries of scientific progress established in the West during the Enlightenment period, and its implicit referencing by Zubrin here works to suggest that the Martian human project is as much of a 'universally' worthwhile goal as the cosmopolitan spread of (Eurocentric) rationality associated with the Enlightenment period. Clearly, the potential 'seizure' involved in SpaceX's vision to colonise Mars is of a very different order than the violent systems of domination historically present in European colonial expansion. Nevertheless, for SpaceX and other champions of multiplanetary life, the supposed fulfilment of latent human potential in the stars mobilises recognisable, and still pervasive, discourses of gendered and racialised colonial triumph, and does so in a manner overtly designed to seduce and legitimise. Tellingly, Ashley Kosak (2021), former Mission Integration Engineer at SpaceX, explicitly cited the pervasiveness of such ideas as key reasons for her exit from the company in 2021.

However, even if we choose to leave these issues to the side and accept the stated aim of constructing a human outpost on Mars as a worthy project in the advancement of civilisation, the actual practical feasibility of the mission is in serious question. Some claim its existing resources and atmosphere, coupled with further technological advancement, make it an ideal fit for settlement (Zubrin, 2019), while others doubt its plausibility at all (Chu, 2014). Yet, despite SpaceX offering only very thin details of life on Mars, the next section will argue that it is the way the corporation *performs* plausibility that is important within the anticipatory regime currently under analysis.

A martian technological sublime

In SpaceX's announcements of its Martian mission, the various interacting systems involved is given in a highly specific, quantitative level of detail. The way that this detail is relayed, however, raises important corresponding questions regarding the basis and objectives that define the mission itself. For example, the grand narrative of Man's efforts to master Nature is exemplified

in SpaceX's diagrams and renderings that purport to describe the experience and technical possibilities of space travel and multiplanetary life. A central protagonist in this theatre of statements is the vessel: the Big Falcon Rocket (BFR). This name, sometimes understood as a pun on the powerful superweapon 'Big Fucking Gun' in 1990s first-person shooter videogame *DOOM*, signals an irreverent tone that is characteristic of Elon Musk's public relations strategies (Heath, 2015). The BFR, now afforded the rather more PR-friendly name Starship, is a powerful object in this anticipatory regime: as a materialisation of SpaceX's brand of invention, disruption, and optimisation, it puts private enterprise at the centre of a new age of discovery.

The Starship can be seen as an important element of what, via Anderson (2010), we can understand as a practice that 'performs' SpaceX's future of Martian colonisation. SpaceX repeatedly emphasise that Starship, in contrast to other spaceships developed by its competitors, is simultaneously more powerful but more economical to launch due to its reusability; that it is versatile and can be repurposed for various mission types; and that it has the requisite capacity to carry both the cargo and human passengers needed to set up an initial 'base' on Mars. Starship also animates science-fiction fantasies while retrieving the spirit of the Cold War-era Space Race, a race which the United States ultimately emerged as the self-declared victors. One notable difference here, as previously discussed, is that the present-day reperformance of the Space Race centres the American *corporation* rather than *the state* in the narrative, even while the corporation's key ventures are enabled through contracts issued by governmental agencies (Parker, 2009). The implication then is that it is the mythic spirit of invention – the supposed core of free market American capitalism – which makes a multiplanetary future a possibility (Billings, 2007).

In Musk's, 2017 Astronautical Congress speech, titled *Making Life Multiplanetary*, the engineering problem of how to get to Mars was a central point of discussion. Musk states:

> The base starts with one ship, then multiple ships, then we start building out the city and making the city bigger, and even bigger. Over time terraforming Mars and making it really a nice place to be. It is quite a beautiful picture. You know that on Mars, dawn and dusk are blue. The sky is blue at dawn and dusk and red during the day. It's the opposite of Earth. (2017, p. 9)

This image that Musk evokes here portrays life on Mars as not only possible, but beautiful. In the various concept renders of the Mars mission published on SpaceX's account on the image-sharing site Flickr, one might be reminded of empire-building real-time strategy videogames and science fiction cinema. Views of geodesic domes, launchpads, and branded SpaceX laboratories, linked by glass tunnels in a sharp silver against the rusty earth of the Red Planet, all feature prominently in the speculative imagery of the Martian base. This image-making is also a form of anticipatory 'practice,' offering

visions that function as 'content' representing mission success (Anderson, 2010). These images have a discernible affective register: they inspire the kind of awe reserved for the world of engineering's great interventions in landscapes. Such structures, from the world's biggest bridges to footage of the atomic bomb detonation and NASA's moon landing, evoke a sense of the aforementioned 'technological sublime' (Nye, 1994) (Figure 2).

