Article

A convergence of crises: COVID-19, climate change and bunkerization

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Abstract

Bunkerization, a term often associated with military fortifications on 20th-century battlefields or the fallout shelters of the Cold War, can now refer to the building, buying and selling of artificial environments designed to provide protective and defensive responses to the ecological, military, and political threats of the Anthropocene. As places of elite retreat, however, these are not spartan spaces. This article documents how—for some—forms of bunkerization have emerged as privileged reactions or responses to contemporary environmental crises, such as climate change, by considering the case of last-chance tourism and luxury cruising. In 2020, both climate change and COVID-19 became intertwined as global crises emerging from humans' troubling relationships with nature. To examine bunkerization as an individualistic reaction to these converging crises, we first outline the challenges presented by COVID-19 and its connections with human exploitation of animals and the environment. We then turn to the particular uses of the environment—in this case, the oceans—as locations of leisure and retreat, and offer an analysis of the image, operations and impact of the luxury cruise industry. In light of our current path of crisis accumulation, we conclude with an urgent call to adopt a more holistic view of planetary public health—one that includes not only humans but also other species and the natural environment.

Keywords

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Introduction

In his book, *Shopping Our Way to Safety*, Szasz (2007) charts various cultural and psychological means by which, as the subtitle runs, "we changed from protecting the environment to protecting ourselves." Among these techniques are forms of denial, the embrace of marketed panaceas, and what Szasz termed "inverted quarantine"; the latter describes individualized and consumeristic acts of self-protection made in response to threatening environmental and social conditions (Brisman and South, 2014: 80–82). As in the traditional concept of quarantine, *inverted* quarantine depends on processes of separation and containment that keep healthy individuals away from disease-inducing surroundings. Individuals engage in inverted quarantine to isolate themselves from environments that are perceived as toxic, polluting or illness-inducing, so that they can remain free from contamination. As an early example of inverted quarantine, wealthy elites in the industrial cities of the nineteenth century separated and distanced themselves from the "great unwashed" and the "dangerous classes," consisting of the masses of working people and urban poor, by erecting barriers as a form of "bunkerization"—or by retreating altogether from the town to the clean airs and waters of spa hotels and mountain clinics. In the 21st century, the wealthy elite continue to engage in bunkerization by buying their way out of problems, including present and future global troubles like climate change.

Although bunkerization is a term often associated with military fortifications of 20th-century wars and the fallout shelters of the Cold War in the 1950s and 1960s, it has been notably refurbished for the 21st century. Today, bunkerization entails the building, buying and selling of artificial environments designed to provide protective and defensive responses to the ecological, military, and political threats of the Anthropocene (South and South, 2021). With the convergence of multiple crises in the Anthropocene, there has been significant growth in the market for bunkerization, as the Doomsday Clock has been set in both 2021 and 2022 to 100 seconds to midnight (Bulletin of the Atomic Scientists, 2021, 2022). While COVID-19 "serves as a historic wake-up call" that humans are looming ever closer to their own destruction, responses to the pandemic have provided, according to the Bulletin of the Atomic Scientists (2021: 2), "a vivid illustration that national governments and international organizations are unprepared to manage nuclear weapons and climate change, which currently pose existential threats to humanity, or the other dangers—including more virulent pandemics and next-generation warfare—that could threaten civilization in the near future." In the absence of (perceived and actual) governmental preparedness and the possibility of coordinated, collective solutions to these existential threats, some individuals have turned toward bunkerization as a means for ensuring their own survival. For those who can afford the option of retreat from risk and danger, criminality and contamination, turning to barricades, bunkers, and survival complexes becomes a serious option—one that is served by a growing industry (see, e.g. Dobson, 2015).

While bunkerization can represent a mentality and practice of human response to different kinds of crises, in this article, we explore how it can also be related to specific forms of quarantine both before and during the COVID-19 pandemic. In doing so, we document how bunkerization emerges as a privileged reaction or response to contemporary environmental crises, such as climate change, and consider how in one manifestation, it presents itself in the form of last-chance tourism and luxury cruising (see, e.g. Brown, 2018). When anticipating the prospect of a damaged and threatening world, the extremely privileged can search for sanctuary, escape and alternative

environments. They can choose to indulge in forms of elite consumerism that reflect the vanity, hubris and myopia of those who can afford to not only collect species close to extinction (Brisman and South, 2020: 926), but also experience—indeed, *enjoy*—sites on the precipice of environmental tipping-points. To examine elite consumption of environments on the verge of imminent disappearance or destruction, we provide the example of last-chance tourists and luxury cruise ships.

