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'Welcome to Mars': space colonization, anticipatory authoritarianism, and the labour of hope

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ABSTRACT

In 2017, the government of Dubai announced plans to create the first human settlement on Mars within one hundred years. This article considers how the 'Mars 2117' project and its Earth-bound beta tests represent an increasingly global and vanguard relationship to the materials we call nature, where the goal of politics is about making a new kind of habitat rather than the creation of a polis. Mars 2117 reveals the ways in which the present grounds for authoritarian legitimacy in the UAE are, in effect, on loan, for which the future functions as a form of collateral for its present day governance structure, and is hedged upon the engineered anticipation of a people, a place, and an infrastructure to come. Anticipatory authoritarianism names a form of authority being innovated to skip over political contradictions and environmental limits caused by the feedback between peak oil and irreversible climate change.

KEYWORDS

Anticipatory authoritarianism; space colonization; Mars; United Arab Emirates

Introduction

Welcome to Mars. You are seated inside a cylindrical rover in Terminal Pod 0012. Your virtual envoy Saeed[1] appears inside the craft and greets you as visiting delegate and 'Guest of Honor' to the United Government of Mars' Planetary Government Summit. A small sphere hovering in front of your craft guides you down a narrow passageway and through a rust-colored door, where you are met by an assemblage of uncrewed construction vehicles and spider-like extraction drones amid a cluster of severe towers. A 2.5 km path of barren rock leads to the City of Wisdom, a series of interlocking dome structures set against the horizon of a yellow sky. As you approach the city, Saeed continues his welcoming remarks, comparing the resourcefulness of Mars' first settlers to the 'desert Bedouins back on Earth' (World Government Summit, 2017).

The first dome houses a laboratory filled with research installments for solar radiation, water filtration, mining, and deep-space exploration, as well as other extraterrestial-related artifacts including NASA's decommissioned Opportunity rover. As you pass into the second and largest dome, Saeed informs you that you have entered the Capitol of the United Government of Mars. You speed past advertising billboards featuring models wearing VR glasses, as well as flying cars, fractal architectures, and manicured green spaces, while your envoy provides you with a brief overview of the formation and function of the planet's main regulatory and institutional body. The Government of Mars, Saeed says, is made up of 'space exploration agencies' charged with the development of the planet and its relationship to Earth. Nearing the conference site of the Planetary

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Summit, the rover passes through a large open area lightly dotted with grey human silhouettes that appear frozen in a moment in time. These permanent residents on Mars, Saeed remarks, 'represent the best humanity has to offer the universe'.

This concept video for the first human settlement on Mars was shown by Shiekh Mohammed bin Rashid Al Maktoum at the 5th World Government Summit in February 2017 to announce the United Arab Emirates' plan to create an inhabitable city on the red planet within a century. To accompany the video, a prototype of the featured Mars rover was built for the summit, where attendees could climb inside and view the video using a virtual reality headset (Gulf News, 2017). This official communiqué regarding the Dubai government's entry into the global space race for Mars coincided with additional announcements that same year about the development of two supporting projects collectively referred to as the Emirate's 'Mars 2117' initiative. The first, Mars Hope, is a space exploration probe which launched from Japan in July 2020, and is set for arrival to Mars in 2021. Celebrated in government publications as the inaugural mission to Mars by an Arab and Muslim country, the scheduled arrival of Mars Hope is designed to coincide with the fiftieth anniversary of the formation of the state in 1971. The purpose of this uncrewed mission, according to these documents, is to study and photograph surface and atmospheric conditions on Mars, which are said to stand comparison to the UAE's own arid climate. The second project, Mars Science City, is an AED500 million dollar training facility designed to simulate conditions on Mars in preparation for human settlement. Scheduled for completion in 2024, Mars Science City has also been promoted as a forthcoming major tourist attraction that will include a museum dedicated to 'space achievements', offices for start-ups, and other entertainment facilities (Figure 1; Garfield, 2017).

In this article, I consider how the UAE's Mars colonization project and related Earth-bound beta tests and architectural projects reflect a temporal financialization of authority – that is,

Figure 1. Concept image for Mars Science City in Dubai. Source: Dubai Media Office. https://www.businessinsider.com/mars-simulation-city-big-uae-2017-10.