Yet, amidst the extensive and seemingly precise discussions about engineering prowess and technical ingenuity, there is a peculiar silence when it comes to the question of what multiplanetary life might actually *be* – at least beyond the quite literal status of *some* humans being on two planets simultaneously. Musk's speech, the concept drawings, and the rocket itself help to generate a superficial but spectacular impression of life on Mars. In outlining what we might understand as a Martian technological sublime, they are powerful statements that describe the seductive and desirable qualities of making life multiplanetary. Yet, the questions concerning what ethical, moral, or legislative principles might govern behaviour in SpaceX's Martian outpost go unsaid, bracketed off by SpaceX as discrete problems to be resolved by unnamed others. In this discourse, such concerns are entirely disconnected from the engineering challenges and technological preconditions required to make this anticipated future possible: 'society' and 'technology' appear to be logically separate, materially and conceptually.

A peculiar easter egg – albeit an instructive one – in the Terms of Service of SpaceX's Starlink satellite mesh networking system provides a playful suggestion of the anticipatory regime involved here. Expressed in a calculated and eminently memeable irony, the document stated that those who subscribe to Starlink also agree to the following:

Figure 2. *SpaceX's concept rendering of a Martian outpost* (SpaceX, 2019b). https://www.flickr.com/photos/spacex/48954139137. Issued under a CC BY-NC 2.0 DEED license.

> For Services provided on Mars, or in transit to Mars via Starship or other spacecraft, the parties recognise Mars as a free planet and that no Earth-based government has authority or sovereignty over Martian activities. Accordingly, Disputes will be settled through self-governing principles, established in good faith, at the time of Martian settlement. (Starlink, 2021)

While the purported joke here was effective in that it generated considerable discourse amongst SpaceX fan communities and across the sphere of tech journalism, the underlying point is rather serious: making life multiplanetary has a distinctly libertarian dimension. While this remains mostly unsaid, it is nevertheless present as a guiding political attribute in this anticipatory regime.

Multiplanetary individualism

For SpaceX, this irreverent tone has been a successful tactic for marshalling a mass public of supporters for the corporation's ventures. Memeworthy stunts and spectacles, often originating on Elon Musk's personal social media accounts, distinguish SpaceX from the impersonal, anonymous corporatism of other aerospace firms. Drawing once again on Anderson, these efforts can also be understood as a practice in which the future is mapped across 'content,' and expressed as affective and epistemic objects which circulate across a discourse (2010, p. 779). With over 60 million followers on Twitter at the time of writing, Musk's timeline is an eclectic mix of non sequitur remarks – or to use the colloquial, 'shitposts' – about cryptocurrencies and net culture more generally. These posts appear alongside technical updates about SpaceX, Tesla, and other such programs which Musk takes an executive role. Almost invariably, his tweets attract thousands, and in some cases tens of thousands of 'retweets,' and an order of magnitude more 'likes.' In this sense, Musk's public profile exemplifies intermingling of the corporate mainstream and internet subcultures described by Whitney Phillips, in which both are 'locked in a cybernetic feedback loop predicated on spectacle' (2015, p. 52).

In August 2019, Elon Musk posted a short tweet on his Twitter account: 'Nuke Mars!' (Musk, 2019a). The tweet is a particularly useful case study here due to its discursive generativity: it was a succinct, speculative, and obviously controversial provocation that perhaps unsurprisingly attracted extensive commentary both across the tech news sphere and on Twitter itself. The memetic quality of this statement was further reinforced with a pithy follow-up tweet posted a couple of hours later: 'T-shirt soon' (Musk, 2019b). Indeed, a t-shirt did later appear on SpaceX's online shop, joining a range of merchandise emblazoned with various slogans, images, and logos that draw on the broad range of SpaceX's operations (SpaceX, 2021b). For instance, customers can purchase jumpsuits styled on the space suits worn by the civilian astronauts on the recent Inspiration4 orbital mission, t-shirts decorated with diagrams of the Starship, and Starlink baseball caps. A techno-

militaristic aesthetic pervades across the merchandise on offer, not least in the 'Nuke Mars' t-shirt. Following Maclaren (2021), focusing on the material culture that surrounds of outer-space is especially relevant considering how wearable space paraphernalia, such as NASA Space Shuttle mission patches, exist as form of iconography, embedding narratives of cosmic expansion linked to particular Earthly political manoeuvrings.