While "the ship" has emerged as a compelling metaphor for making sense of and responding to catastrophes in the Anthropocene (see, e.g. Armeiro, 2018; Mentz, 2015, 2019; Shotwell, 2016: 129–130), the frequent sentiment of this message is that "we are all in the same boat," whether we call it Spaceship Earth or the Ark.[1] Such a message assumes that collective human action is needed and will materialize in the face of shared threats. Yet we are not, in fact, *in* the same boat because we are not all *on* the same boat(s): some are enjoying the view from luxury liners, while others are trying to make a living on skiffs fishing for marine species that are endangered by warming and increasingly polluted coastal waters; still others are not even on a boat at all but will soon need one due to the rising tides associated with anthropogenic climate change. Today, as in the past, ships of leisure are being used in ways that both exacerbate anthropogenic climate change and intensify existing class and racial inequalities. In 1912, an iceberg struck the *Titanic*, an "unsinkable ship" at the forefront of technological innovation; in 2020, an invisible coronavirus snuck aboard cruise ships, nearly sinking the entire industry. While these examples are separated in time by more than a century, both serve as reminders that humans are centrally involved in the making of our own disasters, as well as the unmaking of the world-as-we-know-it.

In this article, we trace the ways in which COVID-19 and climate change have been enmeshed, recognizing that others are already "untangling the threads of crime, media and culture implicated in the world's response to a global health challenge" (Armstrong et al., 2021: 5). COVID-19 and anthropogenic climate change have become intertwined as global crises emerging out of humans' troubling relationships with nature; both evoke a response among elite individuals to bunker and retreat. In what follows, we first outline the challenges presented by COVID-19 and its connections with human exploitation of animals and the environment. We then turn to the particular uses of the environment—in this case, the oceans—as locations of leisure and retreat, and we offer an analysis of the image, operations, and impact of the luxury cruise industry. In light of humanity's currently bleak trajectory, we conclude with an urgent call to adopt a more holistic view of planetary public health—one that includes not only humans but also other species and the natural environment.

Hovering "at doom's doorstep" (Bulletin of the Atomic Scientists, 2022: 2), we are on a path of crisis accumulation, where the impacts of climate change are intensified by the global effects of multiple, converging catastrophes, including the continued spread of COVID-19 variants and further zoonotic disease transmission (e.g., Ebola, "monkeypox"), and the rising threat of nuclear warfare in recent and long-running conflicts around the world. Through all this, while many have suffered loss of life, health or livelihoods, some have retreated and bunkered down, increasing their wealth and enhancing their lifestyles. Our prognosis for humanity's future might be less bleak if there were signs that "lessons have been learned" regarding the consequences of human actions and inactions. Unfortunately—and regrettably—the dangers of a "war with the environment" not only remain, but have also been amplified (see Armstrong et al., 2020).

From animals to COVID-19 to bunkerization

The precise origin of COVID-19 remains uncertain but the philosopher, David Benatar (2020), is right to argue that

> the pandemic is of our own making as humans. . . . The coronavirus arose in animals and jumped the species barrier to humans and then spread with human-to-human transmission. This is a common phenomenon. Most—and some believe *all*—infectious diseases are of this type (zoonotic). That in itself does not put them within the realm of human responsibility. However, many zoonotic diseases arise because of the ways in which we humans treat animals. . . . Simply put, the coronavirus pandemic is a result of our gross maltreatment of animals. . . . In the future, we should fully expect our maltreatment of animals to wreak havoc on our own species.

A similar sentiment is echoed by Beirne (2020): 619–620), who asserts that "our relationships not only with wildlife but also with those countless animal victims held in the animal industrial complex must be fundamentally realigned." As Gunn-Wright (2020) observes, there are clear linkages between "factory farming—one of the largest sources of methane emissions—[and] faster-mutating, more virulent pathogens." Likewise, Foer (2020) notes that while much attention has been paid to wet markets (see, e.g. Benatar, 2020; Maron, 2020; Woodward, 2020; Xiao et al., 2021; Yu, 2020), "factory farms, specifically poultry farms, are a more important breeding ground for pandemics. . . three out of four new or emerging infectious diseases are zoonotic—the result of our broken relationship with animals." Not only does "the vast majority (three out of every four) of new infectious diseases in people come from animals—from wildlife and from the livestock we keep in ever-larger numbers," but Armstrong et al. (2020) stress that, by clearing forests and removing habitat, "[h]umans have already claimed more than a third of the Earth's land for agricultural use [e.g. soy, palm oil and cattle]," bringing wild animals ever closer to human settlements (Einhorn, 2020). The hunting and sale of (often endangered) wildlife, or their body parts/products, increases the risk of disease transmission from animals to humans—a list that includes bird flu, Ebola, Hendra, HIV, MERS, and Zika, as well as SARS-CoV-1[2] (see Bale, 2020; Kolby, 2020; Yu, 2020).