financialization in the sense of time, not money – around issues of belonging, legitimacy, and competency. Dubai's Mars 2117 project reveals the ways in which the present grounds for authoritarian legitimacy in the UAE are, in effect, on loan, for which the future functions as a form of collateral, and where the governmentality of its present day 'autocratic openness'[2] is hedged upon the engineered anticipation of a people, a place, and most importantly, an infrastructure to come. This plan to colonize Mars reflects a form of anticipatory authoritarian nation-building, one that is organized around an imagined community premised on a nostalgic longing for a mythic future rather than a mythic past. This is distinct from conventional understandings of nationalism and the creation of national community in two ways. When images of the past are evoked in the context of Mars 2117 – which references the present-day governance structure of the UAE as having an historical continuity with an Islamic 'Golden Age' and 'indigenous' climate-adapted architectures – this is done as a pretext for the possibility of a future people, rather than a present or past national populace. This form of authority is being innovated in the UAE to skip over the contradiction created by its national and elite populations in comparison to its non-national, non-elite, and non-citizen labour classes, as well as the precarity of a tumultuous and potential catastrophic future caused by the feedback between peak oil and irreversible climate change. Mars 2117 reflects a relationship to the future that is different from the aspirational elements of national modernization projects that focus on the perfection of an existing territorial state. Its aspirational horizon is one of escape and rebirth rather than the actualization of an already existing settlement. To provide some context, the doctrine of 'Manifest Destiny' in the United States saw in westward expansion an extension and completion of an already existing colony. For the US exceptionalist vision, the west was 'wild' but fecund. Mars 2117's territorial imaginary is instead shaped around the ecological poverty of a future earth. The new UAE envisioned by Mars 2117 is not expanded from the modernist projects of Abu Dhabi and Dubai – it transcends them. It is hard to find a correlate nation-building project for which the vision of building the nation-state is one of abandoning the territorial state already built. The experience of temporality is more like the messianic impulses of nations without states, seeking states and territories in which the affective economy of the nation-to-come swings between utopia and catastrophe. Mars 2117 is thus a vision of exodus. As such, a*nticipatory authoritarianism* is an answer, if not a solution, to a dialectic of destruction woven into the contemporary global labour practices that shape the UAE's carbon economy-ecology nexus.

Mars colonization has long been a common theme in science fiction films and novels, and to some extent has always been driven by the fear and fantasy of irreversible planetary catastrophe and an uninhabitable Earth. However, the narrative has re-entered the realm of legitimate policy discourse. This is in part the result of contemporary media focus on and the distribution of public and private resources toward creating human settlements on the planet, as advancements in technology have made settlement increasingly plausible after the space pessimism that set in after the 1980s (Levchenko et al., 2019). Projects like the recently bankrupt Mars One,[3] Elon Musk's SpaceX Mars Colony plan, and Jeff Bezos' 'Blue Moon' project[4] are more well-known, yet a number of other governmental and private enterprises are investing in long-term efforts toward Mars colonization including NASA, the China National Space Administration, the Indian Space Research Institute, and the European Space Agency. Several analog Mars habitats have been created, including the NASA-funded HI-SEAS (I–VI) experiments on the island of Hawai'i, as well as one in Hanksville, Utah organized by the Mars Society, a US space-advocacy non-profit. Concept designs for urban settlements on Mars are also being proposed to address present-day concerns regarding pollution and air quality on Earth, for example the Liuzhou Forest City in China (Block, 2017; Gibson, 2017). The renewed interest in Mars can also be attributed to intensifying great power competition over

outer space. However, I do not believe that power politics or subterranean missile programmes hiding behind space exploration sufficiently account for the broad interests of states and corporations for whom geopolitical positioning does not benefit as directly. A purely realist account of space activities would miss the ways outer space increasingly plays a role in the nationalist visions of expansion and survival rather than merely stories about competition.[5]

In the UAE, the governments' plans for settlement on Mars are also varied, with both Dubai and Abu Dhabi promoting their own distinct visions. The most notable project to come out of Abu Dhabi's '2057 Vision' of what it refers to as near (2022), medium (2030–2040), and far (2057) futures (see Dartnell, 2017) is a fully-automated police station on Mars, where automated patrol vehicles will 'monitor security in space' and AI systems will 'direct the behaviour of inmates' (Figure 2; Moore, 2017; government.ae). This perfectly carceral vision of a prison planet without people can be compared to Dubai's Mars 2117 project, with its version of carcerality more conspicuously centred around the creation of a particular kind of *habitat* based on its own distinct exhibitionary order, where spectacles are set up to reflect political 'truths' in times of rapid political change and uncertainty (Mitchell, 1991).

This exhibitionary order can be traced alongside the development of Dubai's futuristic architectures and 'starchitect' developments in relation to the Gulf's periodic construction booms. Kanna & Keshavarzian, 2008 link these developments to the ways in which existing government structures assert a monopoly on representations and interpretations of space, cultural identity, and meanings of progress. While my focus here is primarily on Dubai's Mars 2117 programme, both Emirates' visions of the future demonstrate emerging imaginings of the planet within a broader ecology of space and security (see Agathangelou & Killian, 2016), compelling us to revisit the concept of the frontier as something material and imaginative that 'makes' our experience of space and time (Tsing, 2011), as well as broader global transformations in the organization of life and labour in an era of 'peak everything' (Klare, 2012; Valentine et al., 2009). Such developments dovetail more generally with ecomodernist visions of transcending the Earth's geological limits to high-levels of economic growth and consumption through industrial intervention, human engineering, and