The first t-shirt is simple in design: on a black base fabric, the statement 'NUKE MARS' is capitalised in a textured, stencil-effect typeface that is distinctly militaristic. An image of Mars punctuates the statement. Yet, instead of the familiar appearance of the red planet, a more-earthly rendering of Mars, with green landscapes and blue oceans, is present. Nuclear weapons are provocatively imagined here not as devastating weapons that pose an existential threat to humanity, but as geoengineering tools which can prepare an otherwise inhospitable planet for human habitation. The spectre of Cold War technoscience is present here: the proposition to 'nuke Mars' to control the planet's weather systems recalls the American scientists and military commanders who, in the aftermath of the Second World War, suggested using nuclear weapons as tools for climate engineering and weather control (Fleming, 2010, pp. 194–195).

The second t-shirt, in an almost identical design but with the slogan 'Occupy Mars,' can also be purchased from the SpaceX store (SpaceX, 2021c). The use of the word 'occupy' has specific political connotations with the Occupy Wall Street movement. In September 2011, activists began gathering in Zucotti Park in New York's financial district to protest economic inequality and the neoliberal financialisation of markets in the West. One of its core slogans was 'We are the 99%,' which highlighted the disparity in wealth being held by a small minority of the US population. The Occupy Movement spread across the globe, with various occupations of public space in several Western cities and persisted long after the protesters were removed from their respective encampments. Notwithstanding the efficacy of the protests, these were moments of public rebellion, mediatised to the extent that they contributed to 'The Protestor' being chosen as the *Time's* Person of the Year in 2011 (Andersen, 2011).

In this context, the call to 'Occupy Mars' retains the political allure of revolt and renewal. The mission of making humans a multiplanetary species is thus charged with a sense of civil disobedience, one that disrupts an established order to make possible the engineering of a different world. However, whereas the Occupy Movement collectively inhabited privatised space to make a statement about planetary corporatisation, SpaceX's Martian mission has exactly the opposite aim grounded in terrestrial hegemonic relations: that is, planetary sequestration and privatisation. Rather than address established injustices in earthly relations of power, then, Occupying Mars seeks to instantiate a seemingly exaggerated version of these familiar relations in an otherwise

uninhabitable environment. The qualities of these relations permeate throughout this theatre of statements analysed above, ranging from Musk's tweets and his public addresses to SpaceX's merchandise and the imagery of the imagined Martian outpost and the rocket itself. These elements act in combination and, considered together, begin to delineate the discursive qualities of an anticipatory regime that uneasily blends a politics of libertarian, corporate (anti)governance with the spectacle of techno-militaristic intervention.

Returning to Earth

In mobilising frontierist narratives of discovery and civilisational advancement, SpaceX's mission to make life multiplanetary presents a marked incongruence, one that glares brightly with respect to the current context of a vastly uneven neoliberal geopolitical world order that itself grew out of colonial genocides and is violently exacerbated by climate collapse (Whyte, 2018; Lazzarato and Hurley, 2021). Furthermore, calling upon these narratives to function as powerful and seductive rationales for speculating on the future serves to reproduce and reify establish epistemic injustices centered around the attempted silencing of subaltern perspectives in the past and present (Morris and Spivak, 2010). However kindly we paint the intentions of SpaceX's Martian mission, naïve or not, speaking of the civilising hope of colonisation in the face of these hard-fought insights and critiques is to deny their validity. The endorsement of colonising practices, even in a cosmic setting, reframes and celebrates them as a necessary feature of progress. This thus negates attempts to bring the violent legacies of colonisation to wider public recognition, as well as undermining crucial efforts toward practical forms of decolonisation and reparations (Tuck and Yang, 2012).