COVID-19 may encourage overdue recognition that, to return to Benatar (2020), "harming animals can lead to considerable harm to humans." While this should provide "a self-interested reason—in addition to the even stronger moral reasons—for humans to treat animals better," unfortunately, Benatar (2020) explains, self-interest is "an imperfect motivator." Indeed, "[f]or all the puffery in calling ourselves Homo sapiens, the *wise* human," he laments, "we display remarkably little wisdom, even of the prudential kind" (Benatar, 2020 (emphasis in the original)). For all our many intellectual achievements, our unwarranted confidence in our problem-solving abilities has meant that we "*respond* to pandemics rather than act to prevent them—we attempt to prevent their spread after they emerge and to develop treatments for those infected" (Benatar, 2020 (emphasis in original)).

Rather perversely—and to make matters worse—governments, according to Whyte (2020: ix), "used the [COVID-19] crisis to speed up the repeal of environmental laws and the sale of land to oil and gas mining and timber corporations" (see also Paterson et al., 2020). While the Trump Administration engaged in "pandemic sneak-arounds" (Rauber, 2020: 21), such as rolling back

Obama-era fuel-efficiency standards for cars (Collins, 2020), many parts of the United States lifted rules on single-use plastics. As the pandemic forced people around the world to shelter-in-place, Smith and Brisman (2021: 304) point out that, at first glance,

> the planet appeared to breathe a sigh of relief as flights were grounded, industry slowed and cars remained parked on driveways during the COVID-19 lockdown of 2020. . . . The demand for plastic, however, seem[ed] not to have diminished. In fact, plastic bags, packaging and other indications of the culture of disposability shifted rapidly from stigmatized products to (false) guarantees of sterility, cleanliness and hygiene. . . .

As the environment has been impacted significantly by human behavior, both before and in response to the COVID-19 pandemic, we highlight what might be called "shared features" of both climate change and COVID-19—the bases of what have been called "intersecting crises" (Lawal, 2020), "overlapping crises" and "joint crises" (Sultana, 2021; see also Armstrong et al., 2020; Yozell and Stuart, 2020; see generally Friedman, 2020; Gunn-Wright, 2020; Guterres, 2020). These include the powerful force of denial permeating reactions to both crises (see, e.g. Krugman, 2021; see also Alba and Frenkel, 2020; Cohen, 2020; Douthat, 2020; Goldberg, 2020; Raskin, 2020; Sengupta, 2020; Stephens, 2020; see generally Lerner, 2021), as well as similar responses to engage in "bunkerization."

In the next part, we turn to behaviors that combine denial and retreat with elite hubris. According to Williams (2020), as COVID-19 global lockdowns led to social isolation and travel cancelations for most, the rich continued to party and "spent millions building their own secret clubs and live music venues, and then flying in musicians and performers for their own version of live entertainment" on their superyachts. Because superyachts were chartered for longer during the pandemic (Williams, 2020), allowing the elite to congregate in groups and be entertained outside of public view, we take the case of luxury cruising as a particularly apt example and metaphor to describe a class of carefree, distracted, and privileged passengers who continue to dance in ballrooms, so to speak, while the world faces an ongoing convergence of crises. From there, we foreground an analytic approach that examines COVID-19 and climate change, not as separate and isolated variables of concern, but rather as interconnected, ongoing emergencies that can evoke a comparable type of response: bunkerization. Instead of delineating more precise causal relationships or correlations between COVID-19 and climate change, in the remainder of this article, we focus on how these two crises intersect to produce changing forms of bunkerization under conditions of quarantine.

Responding to environmental and COVID-19 crises: Luxury cruising, inverted quarantine, and bunkering

In the age of anthropogenic climate change, there continues to be extensive destruction, damage and loss to natural environments and ecosystems (Brisman et al., 2020; South and Walters, 2020; White, 2018). With this ecocide comes Earth's sixth mass extinction, where the survival of all species is under threat (Boyle, 2019; Brisman and South, 2020; Chow, 2017). Predicted mass extinctions and the prospect of vanishing natural landscapes have driven an emerging kind of tourism practice: last-chance tourism. As a means of both recognizing and commodifying ecocide,

last-chance tourism is marketed as a final opportunity to see endangered species and landscapes before they disappear. When an unstable Earth system points to the end of the world-as-we-know-it, it also signals an end to a time of sightseeing. Tourism promoters have rushed to accommodate such climate change-induced tourism, hoping to benefit from a "short-term boom from the doom" (Lemelin et al., 2010: 488). In the thriving travel industry in the years before COVID-19, travelers attained, on the whole, the status of a "geo-force" (Huijbens and Gren, 2016). Collectively, they generated nearly 8% of annual global greenhouse gas emissions through their long-distance travels and tourist activities (Lenzen et al., 2018). Until 2020, the fastest growth in the sector was in cruise tourism (Radic et al., 2020), which transported an estimated 30 million passengers on 272 ocean cruise ships worldwide in 2019 (Cruise Lines International Association, 2019).

