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### **Arcologies, Eco-Shelters and Environmental Exemption: Constructing New Divisions and Inequalities in the Anthropocene**

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#### **Abstract**

This article reviews some trends in the sociotechnical development of urban spaces and controlled environments. It provides past and present examples of spatial, volumetric and symbolic constructions that have functioned to enclose or divide before describing a new context of markets that promise to provide habitats or settlements offering 'environmental exemption'. In other words, this is the ability to pay for access to 'clean', 'green', 'pure' and 'politically free' environments. Examples of existing and proposed eco-enclaves of various kinds are given and discussed. The conclusion considers some implications of these possible projects of 'salvation' or 'segregation'.

#### **Keywords**

Anthropocene; arcologies; climate change; environmental justice; exclusion; green criminology.

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## Introduction

In Paolo Bacigalupi's (2015) *The Water Knife*, a dystopian novel of the future, the western United States (US) is drying up. Water has evaporated and rain fails to fall; conflict, disorder and the misuse of corporate power follow. American citizens become 'climate refugees' in their own country and it is external capital, from China, that provides salvation for some (those who can afford it) through the construction of Arcs—enclosed environments and atriums with air conditioning powered by an exterior 'solar skin', filtered air and recycled water.<sup>1</sup> Bacigalupi (2015: 10) describes these 'arcologies' as consisting of 'Domes and condensation-misted vertical farms, leafy with hydroponic greenery and blazing with full-spectrum illumination'.<sup>2</sup> The narrative mixes currently possible technology with visions of corporate science preparing for a climate-changed world, to describe buildings that mix software and the organic. As one character puts it, 'It's a whole big living machine ... It's tilapia, and snails and waterfalls all linked together' (Bacigalupi 2015: 111).<sup>3</sup>

This is fiction, an example of a growing genre of 'sci-fi' or 'cli-fi', yet it is also reflective of social, corporate and governmental responses to various risks and threats that are familiar in the real world. Whatever the scenario, it seems that in the future—as in the past—security and survival are to be ensured by mechanisms of protection for some, and separation from others—the excluded. There is, of course, 'a long history around urban enclosure and the varying ways in which shared public space and commons have been privatised or walled for more restricted access and use' (Marvin and Rutherford 2018: 1146). However, when considering the future, we need to be 'attentive to the geographical unevenness and inequalities' in the development of controlled environments at 'different scales' (Marvin and Rutherford 2018: 1157; see also Sloterdijk 2009).

This article provides a brief history and some examples of spatial, volumetric and symbolic constructions that have arisen to enclose or divide. It describes the emergence of markets that promise to provide 'environmental exemption'—in other words, the ability to pay will (supposedly) enable access to 'clean', 'green', 'pure' and 'politically free' environments. The inspirations and motivations underpinning these new markets have been stimulated and shaped by a variety of twenty-first century developments. These include: anticipation of the future deterioration of environmental conditions now being predicted (Loughran 2018; Steffen et al. 2015); growing support for and investment in experiments in non-traditional governance and 'radical individualism' (Mitchell 2005); the interest of the ultra-wealthy in expensive properties offering proximity to spectacular nature but with reinforced structures and capabilities to hide 'off-grid' (Smyth 2018); and the climate of populist support for forms of diplomacy and politics based on 'building walls rather than bridges' (Marks, Matsha and Caruso 2018). Examples of proposed, planned and existing eco-enclaves of various kinds are given and discussed, and the conclusion considers some implications of these possible projects of 'salvation' or 'segregation'. In terms of a contribution to criminology, and to the analysis of linkages between social and environmental justice (Hansel 2018), the examples and discussion of forms of eco-enclaving and eco-exclusion obviously connect to the literature on green criminology (Brisman and South 2017a; White and Heckenberg 2014) and environmental justice (Bullard 1994; Lynch, Stretesky and Long 2015). As in other areas of criminology, the 'discovery' and pursuit of new issues and concepts is important but can run the risk of forgetting, overlooking or even reinventing previous insights and contributions (Carrabine 2015; Carrington, Hogg and Sozzo 2016; Rodríguez Goyes and South 2017). Therefore, one of the aims is to offer the basis for connections between such relatively new theoretical frameworks and other studies and debates regarding social divisions and geographic divides.