Figure 2. Concept image for Abu Dhabi's 2057 'Mars Space Center for police'. Source: Newsweek. https://www.newsweek.com/abu-dhabi-build-futuristic-police-station-mars-astronauts-misbehaving-outer-713087.

planetary-level systems management (see Grove, 2019, p. 192). Of course depending on how and where these visions are made manifest, they take on their own distinctive contours of politics and governance. In the UAE, this difference matters to understanding the performative character of these projects at several levels of analysis. For instance, as an international and collaborative endeavour involving entities like the University of Colorado at Boulder for development, and Mitsubishi Heavy Industries for launch capabilities (Clark, 2020), the Mars 'Hope' probe demonstrates the MBRSC's peer-status in a global technological community alongside other nations and corporations that will have formidable space programmes.

How the project folds into other forms of governmentality – meant to craft and steer populations favourably toward socio-technical solutions in times of political and ecological crises – speaks to a different ecology of meaning, power, and temporality. The distinctive combination of agencies and things that organize Mars 2117 does not fit the schemas of authoritarian governance that dominate contemporary explanations of state rule, nor do they follow stalled-out discourses on stages of development, racialized arguments about oriental despotism, nor regional exceptionalism. Further, the UAE's promise to create the first human settlement on Mars is also more than another example of 'neoliberal authoritarianism' for which technocratic investments in mega-projects are often pointed to as exemplar of unregulated capitalism. I believe there is truth to more nuanced readings of this type of governance structure, which emphasize the relational contours of authority between local, regional and international agencies rather than simply the transfer of power from citizens, residents and local municipalities to state agencies around resource distribution and state planning (see Bogaert, 2018). One distinction I want to explore here is the tension between how market efficiency is featured prominently in explanations of neoliberal reform (Harcourt, 2010; Mansfield, 2004), and the fact that there is nothing efficient about the endeavour of creating a human settlement on another planet. While a number of popular and academic engagements with the event of Mars colonization emphasize the practicality of human settlement there (often in comparison to Jupiter's moon Titan, or Earth's moon) it is by all current measurements a capital-losing and fatal proposition.[6] Models of governance proposed on Mars (see Paksoy, 2009) also fall short of more 'efficient' ways of organizing a people. As one group of MIT researchers found after analyzing various aspects of the now defunct Mars One mission's architecture, the first settlers were estimated to survive only 68 days before losing atmospheric pressure and suffocating (Chu, 2014). There is a parallel here to the early stages of European colonization in the Americas. Although often explained as part of a proto-capitalist political economy, recent work on the first 100 years of colonialism in the Americas shows just how contrary it was to any rational state-craft or economic interest in colonization, as colonizers often faced worse conditions than poverty in Europe, with little or no financial gain for investors or the states that backed them (see Shapiro, 2002; White, 2017).

Thus the technocratic form of world-making involved in Dubai's vision of Martian settlement would seem to exceed singular drives toward amassing capital or state-corporate power found in musty descriptions of 'sultanistic dictatorships' (for example, see Goldstone, 2011). Certainly the Emirates' corporatist politics of 'impossible dreams made reality' continue to retain an affective power as part of a style and strategy of governance, however the authoritarian contours of Mars 2117 and other future-focused initiatives in the Emirates resonate more with the evangelical technologism of Silicon Valley than they do with derivative analyses of regime elites. There are some elements that still run contrary to Silicon Valley's particular iteration of libertarianism in its performative disavowal of the state (though it will always fall back on the state when it comes to military violence or the raising and protection of capital) in that Dubai's version of technologism holds no presumption about the withdrawal of the state or the relaxing of state regulation. It is quite the

opposite: Mars is held up as the seamless integration of the state into every managerial and ordering practice as a virtue rather than as a necessity. I also want to emphasize the use of the term technologism here rather than developmentalism because Dubai's vision of Mars colonization and its Earth-bound beta-tests are not developmentalist; there are no stages or ideas of development that accommodate these projects. Similar to the ways in which figures like Steve Jobs, Bill Gates, Elon Musk and Jeff Bezos sell imaginings of the future as a particular way of doing capitalism, Dubai's space colonization projects are premised on 'unprecedented' innovations, not as the result of a continuous mode of development, but rather on their ability to be disruptive.