In general, travel has become more affordable over time, permitting an increasing number of people to engage in mass tourism and cruising. As such, some may forget that travel and tourism remain privileged leisure activities that continue to be tied to wealthy lifestyles. After all, mass tourism, itself, has been built on creating more widely available versions of luxury travel and leisure activities to middle-class consumers. It is unsurprising, then, that the consumption zones of the elite continue to provide "exemplars of development" that can be emulated elsewhere for mass tourism (Urry, 2011: 10). Images of the "dreamworlds of the super-rich" are still reproduced globally because they "enflame the desire for similar kinds of experience in much of the world's population," including the possibilities of "infinite consumption, total social exclusion and physical security" (Davis and Monk, 2007: xv). But, of course, in reality, the promise of bunkering in an affluent dreamworld is truly possible only for a few. Even today, traveling, in general, and luxury cruising, in particular, remain the purview of the socio-economically privileged[3] (Oswald et al., 2020). Their socioeconomic privilege maps onto other privileges, such as the right to view the world from the comfortable and comforting position of strategic ignorance (McGoey, 2019). For example, privileged cruise tourists—whether through deliberate avoidance or genuine lack of awareness—tend to remain unaware of their large carbon footprints; they are often ignorant as to how their consumption contributes to the destruction of the very natural wonders they seek to visit (see, e.g. Dawson et al., 2010, 2011; Lemelin et al., 2010).

When affluent passengers board luxury cruises—whether bound for the Amazon to see the imperiled rainforest or for the Arctic to experience directly melting glaciers—it is their socioeconomic security that affords them the opportunity to essentially consume ecocide, so to speak, as a "safe" adventure. During their trip, these passengers can be comforted by the knowledge that they will be protected and secure, and, as such, they will be able to enjoy the voyage as *carefree* passengers. On cruises, passenger security, safety and care are defined in relation to each other. *Security* often refers to "a state wherein concerns and worries have been put off to the side" (Hamilton, 2013: 5), while *safety* can be experienced as "freedom from care" (Zedner, 2009: 16). Journeying to natural environments that have been tamed and "Disneyfied" for their enjoyment (Matusitz and Palermo, 2014; Service, 2006), passengers are free to be mere spectators of dying natural wonders because they know that the crew will serve as their own private protective services. Whether on land or sea, security, then, becomes a prestige symbol that "has less to do with personal safety than with the degree of personal insulation, in residential, work, *consumption and travel environments*, from 'unsavory' groups and individuals" (Davis, 2006: 224 (emphasis added); see generally Brisman and South, 2017).

Because security mobilization has been tied to both affluent and middle-class demands for increased spatial and social isolation (Davis, 2006), it is notable that cruise ships are built like floating, fortress cities. To ensure little to no mixing of social classes, races and crowds, most cruise ships are designed to maximize passengers' living and leisure areas, and minimize space devoted to the crewmembers that provide leisure and hotel services (Bolt and Lashley, 2015). With a "cultural class system" (Testa et al., 2003: 137) built into the organization of ship space, officers from the Global North are able to dine with passengers—many of whom are also from the Global North[4]—and live in individual cabins on the upper deck. In contrast, the majority of crewmembers from the Global South are required to dine separately in staff mess halls and share cabins with each other on the lower deck (Chin, 2008).[5] Whether these class and cultural differences are described in terms of upstairs/downstairs or front/back—as in the titular train in Bong Joon-ho's film *Snowpiercer* (2013) (see McClanahan et al., 2018)—elite passengers and officers are placed in privileged areas above those who toil below, mirroring global class differences that associate superiority with the Global North. Importantly, the luxury cruise's cultural class system provides a compelling metaphor for visualizing the intersection of global inequalities related to class, race and climate change's effects: relying on "the appropriation of labor and resources from the Global South for [its] economic growth," the comparatively wealthy Global North produces 92% of the world's excess carbon emissions, and the knock-on effects of those emissions will disproportionately harm the Global South (Hickel, 2020: e403).

In mirroring the dramatically unequal impacts of climate change across social classes and regions, luxury cruising and last-chance tourism continue to operate in the self-interest of rich classes and countries. As Davis (2010: 37–38) has argued, coordinated global action on behalf of the poor and the unborn would seem like a realistic outcome only "if it can be shown that privileged groups possess no preferential 'exit' option" and "that greenhouse gas mitigation can be achieved without major sacrifices in northern hemispheric standards of living—none of which seem likely." In lieu of proactive, global solidarity to mitigate climate change effects, forms of modular, private consumption have appeared instead—precisely because heavy investments have been made to support the "selective adaptation [of] Earth's first-class passengers" (Davis, 2010: 38) in their leisurely "exits" from facing the full environmental consequences of their actions. Unsurprisingly, the exclusivity of such luxury tourism depends on an intensification of the pronounced exclusionary and segregated tendencies that have shaped capitalist societies in late modernity (Young, 1999). Through the establishment of what Young (1998: 79–80) called a social and actuarial *cordon sanitaire*, a clear line is created to separate "the world of losers"—that is, those that cannot afford passage aboard the cruise ship—"from that of the winners." As a result, the "winners" are able to engage in a form of inverted quarantine during their voyage.