As it is, both the material and ideological dreams of colonial sequestration remain intact in SpaceX's plans for Mars. As we alluded to in earlier sections, the discursive style in which Mars is envisaged as an objectified land ripe for human settlement mirrors historical colonial discourses, which hold in place hegemonic and hierarchical binaries of Man/Nature (de la Cadena, 2010). In this style, only when Nature is situated as below the Human can the former be ethically plundered to meet the requirements of the latter. Thus, configuring Mars as an empty natural vessel repeats Modern systems of epistemic categorisation that historically justified colonialism, and which continue to legitimise the capitalist exploitation of natural resources for human gain in the present age.

While often presented as a rupture of the normative conceptualisation of the place of humanity in cosmological scales, glorifying cosmic human expansion in fact forecloses any serious questioning of the human/nonhuman relations that have actually led to its imagined necessity. In these visions, we are asked to reaffirm the narrative of White human exceptionalism and the logic of

expansion to save humanity in its moment of need. The opportunity to reflect upon the extractive economic, social, and political conditions that have wrought the current ecological crisis of the present age is missed. Maintaining this exclusion is to either say that such structuring conditions do not exist or that they do not matter, constituting false or insignificant concerns beneath the overarching technological triumph of multiplanetary life. Therefore, while a significant consequence of the dreamed escape to Mars is that it downplays the necessity of changing the destructive human habits that have led to earthly ecological ruin, we can now also see how it serves an even more violent, and conservative, epistemological and ontological function.

The themes of militarism, Man's mastery over Nature, and the capitalist logic of expansion described earlier evoke discursive qualities of the space race during the 1950s and 1960s. Rocket launches were then presented by the US government as a technoscientific venture, an exciting and worthy endeavour that could demonstrate the ultimate spectacular triumph of capitalism over communism. Space was 'the High Frontier, a new wilderness, not only a physical vacuum but also a "moral vacuum" waiting to be filled' (Gorman and O'Leary, 2007, p. 74). Tutton states how, for those who witnessed the development of the Apollo programme, it is remembered 'as a pivotal moment of human achievement but also the point at which their preferred version of the future was in effect cancelled' (2021, p. 249). The dialectic registers of anxiety and hope are animated by a latent nostalgia for a spectacular performance of American technological hegemony, once again showing how anticipating the future necessarily constructs visions of the past as its point of departure.

While the associations with this historicised discourse of perceived American supremacy is palpable, the militaristic facets of SpaceX's ventures are largely confined to the performative and memeable aesthetics of the merchandise for sale in its online store. Nevertheless, in this logic, there is a latent propaganda game also in play: a psychological operation that positions the lean, agile, future-oriented corporation – as opposed to the slow and repressive State – as the saviour of humanity from the crises of the Anthropocene. Indeed, SpaceX is in a position to frame itself as lean, agile, and future-oriented precisely because of the extensive and highly lucrative contracts it receives from the U.S. government.

The near-term implications of this logic, in which the State is supplanted by a corporation benefitting from public funding, is evident in the operations of SpaceX's sibling enterprise The Boring Company. Also founded by Elon Musk, the Boring Company is invested in tunnelling beneath the Earth's surface to create a three-dimensional transport infrastructure, ostensibly solving the problem of the infamous traffic congestion that beleaguers American cities. Along with a High Frontier, then, there is also the Subterranean Frontier to be captured. Yet rather than address, for instance, the negligible availability of affordable, sustainable public transport, this solution instead

seeks to increase capacity for private automobile travel through more roads. Once again, this highlights the distinctly conservative function of seemingly disruptive technical interventions.

While the underground logistical grids and domed cityscapes envisaged by these corporations remain confined to the glossy speculations of computer-generated concept art, what we learn from the sociology of outer space is that the development and ownership of these future visions facilitate new (and often highly profitable) possibilities of governance. Furthermore, they also prescribe new fixes and flows for private capital (Dickens and Ormrod, 2007; Deberdt and Billon, 2023). In the same vein, and in the near term, SpaceX's business activities focus on the provision of cosmic infrastructures, including a contract for NASA's renewed mission to put American astronauts on the Moon (Chang, 2021). Commercial earthly travel infrastructure is also part of SpaceX's portfolio. Speaking of the Starship aircraft, Musk asked 'if we are building this thing to go to the Moon and Mars, then why not go to other places on Earth as well?' (2017, p. 10). The answer to this comes in the form of intercontinental business-class rockets, which grant a journey to paying travellers from Los Angeles to London in half an hour. The anticipatory regime of making life multiplanetary then is also enmeshed in the terrestrial flows of global capital, which constantly seek new, more 'optimal' vectors for the transport of things and people from one place to another. This optimality, however, can only be considered as such if we continue to bracket off that bleak obverse which such infrastructures produce: those questions of the unsustainability of overconsumption, engineering inequity, and the increasingly palpable reality of terrestrial ruin.