As a brief note on methodology, the ideas presented here began to take form during field research in Abu Dhabi, Dubai and Sharjah as a Fulbright scholar in 2017, where I considered how entertainment and leisure spaces were shaping incipient biopolitical orders in the Gulf, as well as the ways in which the synergetic organization of technologies of control in these spaces informed the management of life, norms, and the rescaling of sociality and mobility in these complex and artificial worlds. Over the course of six months, I spent hundreds of hours in entertainment complexes, gaming hubs, theme parks, hotels, convention centres, national festivals, malls, schools, heritage sites, and other spaces structured for play, games and recreational activities. I also conducted semi-structured interviews and informal conversations with dozens of industry professionals, service workers, gamers, government officials, conference attendees, security personnel, and long- and short-term residents and visitors. Over time, I became increasingly curious about the distinctive anticipatory ethos woven in and through the Emirates' expansive landscape of infrastructures, complexes, and technologies to come, and tried to cultivate a sensibility toward the maelstrom of interacting agencies and complexities in these spaces – human, technological, and environmental – as a way of noticing and embracing the different political registers upon which such anticipatory articulations were formed (Grove, 2019). To further understand the intersection of anticipation and geopolitics as part of an 'ecological community' of interacting agencies (Agathangelou & Killian, 2016), I turned some of my attention to Mars 'Hope' and its nationalist vision projected 100 years and 74 million miles into the future. By bringing together theoretical and empirical meditations on play and control with a detailed examination of government and industry documents on the project, I have tried to understand how anticipation informs creative tensions around regime stability and survival, reinvention as necessary to these future-looking infrastructures and architectures, and also how these developments speak to larger global trends in design, population engineering, technologism, and climate catastrophe.

Mars 2117 allows us to speculate about a particular relationship to the materials we call nature combined with a world-forming narrative, where the goal of politics is about making a new kind of habitat, rather than the creation of a polis *or* the labour of getting there. Put plainly, Mars 2117 and other global projects of space colonization demonstrate an aspirational politics of making the problem of labour obsolete. This particular aspirational politics, driven by demographic, racialized, and geopolitical anxieties, has distinctive contours within the UAE but *is not* specific to it. For instance, in the UAE dependence on non-national labour coupled with the fact that non-nationals make up a significant demographic majority informs affective, political and economic investments in automation as a way of managing the state and the nation simultaneously. Beyond the UAE, debates over automation highlight corresponding anxieties with their own particular social and political figurations. Further, this form of governmentality resonates with other authoritarian narratives featured in wave after wave of editorials about the global failure of liberal democracy, where catastrophism is held up precisely to show that participatory democracy could not make a world worth living in, thus a new world and heroic process is offered. Within these narratives, responses

to climate change, peak resources, pandemics, and even fulfilling a sacred destiny are not about holding onto the world we have, but rather are about using catastrophe to instantiate a Promethian vision of world-making without politics or a people.

Space colonization and the labour of hope

As a term of industry in architecture, communications, engineering and construction, the concept of 'future-proofing' refers to processes of anticipating, insulating, and where possible, taking advantage of 'shocks and stresses' caused by future events (Rich, 2014). In order to understand the translation of 'future-proofing' in the UAE, we should consider how the reconfiguration of sociality and urban life, as well as efforts toward economic diversification in the areas of tourism, finance, security, and now space technology are shaped by strong associations with dependence upon consumer oil revenues. Thus the notion of 'future-proofing' society is often framed amid concerns over declining oil prices, and more recently taken up in references to data being 'the new oil' in broad contexts across the country. The globalization of this wildcat ethos rests, in part, on a kind of frontier abstractionism, where fantasies of intrepid exploration and the releasing of trapped assets pair with the understanding that users sit on a vast substratum of personal information that can be extracted to generate profit, social change writ large, as well as provide intelligence for predictive security and military applications (see Grove, forthcoming; Martinez, 2019).

Mars is similarly positioned as a ubiquitously malleable resource with 'untapped' potential, one that has emerged at a time when the fascination with a particular type of extreme growth associated with Dubai has given way to broader global trends in 'sustainable' development. In 2017, the UAE's National Committee on Sustainable Development Goals published a report titled 'UAE and the 2030 Agenda for Sustainable Development: Excellence in Implementation'. In the document, sustainability is framed as a form of economic diversification reflecting the move from a resource-based to a knowledge-based economy – a shift that encompasses the development of commercial space projects within the country, and in particular, Mars Science City. The Mohammed bin Rashid Space Center (MBRSC), which oversees the Mars 2117 project, is mentioned as being integral to the government's overall sustainability goals over the next ten years. Its anticipated contributions to land and climate observations and supporting environmental protections are linked to the development of a new satellite programme, where references to the KhalifaSat, a low Earth orbiting satellite designed by the MBRSC, as well as DubaiSat1 and DubaiSat2, promise to capture high-quality images of Earth to address 'environmental changes, ensure effective urban management, and aid in disaster relief'. Some of these challenges include monitoring the country's reservoir levels, creating water area maps, tracking changes to surface water, and observing levels of fish stock in the country (mbrsc.ae). Descriptions of Dubai's new space technologies industry in the sustainability report combine with references to the creation of the first self-cooling 'eco-homes' in the UAE independent of any power grid. These descriptions combine an emphasis on the government's leading position in the global space race with a commitment to using related technologies to address 'innovative solutions to global challenges' on Earth (see also Mairs, 2017).