Consistent with earlier manifestations of inverted quarantine (Szasz, 2007), mentioned at the outset of this article, the current aim is to keep cruise passengers separated from any toxic, disease-inducing surroundings and people. Whether based on superstition or medicine, conceptions of "disease" and "contagion" have given rise to forms of stigma, rituals, and practices of exclusion (see Foucault, 1975) that inform a social binary division between those who might be idealized as the epitome of glowing physical and financial health and those of poor stock, in all senses. Aboard ship, affluent passengers are socially and spatially separated from the less privileged "masses," in order to achieve, even if temporarily, the political dream of what Foucault (1975: 198) called a "pure community"—that is, in our case, a community free from various forms of

contamination, as well as one free to pursue activities that could bring members back to a natural state of purity. On luxury cruises through the Canadian Arctic, for instance, passengers tour pristine, albeit vanishing, landscapes that appear far removed from pollution and the realm of harmful human activity; they drink "pure" iceberg water, and take comfort that any natural dangers (e.g. polar bears) and social threats will be contained in toto (Lam with Tegelberg, 2021).

Quarantining, COVID-19, and CO_2

Although cruise ships served as mobile, privileged bunkers before the arrival of a novel coronavirus, promising security in the form of an inverted quarantine, they were not effective bunkers during COVID-19. Ultimately, they failed to separate healthy passengers from disease. In early 2020, 3 days after the *Diamond Princess* set sail on 20 January from Yokohama, Japan,[6] news reports arrived that China had placed Wuhan, a city of 11 million people, on lockdown in an attempt to prevent the spread of the coronavirus. On 3 February, the luxury cruise ship returned to Tokyo Bay for health screenings of passengers and crew in response to an elderly passenger's positive COVID-19 test. There, the Japanese government invoked a medically advised *cordon sanitaire*—a disease control method that enables authorities to compel everyone, whether healthy, infected or immune, to stay inside an area of suspected outbreak. Despite being subjected to a 23-day quarantine, 712 people aboard the *Diamond Princess* were infected, and a total of 14 passengers died as a result of this COVID-19 outbreak. With 2666 passengers and 1045 crewmembers from around the world, "the luxury ship proved to be a microcosm of the world's battle with the novel coronavirus": it served as "the cruise industry's patient zero" (Smiley, 2020; see also Tokuda et al., 2020).

Beginning with the *Diamond Princess* in the spring of 2020, the cruise ship industry was hit hard by COVID-19. From February to March, three cruise voyages accounted for more than 800 laboratory-confirmed cases of COVID-19 among passengers and crew, while additional confirmed cases were reported on at least 25 other cruise ships that were already underway (Moriarty et al., 2020). In response to 78 reported cases of COVID-19 (Mallaparty, 2020), the *Grand Princess* was quarantined off the coast of California. Despite its quarantine, the ship was connected to at least 122 cases of COVID-19 and six deaths (McCormick, 2021). What were once voyages that promised a safe escape from everyday life turned into potential death traps: luxury ships became sites of contagion and quarantine.

On 13 March 2020, the Cruise Lines International Association announced a 30-day voluntary suspension of all cruising operations. The US Centers for Disease Control and Prevention (CDC) followed this announcement by not only recommending that all travelers postpone cruise travel worldwide, but also by issuing "No Sail Orders" on 14 March and extending these orders until 31 October 2020 (Centers for Disease Control and Prevention (CDC), 2020: 5). Carnival Corporation— "the world's most popular cruise line"—canceled all voyages for the spring and eventually for the rest of 2020 (Carnival Cruise Line, 2020). In response to COVID-19, new cruise voyages were suspended, as governments around the world tried to secure safe passage home for passengers stuck aboard luxury cruise ships. While passengers were evacuated in March and April of 2020, many crewmembers remained in quarantine after the departure of sick guests. In fact, many ships returned to sea after offloading paying guests. In the US alone, nearly 80,000 crewmembers became stranded on roughly 100 ships in port or at sea (Robles, 2020), highlighting how the lives aboard a cruise ship are differentially valued. Those with socioeconomic privilege are quickly

saved; they are enabled to escape conditions that threaten their lives, while those without such privilege are mostly forgotten, and left adrift to fight for their survival (see, e.g. Smith, 2020).