## **Context: Contamination, climate change and catastrophe**

According to Crawford and Hutchinson (2016: 1194–1195), ‘Social life unfolds within a framework of time and space’ and our insecurities and anxieties ‘transcend different scales from the micro-local, city/regional, [and] national to the global’. The great condition and shaper of our existence, however, is the intimate entanglement between humanity and nature (Swyngedouw 1996). In the twenty-first century era of the Anthropocene, considering how ‘social life’ will unfold in the future and how new urban constructions and divisions might follow, requires examination of the state of the environment and the planet.

The United Nations has estimated that about 20 million people a year are displaced by ‘natural disasters’, global warming and climate change. At least 85 per cent or more come from poor countries (Guha-Sapir and Hoyois 2015). These phenomena have unequal and differentially distributed impacts (Brisman and South 2018; South 2010: 238) with the most serious affecting those who have contributed least to anthropogenic climate change. Across the world, the air we now breathe frequently qualifies as ‘contaminated’. The resulting pollution can be understood criminologically in terms of ‘pollution as crime’ (Lynch, Stretesky and Long 2017: 48–71; Walters 2010: 2013) and ‘pollution leading to crime’ (Pirtle 2016; Sampson and Winter 2018). For example, Britain has acted criminally for years, being ‘in breach of EU legal limits on air pollution since 2010’, leading to ‘40,000 early deaths a year’ (Bawden 2016: 20). In the US, as President Donald Trump rolled back environmental protection legislation, a report from the Environmental Protection Agency (2017) concerning air quality in major US cities suggested that ‘pollution levels in many areas of the United States exceed national air-quality standards for at least one of the six common pollutants’ and that although levels of:

particle pollution and ground-level ozone pollution are substantially lower than in the past, levels are unhealthy in numerous areas of the country. Both pollutants are the result of emissions from diverse sources and travel long distances and across state lines.

Among numerous consequences of heightened levels of air pollution in urban settings, there is robust evidence about the variety of detrimental impacts on human physical and mental health. Further, some criminological and epidemiological research has demonstrated ‘causal links’ between ‘ambient air pollution’ and ‘same-day violent criminal activity’ in urban contexts such as Chicago and Los Angeles (Pirtle 2016). Inevitably, those who can afford protection from risk and danger are showing an interest in being able to distance themselves from both criminality and contamination—if not managing a physical move then erecting other forms of barricade.

While the impacts of climate change and global warming may not be a significant feature of anxieties and anticipation for some (South 2016), others acknowledge that the human activities responsible for emission of 575 billion tonnes of carbon into the atmosphere since 1870 (Le Quéré et al. 2014) have meant the Anthropocene era brings the prospect of living in a different sort of world. According to Hamilton, Bonneuil and Gemmene (2015: 4–5 citing Dyer 2008) this will mean:

inhabiting an impoverished and artificialized biosphere in a hotter world increasingly characterised by catastrophic events and new risks ... It’s a world where the geographical distribution of population on the planet would come under great stress. And it is probably a more violent world, in which geo-politics becomes increasingly confrontational. (Dyer 2008)

For some of those who can afford it, relocation to less stressed and less risky environments will be an attractive possibility.

## Planning for protection and exclusion

Appleyard (1980: 110–112) reminds us of some relevant points about the concept of ‘protection’ in relation to the history of the development of planning concerning ‘neighbourhoods’. Thus:

In the history of city planning, there have been a number of significant attempts to protect neighbourhoods. The neighbourhood unit ... was conceived not only as a bounded social enclave, but also as a protection from traffic. Though attacked later for its social exclusiveness on the one hand and for its ineffectiveness in the socially and physically mobile world of the modern city on the other ... the concept endures with remarkable tenacity.

Appleyard’s essay is fascinating and although clearly an optimist and occasionally appearing a little naïve (at least as read with the benefit of hindsight), he was not ignorant of ‘the dangers of exclusiveness’, which he argued ‘must be vigilantly watched’, as the ‘parceling of neighborhoods into defended islands could encourage the division of the city into warring fiefdoms, and the more powerful neighborhoods may monopolize the concept’ (Appleyard 1980: 116). Hence, one feature of the endurance of the concept of ‘neighbourhood’ is the ever-more explicit planning and selling of it as, in some way, socially exclusive. At the elite (and now not-so-elite) end of this trend, there has been a convergence of the ideas of ‘community’ and ‘security’ in the marketing of enclosed and gated streets or complexes, creating mini-fortresses within the modern city. In their more luxurious or extreme versions, entertainment facilities extend to basement cinemas and swimming pools while security protection features may include not only ‘panic rooms’ but also bomb-resistant bunkers. As in the Cold War period of the 1950s and 1960s when fears of atomic attack led to fallout shelter hysteria and a booming market for protection (Greenberg 2003), today bunkers barriers, gates and bridges all serve to provide reassurance and real or perceived security, primarily by permitting control over who or what is within, and who or what is without. These functions are found in diverse historical and contemporary examples.