This is just one example of how the language of sustainability dominates discourses about the UAE's Mars projects in official publications. It also demonstrates how this vision is different from the logic of development put forward by international organizations like the U.N. emphasizing slow, linear, and continuous growth of 'developing' nations in efforts to 'catch up' with the so-called North without destroying their eco-systems. Dubai's vision of sustainability is rather one of explosive and disruptive transformation, where sustainable technologies are a step change out of

scarcity, so that emancipatory or revolutionary growth continues to be possible – hence the connection to the infinite resources of space. Such shifts in language dovetail with proliferating modes of prediction and preparedness that extend to broader global economic and security networks. The rebranding of Dubai's infrastructural ambitions, long connected to exaggerated investments in futuristic architecture and urban development (Kanna, 2011), can be found in other new, 'transformative' projects such as Dubai Smart City, innovations in weather modification including regular cloud seeding, and a proposed project to build a mountain to attract more rainfall (Brown, 2018; Perlman, 2016).

Drawing connections to the ways in which speculative finance has become the dominant mode of capital accumulation, Adams et al. (2009) call this broader global moment one of *actuarial saturation*, where the science of the actual is replaced by an investment in knowledge about the 'truth' of a future known through speculative forecast. Speculative forecast itself 'has been loosened from the virtue of certainty and redirected as an injunction to characterize and inhabit degrees and kinds of uncertainty', and where one must constantly adjust oneself 'to routinized likelihoods, hedged bets and probable outcomes' (p. 246). Anticipation is argued here to be what Ngai (2005) has elsewhere referred to as an 'ambient aesthetic,' one that is shared globally and at different levels of intensity in all realms of self, community and state.

In the UAE, this experience of anticipation, however, is not a recent strategy of the state. In some sense, the state itself has been built around an anticipatory economy of temporariness, one that is replicated in projects like Mars 2117. Consider the following quote attributed to the founding ruler of Dubai, Sheikh Rashid Bin Said al Maktoum, which has been reproduced so often its actual origins are unclear: 'My grandfather rode a camel, my father rode a camel, I drive a Mercedes, my son drives a Land Rover, his son will drive a Land Rover, but his son will ride a camel'. The quote suggests a condition of living in the future-present, where the internalization of a standard modernization narrative could never completely take hold because of an awareness of the limitations on relying indefinitely on a single resource for more than two or three generations (see Aima, 2018).

In Dubai, where the demonstration of concepts – through wave after wave of billboards, mock ups, pilot programmes, conventions, and tests – rather than the creation of the actual thing itself, shows how value is generated off of promises rather than the realization of those promises. One never actually has to make good on what is anticipated, only on the promise of what could be. This kind of superlative capitalism is different from the kind of interventionary capitalism associated with large-scale infrastructure and modernization projects of the 1950s and 1960s in that it is about living in a mortgaged future that is assured to show up eventually, but actually never does.

Drawing on the language of 'Mars Hope', this experience of anticipation is intimately related to the ways in which *hope* for particular futures is produced, consumed and commoditized. A number of works have explored how anticipation is productive of new socialities and ethical orientations toward the future, shaping moral imperatives around relationships to the state, as well as how the past, present and future of these relationships are understood (Adams et al., 2009; Brown, 2003; Choi, 2015; Clarke, 2015; Fischer, 2003; Zournazi, 2003). Clarke (2015) emphasizes how the classed, racialized and gendered labour of anticipation becomes an energy source for, but is also produced by the ways in which particular government structures seek to extend themselves into the future. Choi (2015) similarly draws our attention to the different valences and experiences of risk and the anticipation of disaster, which have reverberating and sometimes contentious effects across different layers of time, space, and community. Halpern and Günel (2017) expertly link the notion of 'preemptive hope' as both an aesthetic and descriptive category for understanding the

proliferation of global logics of the demo in urban planning, and how it interfaces with speculations about disaster to justify disruptive interventions in utopian living (see also Günel, 2019).

Dubai's more pragmatic endorsements of its Mars 2117 project and efforts to promote the country as a new hub for research in space technology are framed as an interstellar 'journey towards Hope', where 'nothing is impossible', and where '[Emiratis] can compete with the greatest of nations in the race for knowledge' (*Mission to Mars*, 2015, p. 166). These official statements, mined from publications produced by Maktoum's Executive Office, are sentimentally framed alongside wandering facts about black holes and combined with references to Emirati ambitions 'beginning in the skies' (p. 28). They also speak to an important difference between what those running these project want for themselves or how the project plays into different ideas and desires around the future of the nation, and alternatively, what they would like to communicate about the project to an international audience. In both instances, however, 'Hope' is a model of speculation with a particular structure of temporality and belief built into it, one that is based on a notion of anticipation and futurity, and for which the evidence of a thing has not yet come into existence.