While marooned crews were left at sea in the spring of 2020, governments increasingly restricted or prohibited citizens from engaging in "non-essential" forms of travel. Governments dealt with COVID-19 as a 21st century plague and, in reaction to the disorder, created regimes of "medical and political correlative discipline" that called for "multiple separations, individualizing distributions, an organization in depth of surveillance and control, an intensification and ramifica-tion of power" (Foucault, 1975: 198). Amid efforts to measure individual differentiations of sick-ness and health, to tactically quarantine those who were most sick, and to put in place various forms of surveillance (e.g. French and Monahan, 2020), governments immobilized citizens through stay-at-home or shelter-in-place orders. In short, they asked citizens to engage in land-based forms of bunkerization by turning their homes into temporary facilities for infection control or by purchasing permanent containment and exclusion structures, which, as McMillan Cottom (2021) points out, created its own disparities in terms of the "luxuries of self-isolation." In the face of the coronavirus, the demand for doomsday and survival bunkers increased significantly, no longer limited to fringe prepper communities concerned about an upcoming apocalypse (see generally Brisman, 2017), but extended to middle-class and affluent consumers who needed safe "vacation homes" far from urban centers (Schiffer, 2020). During the pandemic, the affluent bought lavish bunkers that were designed with the amenities of private yachts, and equipped with special air filtration systems (Fleming, 2020).

As a result of government orders to bunker at home and shelter-in-place, much of the cruise industry was ground to a halt, which, in turn, enabled some positive impacts on the environment.[7] These impacts, as noted earlier, included a temporary decline in greenhouse gas emissions and associated forms of pollution (Jaggard, 2020; Koren, 2020; Meredith, 2020; see generally Cohen, 2020),[8] leading Dr. Michelle Fournet, a marine ecologist at Cornell University, to quip, "Nature is taking a breath when the rest of us are holding ours" (quoted in Koren, 2020).

The contribution of mammoth ocean-going vessels to global warming is usually overlooked because of the predominant, albeit myopic, focus on air travel pollution. Marketing images that emphasize clear skies, pure blue waters, and ships with pristine white profiles are not associated in the public eye with planet-damaging emissions. Yet, for example, the Carnival Corporation, the world's largest luxury cruise operator, emitted in 2017 nearly 10 times more disease-inducing sul-fur oxide around European coasts than did all 260 million cars in Europe (Transport & Environment, 2019). Operating on dirty, heavy oil, even a mid-sized cruise ship can use as much as 150 tons of fuel per day which, in turn, can produce as much particulate pollution as one million cars (CBC Radio, 2017). In contrast to land and air transportation, cruise ships not only contribute to greater amounts of air pollution, but also to higher levels of greenhouse gas emissions. Compared to air travel, the most efficient cruise ships still emit three to four times more carbon dioxide (CO_2) per passenger-mile (Kennedy, 2019). Without accounting for a passenger's travel to and from port, the Griffith Institute for Tourism (2017) estimated that the average cruise ship passenger in 2017 emit-ted 0.82 tons of CO_2-equivalent for their cruise. Based on this assessment, the nearly 30 million cruise passengers in 2019 would, on the whole, emit nearly 24.6 million tons (or 22,316,744 metric tons) of CO_2. If 1 metric ton of emitted CO_2 can cause the loss of 3 m^2 of Arctic sea ice (Notz and Stroeve, 2016), then the cruise passengers, together, would have contributed to a loss of Arctic sea ice roughly 10 times the size of Gibraltar—an area loss of more than 66 million m^2.

In addition to understanding how cruise tourism accelerates the death of ice forms, we can also reframe loss in terms of human death, by estimating the mortality cost of passengers' total CO_2 emissions. According to Bressler's (2021) mortality cost calculation, an emission of 1 million metric tons of CO_2 will cause an expected 226 temperature-related, excess deaths globally from 2020 to 2100. If cruise passengers, on the whole and on average, contributed to over 22 million metric tons of CO_2 in a year, then their total emission will have caused—*for that year alone*— nearly 5044 excess, temperature-related deaths globally from 2020 to 2100. In addition to their greenhouse gas emissions, cruise ships also harm ecosystems through their discharge of wastewater (Syal, 2022), generating each day 3000 gal of sewage (black water), 255,000 gal of gray water (e.g. from showers, sinks, washing machines), and 7000 gal of oily bilge water (Oceana, 2009). With the suspension of cruise ship operations during the global pandemic, wildlife could return to some ecosystems. With reduced air and boat traffic, people worldwide reported seeing clearer skies and cleaner waterways (see, e.g. Daly, 2020). The clarity of the Venice lagoon, for instance, improved dramatically in the absence of cruise liners and tourist boats (Brunton, 2020).