## Inclusion, exclusion and creating ‘quarantine zones’

Historically, institutions and methods of containment and control, as Atkinson, Parker and Morales (2017: 446) argue, often reflected the strategies of ‘Military commanders with limited forces at their disposal, large territories to control, and an indeterminate and resourceful enemy’. Territorial governance can be achieved not necessarily by occupation of a space, but simply by marking it out. The idea of the military ‘cordon sanitaire’, borrowed from the French term for the public health measure of establishing a quarantine zone, was based on the efficiency of calculating and monitoring ‘the costs and benefits of entering and occupying particularly dangerous spaces’.

In public health medicine, the idea of ‘quarantine’ involves placing the infected and infectious in an enclosed, secured space to protect those ‘outside’ from contamination. In urban planning and design, a related but reversed principle aims to protect those who are allowed ‘inside’—the ‘included’—from those who should be ‘outside’—the ‘excluded’—employing mechanisms and controls such as zoning, apartheid, checkpoints and pricing (Herbert and Beckett 2009; Johnstone 2017; Walby and Lippert 2012). By way of illustration, consider Schindler’s (2015: 1934–1935) account of the ‘paradigmatic’ story of Robert Moses—the ‘Master Builder’ of New York in the mid-twentieth century—and the design and construction of bridges crossing over roads to the beaches of Long Island:

Moses set forth specifications for bridge overpasses on Long Island, which were designed to hang low so that the twelve-foot tall buses in use at the time could not fit under them. ‘One consequence was to limit access of racial minorities and low-income groups’—who often used public transit—‘to Jones Beach, Moses’s widely acclaimed public park. Moses made doubly sure of this result by vetoing a

proposed extension of the Long Island Railroad to Jones Beach'. (Winner 1980). Moses's biographer suggests that his decision to favor upper- and middle-class white people who owned cars at the expense of the poor and African-Americans was due to his 'social-class bias and racial prejudice'. (Winner 1980)

Examining more recent trends in the implementation of aggressive 'urban initiatives' directed against the 'socially marginal and the spaces they inhabit', Atkinson (2015: 866) argues these have been a consequence of 'policy instruments' that have been conceived to address the pressures of political and public anxieties and have had the 'common objective of removing or eliminating unwanted or disorderly populations and districts'. According to Atkinson, 'Such actions are rooted in resentment and fear directed at often politically scapegoated groups'. Johnstone (2017: 2) similarly notes how the 'usual suspects', the 'abject' (Tyler 2013) and the 'difficult' (Young 1999) find themselves now in conflict with the norms governing 'contemporary urban space'—successful urban regeneration requires 'eradication of signs and symbols of disorder'.

Ideas of quarantine and separation become even more suggestive when examining the boundaries drawn and initiatives pursued to preserve a 'healthy' environment for some, at the expense of, or with disregard for, 'others'. Erecting barricades, figuratively and literally, is becoming part of national politics in the United Kingdom and US, while on the street, according to Bonds and Martin (2016), the homeless have come to be regarded as an 'environmental contaminant' to be cleaned up. In the UK, Harris (2016) has described a 'monstrous shift in policy and official attitudes towards homeless people', and across the country there has been increasing use of a 'policy instrument known as public space protection orders (or PSPOs), brought in by the 2014 coalition government. As with New Labour's "antisocial behaviour orders", this new legal invention creates opportunities to criminalise hitherto non-criminal behaviour'. This mirrors developments in the US, where charitable 'activities linked to homelessness', such as providing shelter or food, have been prohibited in various places. For example, in 2014, a national advocacy network, the National Coalition for the Homeless, published *Share No More*, a report describing legislation and efforts in at least 31 cities directed towards criminalising 'the use of public spaces and the sharing of food with those in need' (Chamseddine 2017; see also Dum et al. 2017). The stigmatisation of the 'undeserving poor' and creation of systems of charity based on principles of 'less eligibility'<sup>4</sup> are being reinvented and reworked.