The anticipation of human settlement on Mars works affectively and politically here as part of the state's national ethos, where government investments in space colonization reflect the UAE's expectation that both nationals and non-nationals exist in, and even embrace, an ambient state of uncertainty, even as other national narratives seek to foreclose the possibility of unanticipated political, social or economic upset. For example, the World Bank's annual report on global environmental indicators ranks the UAE as having the highest measure of airborne pollutants (Iyengar, 2015; World Bank, 2015), however it is quite difficult to find reliable real-time data on air quality in the Emirates. Compare this to the steady stream of articles promoting the government's environmental protection efforts and events like Abu Dhabi's Annual 'Sustainability Week', Dubai's 'Miracle Garden' recreational destination, and the placement of air quality as a key issue in UAE's National Vision 2021 agenda (Gulf News, 2018). Here, the kind of anticipatory reason that frames these new visions of the future can be differentiated from other readings on anticipation and preemption informed by images of a security state's reactionary expansion (Hong & Szpunar, 2019). The absence of reliable data on air quality in the UAE and the different Emirates' promotion of ongoing sustainability initiatives suggest a mode of governance beyond concerns with preemption that focus solely on securing what already exists against an enemy, climate warming, or labour unrest. These forms of preemption are also about expanding and inventing new modes of government. While it is commonly assumed that preemptive logic is 'productive', I would go a step further to say that here anticipatory reason is also creative, where 'hopefulness' suggests a moral responsibility to government as well. As a state-corporate driven affect, however, hope is fundamentally conservative in its organization around the shaping of cultural and national commitments to technocratic solutions in the face of impending global catastrophe. Domestic and international concerns over dwindling oil reserves, political upheavals, real estate bubbles, migration flows, terrorism, and resource scarcity inform the promise of Mars as a boundless resource, where smart infrastructure, intelligent machines, and automated labour are envisioned as vital assets that could be manifested in any number of political designs.

Contradictory and complex forms of affective labour are involved in envisioning what is possible for a future of the nation, a task that requires tacking back and forth between visions of the past, present and future of the existence of the UAE and its present form of political economy. The moral imperative of existing in a state of uncertainty is linked to the fact that for some 85% of the UAE's residents, there is little or no access to naturalization (see Vora & Koch, 2015). While the high proportion of the labour market as compared to the state's total population is distinct here, these

dynamics should be considered in terms of global patterns of migration and migrant experiences that are not unique to the UAE or other Gulf states (541). This prompts further questions about how such a dynamic is manifest in terms of another global pattern, which is the move away from solution-based approaches to political order, and the drift toward the creation of political subjects expected to thrive in chaos (O'Malley, 2010).

The ambivalent indigeneity of an architecture on Mars

The monumental and spectacular architectural designs often associated with Dubai are being supplemented with what Bjarke Ingels Group (B.I.G.) – the international firm contracted to design Mars Science City – calls 'a Martian vernacular architecture on earth' (ISPCS, 2017). Vernacular architecture, as a mode of design, is said to refer to 'functional architecture for extreme times'. This includes the development and design of self-cooling homes without access to power in the aforementioned UAE sustainability report, but also water desalination and water recycling infrastructures (which the country currently relies heavily on for its water supply), indoor gardens for growing food, and other architectural and infrastructural 'feats' that address bare standards of living in difficult environmental and atmospheric conditions. The adoption of vernacular design in sustainable architecture trends draws from the idea that the development of knowledge systems about an environment over extended periods of time has resulted in 'frugal innovations' that make buildings 'intrinsically responsible' to the natural hazards of the desert (Holland, 2017). Most vernacular architecture in desert ecologies is envisioned as a product of land, local climate and culture, where buildings are thought to ensure both a stable and comfortable indoor environment against climatic environmental conditions while also being a reflection of the societies that construct them (Crespo et al., 2015, p. 846; Holland, 2017).

Mars 2117 is in part built upon a similar appeal to a vernacular asset in design. Comparisons between the UAE's desert climate and extreme heat, and conditions on Mars that are inhospitable to human life – including lack of breathable atmosphere and mineral nutrients for planet life – are common in presentations about the UAE's vision for post-Earth futures. The comparison made between the 'desert Bedouins back on Earth' and the UAE's first settlers on Mars in the World Summit video, as well as comparisons between atmospheric, climatic and geological conditions on Mars and in the UAE are meant to intimate the state's unique position to host companies wishing to develop these technologies – or at least provide the training ground for technologies developed elsewhere – to sustain transplanted life on Mars. Similar to the Masdar City project, Abu Dhabi's attempt to create the first zero-carbon city (see Günel, 2019), Mars 2117 has become one of the state's flagship projects for demonstrating its commitment to 'sustainable innovation' on Earth for international media consumers and foreign investors in the wake of recent and broad criticism over its energy intensive development model and per capita ecological footprint (WWF, 2014).