Yet, all of these positive environmental impacts are likely to be short-lived. With a global economic impact of US$134 billion (Cruise Lines International Association, 2019), the cruise industry is preparing to rebound—and possibly rebound faster and more profitably than airlines (Isidore, 2021)—when more ships are set to sail in 2022. After all, the demand for cruising had not disappeared during COVID-19. According to an independent survey of cruise customers in May 2020, only 2% reported that they would never choose to cruise again (Gilson and Abbott, 2021). In 2021, there was a growing demand for cruising, particularly for luxury world cruises. At the beginning of the year, several of the most expensive world cruises (e.g. Silversea's *South Side Story—All the World's A Stage* and Oceania's *Around the World in 180 Days*) sold out within a day (Pfalz, 2021). While the desire to travel may have grown because of COVID-19 travel restrictions and stay-at-home orders, it can also have emerged from a stronger sense of urgency to see the world-as-we-know-it before it all ends.

Post-pandemic bunkering

Since 1945, lives in the wealthy Global North have been premised on increasing incomes and movement, presuming that the accumulation of capital could be analogous to the accumulation of movement (Urry, 2011). Assuming that human "mastery" over nature could be achieved as interdependent mobilities across high carbon systems, these mobilities have produced, organized, formed and reformed the contemporary contours of social life (Urry, 2011: 4–5). Even when reshaped by pandemics and crises, such contours always have about them the fixed lines of racial and class inequalities—and these inequalities are widening. As the wealthy view the world as a stage for their pleasure in what might be humanity's final act, the less fortunate, who live in already threatened environments, will experience the cascading effects of such niche entertainment and leisure as existential threats. There is, after all, a remarkable difference between taking advantage of "a last chance to see," and having a last chance *to live*. Post-pandemic, among the accumulating crises, there is a predicted intensification of poverty, food insecurity and extreme weather events, encouraging the wealthy to also explore options for more permanent forms of bunkerization.

While cruises can be considered temporary "floating cities," more static complexes have been designed and developed as settlements offering "environmental exemption" for those wealthy enough to pay for access to "clean," "green" and "politically free" environments (South, 2019), although various experiments have faced predictable difficulties (Elmhirst, 2021). The idea of creating

communities at sea or enclaves of resilience is often presented as a form of visionary environmentalism and eco-engineering, reflecting greenwashed public relations presentations of residential developments that are allegedly sensitive to the future implications of a climate-changed world. For example, consider Monad Terrace, a new development in Miami Beach, Florida (see http://monadterrace.com/; https://www.monadterracesobe.com/; https://monadterrace.miami/innovations/reflection-machine/), where prices range from US$1.8 to over US$7 million (and "are subject to change without notice"). As the first luxury condos in Miami built above updated flood and sea level elevations, Monad Terrace is "designed to reflect the light and water of its surroundings, while living in harmony with the time and place in which it rises" (Shaw, 2020). In an era where "fortification against sea-level rise [has become] a core selling point," the development might, at first glance, be praised for "its nod to climate awareness"; but, as Shaw (2020) argues,

> Monad Terrace's version of resiliency is limited. The building is simply lifted above the flood line (and the height of competing developments) to avoid sea-level rise. It does nothing to mitigate the impact beyond the property line—and in fact, a flood-fortified tower in low-lying Miami Beach could make things worse for its neighbors by directing rising seawater into the already volatile water table.

Consequently, Monad Terrace plays on the slippery concept of resilience as part of its response to climate change. Rather than fully adapt to anticipated climate change effects, the development embraces an "outdated way of thinking" about resilience—"the idea that we can somehow stop or contain the forces of nature. [This conceptualization of resilience] can also be exclusionary and unjust; if we can never stop or contain nature, we will just deflect it—onto those who cannot afford to get out of the way" (Shaw, 2020).

In effect, those who *can* afford to "get out of the way" and live in Monad Terrace are like those who voyage in "floating cities" away from what they consider to be social agents and forms of pollution and disease. As last-chance tourists, serviced by various forms of mobility (Urry, 2011), affluent passengers can safely consume environmental destruction as spectacle, even though their traveling activities contribute to ongoing environmental devastation. Ultimately, they serve as both consumers and producers of ecocide—a trend exemplified by the growth of a new space tourism industry. Like cruise voyages, the space voyage allows the very wealthy to experience escape, whether it is momentary (e.g. for leisure) or permanent (i.e. to escape a ruined Earth and resettle on another planet). If spent in a different way, the billions being invested in such ventures by Jeff Bezos, Richard Branson and Elon Musk might well, as various critics have suggested, do much to forestall further and future environmental problems facing the poor around the world today. Instead, the space tourism industry will generate substantial new amounts of greenhouse gases and pollutants, many of which will be emitted directly into the upper atmosphere where they can linger for as long as 2–3 years (Gammon, 2021).