Amster (2003: 195) notes that 'patterns of spatial exclusion and marginalization of the impoverished' have been evident throughout modern history. However, they appear to have re-emerged in recent years as a channelling of new narratives about fears of disorder and illegality, as well as disease and decay. Thus, homeless individuals come to be viewed as 'a kind of pollution', their unwelcome status expressed by NIMBY movements and the development of 'civility codes' (Bonds and Martin 2016: 138) and 'processes of sanitization, sterilization, and quarantine' (Amster 2003: 197). The fulfilment of these 'processes' can perhaps be viewed in their purest (but artificial) form in the image and hegemonic aesthetic of 'Disneyland-type' constructed and controlled environments (Shearing and Stenning 1987). These might be 'seen not as a place for the "clean" to gather and play, but as an antiseptic retreat for the diseased of spirit to be temporarily distracted from the depredations of their existence. In a sense, it might be said that 'the palpable fears of the bourgeoisie' (Mitchell 1997: 328) have, throughout modernity, reflected doubts about the health and vitality of the elite classes—doubts that are often subsequently projected on and attributed to some marginalized or colonized "other"' (Amster 2003: 197).

### **Spatial and environmental inequalities and injustice**

Personal behaviours, social measures, symbolic gestures and legal force all send powerful messages capable of initiating and/or reinforcing divisions. Probably the most historically

enduring and effective means of separation, however, has been the building of walls and the enclosure of previously open space.

In the UK and the US, formerly public rights-of-way in urban centres and rural areas have been modified in their accessibility—not to make access easier but to close it off for ‘health and safety’ reasons (with a subtext of removing the unwanted), or been redesignated as ‘private property with public access’, or simply surrounded, walled, gated and opened to ‘members or residents only’. In some cases, this directly aims to keep out the homeless and has been described as a form of ‘revanchist urbanism’, ‘cloaked in the populist language of civic morality, family values, and neighbourhood security’ (Smith 1996: 211). As Amster (2003: 206) argues, the ‘well-off ... have “stolen” and “colonized” the public places of the city, literally and legally converting supposedly prized havens of public space into exclusionary domains of private property.’ This is happening around the world.

In Mumbai, controversy has—for some time—been attached to the ‘city’s strained relationship with space: there is too little of it, and too many people who want to control it’. Citizens’ groups have been critical of a municipal corporation plan ‘to hand over several open spaces in Mumbai to private developers’ (Kalbag 2016). In China, as Zhou (personal communication 2017) reports, although late-twentieth century communism led to the opening of private gardens and park spaces for the general public, the subsequent embrace of a version of a neoliberal market economy since the early 1990s and into the twenty-first century, has seen most of these parks or gardens introduce a high entry fee. This effectively denies access to the poor while middle-class urban residents have placed increasingly high value on such spaces as a result of air pollution and the crowded nature of urban living. In a new form of enclosure movement, residential developers in China have begun to enclose existing parkland within building projects, creating new walled and gated ‘green communities’ that are not accessible to the general public (e.g., see Carter 2014).

The pioneer of environmental justice studies and activism, Robert Bullard (1990, 1994), drew attention to the injustice of situations in which the distribution of sources of pollution and dangers to health was unfairly concentrated in locations where the poor and powerless lived, and where inequality of access to the ‘provisions that sustain human well being’ (Bonds and Martin 201: 137) could be shown. The unjust distribution of environmental harms and dangers may be accelerating as the valuing of mutual care and belief in public welfare give way to individualism and securitisation (Low 1997; Sennett 1996). The divide between the ‘haves’ and ‘have nots’ has always been reflected in various urban environmental conditions and ‘physical attributes’ of neighbourhoods. Marks, Matsha and Caruso (2018: 134) describe this division in the context of both pre- and post-Apartheid South Africa. In terms borrowed from Latour (2014), they consider the reality and symbolism of ‘walls’ as ‘objects’ or ‘things’, created by humans ‘to rupture, to exclude and to offensively separate what could and should be intertwined’. This results in human ‘alienation from other humans, from the natural environment and from things that create meaning such as streets’. Although Marks, Matsha and Caruso (2018) call for the ‘breaking down’ of walls to enhance human connectivity and avoid some of the negative consequences of the Anthropocene, it is quite possible that as our environment degrades, pollution increases and climate change makes its impact felt (South 2015; Walters 2013; White 2018), there will instead be more walls—and more systems, constructions and enclosures that both subtly and starkly create separation.