In his work on governmentally and sustainability rhetoric, Tim Luke (2005) describes the ways in which discourses of sustainable development have come to serve a key function in shaping public agendas around the interests of owners and managers of large corporations and market-based technologies. Here, environmental and economic calculation come together to remake the world through an amorphous mix of ecological business practices that include, but are not limited to, 'greener' consumption, labour utilization, pollution reduction, managerial centralization, lower-cost energy use, efficient corporate communication, and 'social' entrepreneurship among other rhetorical and material devices (pp. 231–233). As Luke argues, we see here 'webs of governmentality running through much of modern environmentalist reasoning … thus how these calculations come

together through different forms of social and political engineering depends upon the historical and social contingency of the places in which they are adopted and transmuted' (p. 233).

Drawing on these insights, a major marker of the Mars 2117 project has been the *spectacularlization* of this vernacular architecture. In its promotional materials, B.I.G. mentions using conceptual designs for Mars Science City drawn from vernacular constructions produced elsewhere, including Tunisia's troglodyte or 'carved out' houses, the Mesa Verde cliff settlements in Arizona, and ice structures in Kangerlussuaq, Greenland and Baffin Island in Canada (Ingels, 2017). B.I.G. also references the use of 'local sand' to 3D print the infrastructure for Mars Science City, reflecting the perfect combination of the use of 'indigenous' materials and borrowed science. This flattening of indigeneity draws on a desire for traditional aesthetics in the Gulf (though certainly not exclusively) in a way that specifically highlights its contribution to 'sustainability', and where such climates are fantasized as a 'natural' product of land, temperature and culture. In reality, Mars Science City looks more like Buckminster Fuller's geodesic domes than the cliff dwellings of Mesa Verde. Still, such references function as a bridge between what are considered traditional forms of building and advanced technologies, even if only superficially. More generally, Mars 2117 shares other similarities with these eco-modernist projects in the Anthropocene, where the 'hope' for a better future via technological change and modern industrial science is justified because if humanity has been able to shift the scale of the planetary for ill then it must also be capable of doing so for good (however that good is defined) through the same means, thus redeeming modernity through a conceptualization of 'hope' that technology will save (some of) us (Grove, 2019, pp. 39–40).

Once held up as a model of spectacular innovation, Dubai's architectural superlatives have now become an example of unflattering excess in an era of sustainable innovation. The orientalism undergirding arguments about 'other' countries' excessive resource use notwithstanding, the reference to vernacular architecture in building design as a response to climate pressures and adhering to 'traditional' culture are heralded as cost-saving, energy efficient, and protective of surrounding systems (Holland, 2017). The reference to the use of 'local sand' reflects the commodification of *indigeneity* around 'green' architectural trends, while also suggesting another potential example of the promissory value of the concept rather than the thing itself. As Laleh Khalili has observed (2019), local sand is too uniform in size to make useable concrete, and therefore sand used in construction in the UAE must be imported.

The investment in building a 'vernacular architecture' for Mars participates in other political rituals meant to imbue the government with a kind of originary legitimacy, blending with familiar narratives about the heroic conquering of nature, and the ability of a (naturalized Emirati) community not only to survive but also thrive in extreme geological and atmospheric conditions. Such framings speak to Tsing's (2011) reflections on the frontier as 'energizing old fantasies' even as they preclude their possibility (p. 29). For example, official government publications narrativize the origins of the Mars 2117 project within a five-century period (786 CE to 1258 CE) of Islamic socio-scientific achievement, often referenced as providing the intellectual ground for the recovery of Europe after the 'Dark Ages' (Renima et al., 2016). *Mission to Mars*, a roughly 200-page book published by the Executive Office of Sheikh Maktoum introduces readers to the Emirates' space programme through a miscellaneous arrangement of glossy images and text featuring illustrated timelines of the UAE's Mars Mission, pictures of tenth century armillary spheres, abstract photographs of the Martian surface, document-signing ceremonies at the UAE Space Agency, and images of Emirati engineers building satellite electronic sub-assemblies at the Mohammed Bin Rashid Space Centre. The book's forward, written by Maktoum, positions the UAE's space programme

as the pinnacle of Arab and Islamic scientific advancement along a single historical trajectory traced back to the 'four capitals of Islamic science' – Baghdad, Cairo, Cordoba and Damascus – as well as the work of astronomers such as Abu Musa Jabir ibn Hayyan (8th C.) and Ibn Sina (10th C.), respectively known at the 'fathers' of modern chemistry and medicine (Amr & Tbakhi, 2007; Haque, 2004). These earlier innovations are sacramentally linked to the corresponding events of the landing of the Soviet Mars 3 probe on Mars and the signing of the UAE's founding treaty, both of which transpired on 2 December 1971. These two 'marches will meet again', according to Maktoum, when the Mars Hope probe enters the red planet's orbit fifty years later in 2021.