Conclusion

According to Armstrong et al. (2020), the "pandemic and the various social and economic challenges it has presented offer a unique opportunity to further understand ourselves as ecological beings." "It is our hope," they continue, "that, in the wake of the pandemic and its chaos, we will find new ways to comprehend the ties that bind humans, nonhuman animals and the ecological

systems on which we all rely." Following this line of thinking, we advocate for greater and more nuanced understandings of ourselves as ecological beings. Achieving this will require an ability to move away from selfish, individualistic responses to crises, whether sea-based communities, bunkers or rockets, precisely because we need to understand ourselves as interconnected and part of a web of ongoing relationships. To place ourselves into existing ties that bind us to nonhuman animals, ecological systems and other human beings means that any attempts to escape our damaged world—through denial, disregard, or tourism—are ultimately futile and can cause greater collective harm. Bunkerization, whether as a temporary getaway on luxury ships or as a permanent form of settlement, can actually *accelerate* and *exacerbate* the very ecological crises that we are trying to avoid. Instead, when we acknowledge our interconnected ties, we come closer to recognizing that we need a more holistic view of public health—one that includes not only the health of humans, but also that of non-human species and the natural environment (Armstrong et al., 2020; Beirne, 2020; Humboldt-Dachroeden et al., 2020). Indeed, as Armstrong et al. (2020) assert, "The health, social and economic consequences of COVID-19 should act as a wake-up call for all governments to take stock. . . and ensure post COVID-19 responses reverse our war on nature. . . a war on nature is ultimately a war against ourselves." Moreover, as Mogulescu (2020) writes, "If the world can do this for one virus, it can begin to do this for the even more catastrophic— and predictable—danger of climate change."

As for our field of criminology, we already take interdisciplinarity seriously in the theory and methods upon which we draw, and intersectionality and interconnectedness are now key pillars of inquiry. All of this leads us to a larger point that we should perhaps follow the logic of these directions further and cease isolating crises in our analyses. While we recognize that both bunkerization and quarantine are thematically linked as human responses that depend upon isolation and control, we are not interested in methodologically reproducing those practices in the study of crises. We do not want to treat either COVID-19 or climate change as yet another variable that can be studied or controlled for in isolation from a larger environment, especially when that environment is profoundly shaped by multiple, ongoing crises created by the intersecting relationships of humans, nonhuman animals, and ecosystems. As the Head of the World Health Organization, Tedros Adhanom Ghebreyesus, warned in a recent speech in Geneva, the world is currently facing "a formidable convergence of disease, drought, famine and war, fueled by climate change, inequity and geopolitical rivalry" (quoted in UN News, 2022). Directing or redirecting our attention from one crisis to the next, as though tackling one crisis is all we can handle, may be especially inappropriate when we are living through such a convergence of crises.

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Notes
1. The Ark brings to mind not only the biblical image of Noah's Ark as a response to global flooding, but also the giant global seed bank, located in the remote Arctic regions of the Svalbard Islands, that aims to preserve humanity's future against the loss of crop diversity. Remarkably, the seed bank has already been threatened by meltwater caused by global warming (Carrington, 2017).

2. Originating in bats, SARS-CoV-1 is the precursor to SARS-CoV-2, the virus responsible for COVID-19. Both coronaviruses can switch hosts (e.g. from animal hosts to human ones), enabling their cross-species transmission and dispersal.
3. According to Oswald et al. (2020), the rich can afford to fly abroad, but people with the lowest incomes can rarely afford to drive.
4. According to Clancy (2017), North American passengers accounted for nearly 90% of global cruise ship passengers in 2000; by 2015, 84.5% of passengers were projected to originate from North America or Europe.
5. Crewmembers from the least wealthy nations, such as parts of Central America, Eastern Europe, and Southeast Asia, tend to occupy lower positions, while senior and more skilled roles are held by people from countries that make up the wealthy Global North (Chin, 2008; Gibson, 2006).
6. While the *Diamond Princess* cruise does not frame Japan as a site endangered by climate change, Japan, itself, will be impacted by future global rises in sea levels. Presently, Japanese cities are experiencing the effects of climate change in the form of torrential rain, landslides and flooding. To the extent that the Earth is changing rapidly because of climate change, all tours and cruises potentially become examples of last-chance tourism whether they explicitly bill themselves as such or not.
7. While the slowdown of human activity, including reduced travel, was associated with some positive environmental effects during the pandemic's "anthropause," some species actually struggled during the same period because of the lack of human protection or resources (Anthes, 2022).
8. Reporting on a study of measurements of the world's deadliest air pollutants before and during the COVID-19 outbreak in 10 major cities (New Delhi, London, Los Angeles, Milan, Mumbai, New York, Rome, Sao Paulo, Seoul, and Wuhan), Meredith (2020) notes that while many cities recorded a lower number of "fine particulate matter" (PM2.5)—the world's deadliest air pollutant—over a 3-week period of coronavirus lockdown in 2020, especially when compared with 2019 levels, Rome did not. The city recorded a 30% *increase* in particulate pollution during the measured time period due to greater reliance on residential heating systems.

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