Conclusion

This article contributes to sociology of outer space literature by providing an empirical analysis of SpaceX's imaginary of 'multiplanetary life,' bringing together previously underexamined and unconnected discursive objects together to show how they operate as part of a 'theatre of statements.' We have expanded Anderson's (2010) anticipatory analytic onto new empirical terrains encompassing social media, concept illustrations, and keynote speeches, further demonstrating the efficacy of this analytic in examining wider contemporary technoscientific imaginaries of space colonialism (Marcus, 1995; Messeri and Vertesi, 2015; Klinger, 2021). In doing so, we have provided an account of how SpaceX channels historical discursive tropes to make multiplanetary life seem not only desirable, but a vital undertaking to secure the future progress and continued existence of humanity. We have analysed how these discursive objects agitate affective dispositions of fear and hope, forming what we can think of as an anticipatory regime of multiplanetary life that shapes discourse in the present.

While this anticipatory regime is explicitly forward-looking and appeals to its own contemporary net-based fan-culture, we have shown how it is also dependent on configurations of power rooted in the past. Notably, it is predicated on deterministic historical narratives of consistent technological and scientific progress, built on a nostalgia for past ages of invention and exploration in which great men of history, and lean, disruptive private enterprises, are afforded the role of heroic and glorious protagonists. With the extraordinary and pervasive violences that characterised these historic ventures excluded from the narrative, the mission to colonise Mars is reframed as a seductive – indeed even seemingly *necessary* – escape route from terrestrial ruin. With this in mind, we have argued that the resultant anticipatory regime produces very material effects in the present: through it we are witness to the foreclosure of certain trajectories for collective action and resistance, while being presented with the inevitability of a future designed and governed by the logics of expansion and the related power and glory of capitalist private enterprise.

Styles, as Anderson states, both produce and limit how the future can be intervened on (2010, p. 778). Building on this, we have shown how SpaceX is involved in the 'management of attention' (Tiisala, 2021, p. 40) which organises the ways audiences come to understand their personal position within an anticipatory regime of martian colonisation and terrestrial ruin. In other words, audiences engaged in SpaceX's anticipatory regime are distracted from the urgent necessity for collective action in response to the climatic fissures of the Anthropocene – action grounded firmly in the here and now, and action which resists established hierarchies of mythic great men inventors, Man's mastery over Nature, and the violence of capitalist expansion. Engaging with the glory of Martian colonisation is to leave the vital discussions surrounding colonial reckoning, environmental reconciliation, and the ethics of vast space-worthy wealth, as discussed above, to the wayside. It is to instead maintain a silence, an *exclusion*, of these issues, resulting in their withdrawal from public consciousness and debate at large. Drawing on the writings of Foucault, we have highlighted how anticipatory regimes function as much through the unsaid as the said of discourse (Foucault, 2002b).

SpaceX's imaginaries of Martian settlement employ seductive rhetorical strategies to sell us its vision of multiplanetary life, offering us an unproblematic account of human exceptionalism within the cosmic frame. As Daniel Deudney (2020) shows, this is a captivating hope. Yet, as we have also argued, it is one that ought to be abandoned in favour of more earth-centric scientific, political, and cultural endeavours. By highlighting the seductive power of these visions, and in explicitly rendering what these visions leave out, we hope to have illuminated a tactical terrain for interested actors to explore in the future. That is, if we wish to fortify the changes of the Anthropocene as an opportunity for redistributive social justice and environmental rectification, we might begin by creating an alternative anticipatory regime to the one currently

offered by SpaceX, one that can compete with its spectacular visions of what human life could be, for whom, and where it could be lived.

Note

1. Indeed, Elon Musk's prominence and notoriety as a public figure changed significantly during the editing of this article, having bought Twitter in late 2022 and subsequently rebranding it as X in mid-2023. As the Twitter content we analyse pre-dates this event, references to the social media platform's former title have been retained.

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Author Contributions

All authors contributed equally to the conception, preparation, and development of the paper. All authors read and approved the final manuscript.

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