As Barthes (1972) reminds us, every myth has its own history and social geography, and myths also mature when they proliferate. Contemporary references to this era of Islamic cultural and scientific achievement function as a way of sacralizing Mars 2117, imbuing it with certain inherent characteristics of divine providence not entirely dissimilar from narratives that have characterized the UAE as unique in its ability to raise a 'city out the desert' in only a few decades. This act of sacralization however reveals a tension in how the relationship between the sacred and the profane are thought in relation to one another as shopping malls, convention centres, police robots, extraction drones, and geodesic domes become consecrated objects through their re-narrativization as being linked to Islamic scientific advancements in astronomy, science, and medicine.

One could read these investments as a way of countering what Ahmed Kanna calls the 'monolithic orientalism' that positions the Arab world as 'homogeneously backward', and where certain parts of the Gulf have come to embody a particular iteration of modernity that appeals to the so-called West (p. xii). Extending this idea, consider how the Mars 2117 initiative, similar to other state-directed projects that market the UAE as a top global tourist destination and regional entertainment capital, emphasizes a unique historiography that bookends ancient periods of architectural and scientific advancements that have long captured western imaginings of the region, and the UAE's particular brand of hyper-modern spectacle. Specifically, Mars 2117 folds two temporal events over one another: an Islamic 'Golden Age' of technological innovation and scientific discovery, and the futuristic exceptionalism of the UAE creating the first human colony on Mars. As a provocative act of dissimulation, this move draws attention to the Emirates' possessive investment in western wish-fulfillment around asynchronous narratives that bring together Orientalist fantasies of a cosmopolitan Islamic utopia,[7] and the highly-technical and securitized zones of global commerce geared toward attracting foreign investment and tourism revenues in the UAE's state-led industries (Grove, forthcoming). The political effect is thus to encourage consumers of this colonizing event to gloss over histories, realities or associations that might challenge official government narratives while reifying the seemingly changeless hierarchy of the regime itself.[8]

* * *

What does this mean for the reconfiguring of authoritarianism through design and substrate? Without searching for the 'smoking gun' of intentionality, we have to consider how the Mars 2117 project strategically makes claims to vernacular and indigenous advantages that draw their power and resonance from the oriental archives of western discourses about the desert and its inhabitants. The ways in which desert ecologies represent a kind of no place or terra nulius – that is, a blank space for adventure and creation – mirror the substrate geopolitics of Martian colonization. Whether or not there is some truth to the claims of habitat-specific knowledge is in some sense beside the point. Rather, what I have considered here is the way in which an imagined national community is built out of future artifacts, anticipated accomplishments, and most distinctively a new place to call home. In sharp distinction to nineteenth

century European narratives of shared traumas, wars, and a primordial appeal to specific places, as well as nationalist return narratives like those of early twentieth century Zionism, the UAE vision of the nation as articulated through its future-oriented projects is mobile. It is a people, an infrastructure, and a place to come. The grounds for authoritarian legitimacy and competency are hedged on a possible future for which the dividend has already been paid in advance. There is no way to know what the debt limit is as each new pilot programme, proposed mega project, and graphic rendering of the future is leveraged for political and financial capital in the present. However, this is the wager of *anticipatory authoritarianism* and its attendant future-present of virtualized nationalism – that a nation can be made out of artifacts that in some ways do not actually exist, may never exist, but most certainly have an effect through the affective temporal tunnelling from an anticipated future, to the practicalities of rule and authority in the present.

Notes

1. Saeed is modelled after Saeed Al Gergawi, the current Director of the Mars 2117 programme at the Mohammed bin Rashid Space Centre (MBRSC) and Mission Strategist for the Emirates Mars Mission, tasked with launching the UAE Hope probe in 2020.
2. For a detailed description of autocratic openness in relation to Dubai, see Vora's *Impossible Citizens* (2013).
3. Mars One Ventures, the for-profit outfit of the Mars One mission that promised to create the first human settlement on Mars, was declared bankrupt by a Swiss court in January 2019. See Cooper (2019).
4. The Blue Moon project is designed to create a permanent settlement on the Moon as a launchpad for Mars. See https://www.blueorigin.com/blue-moon
5. For a comprehensive account of the competing space narratives ranging from geopolitics to transhumanism, see Daniel Deudney, *Dark Skies*, Oxford (2020).
6. https://news.mit.edu/2014/technical-feasibility-mars-one-1014
7. This fantasy structure may also be 'pre-Islamic' depending on the project. I have written elsewhere about this temporal folding in the UAE with regard to Legoland Dubai, and the linking of Petra and the Giza pyramids to the Burj Khalifa (Grove, forthcoming).
8. For more on autocratic openness, see Vora.

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