### **Arcologies: Domes, bubbles, islands—a new world of eco-enclaves in the age of the Anthropocene**

The idea of creating domes over urban spaces and maintaining control over air quality is not new. Between the 1940s and 1960s, architect Buckminster Fuller explored possibilities and even, as Graham (2015: 209) notes, suggested that a ‘giant dome encompassing midtown Manhattan’ could ‘permanently sustain what he called a “Garden of Eden” climate’. The Manhattan dome was

never realised but it is perhaps no longer as fantastic an idea as it once seemed. Today, ‘privatized eco-enclaves’ are planned, attract investment and publicity, and reflect diverse interests and visions. For example, Loughran (2018: 2) observes that ‘In cities around the world, urban planners, political leaders, and other elites propose to reconfigure urban spaces in an effort to mitigate global warming’. Here, the idea is that the ‘spatial fix’ can offer climate change ‘salvation’. According to Marvin (2016: 237), the super-rich are already investing in ‘technologies and ecological services’ that support the construction of ‘artificial environments’ designed to provide protective and defensive responses to the ecological, military and political threats of the Anthropocene ‘by creating new life support systems on an enhanced scale’. Conversely, the ‘interiorisation of ‘nature’ (Graham 2015: 209) might be displayed in projects that seem completely antithetical to the spirit of concern about climate change as, for example, in the ‘megalomaniacal use of air-conditioned interiors’ in the construction of Dubai as ‘the ultimate dreamworld of neo-liberalism’. This example of the hugely energy-consuming manufacture of enclosed micro-climates reaches its ‘extreme with the conceit of a complete, indoor, skiing environment, with real snow, *in the middle of one of the world’s hottest deserts*’ (Graham 2015: 209; emphasis added).

### ***‘Airmageddon’ and the market for clean air***

There is a market for ‘clean’ air (Hernandez and Feng 2016) and ‘pure’ water (Brisman et al. 2018: 113–114). According to Hernandez and Feng, ‘sales of bottled air are taking off’, with a range of products sold as an ‘antidote to smoggy skies’, a ‘luxury item’ or a ‘collectible’, with marketing promises that they will provide a ‘shot of nature’ or an experience with a ‘morning dew feel’. In Shanghai, the upscale hotel Cordis Hongqiao is competing for guests by promising to provide continually cleaned indoor air, retained in the building by double-glazing and with air-quality and pollution monitors in all guest rooms (Roxburgh 2018). Meanwhile, in Beijing, to comply with the latest five-year plan, at least half the number of new buildings in the city must be green-certified. As Roxburgh (2018) notes, ‘Chinese businesses and institutions are rushing to be ahead of the curve’. Technological innovation is being directed at air-purification tools, the inhabitants of the city are ‘engaged in a city-wide rehearsal for life on an inhospitable planet’ and elite schools and colleges are going to the ‘drastic lengths of building an artificial bubble in which to simulate a normal environment’ to provide playground spaces for children that are free from the pollution-saturated air (Wainwright 2014). Competition between these highly expensive schools means that, as one school representative put it, ‘if all the other schools have a dome, then we’ve got to have a dome’ (Wainwright 2014).

Building development in China that mirrors these patterns is likely to ‘lead to two classes of citizens in polluted areas’, with the wealthy able to ‘gain access to the bubble, leaving the unlucky majority trapped in smog’ (Wainwright 2014). Other proposals for residential habitats include balloon structures, filled with clean air, that could envelop a park with vegetation that would then contribute to maintaining air purity. This air would then be available ‘for those living inside the buildings on the perimeter of the bubbles, while also providing a smog-free space for residents to spend time in the faux outdoors’ (Hatton 2014).

### ***The ‘Eko Atlantic’ in Nigeria***

The Eko Atlantic project is a new metropolis under construction near Lagos, Nigeria. The development has been planned as a 10-square-km, USD multi-billion ‘African Dubai’, according to the project website (<https://www.ekoatlantic.com/>). Originally proposed as an engineering solution to enable retention of Nigeria’s shoreline in anticipation of erosion caused by climate change and rising seas (Brisman, South and Walters 2018a), over time this evolved into a vision for an ‘an entire new coastal city being built on Victoria Island adjacent to Lagos ... to solve the chronic shortage of real estate in the world’s fastest-growing megacity’. The project has been pitched as a ‘focal point for investors capitalising on rich development growth based on massive demand—and a gateway to emerging markets of the continent’. As a walled sanctuary for the

richest 'one per cent' (while impoverished locals are evicted from their nearby homes to provide space for the development [Soles 2014]), the project exemplifies the extremes and excesses of arcological responses to global insecurity and climate change. The Eko Atlantic city is designed for the ultra-elite and privileged, who will be protected by private security services from the impoverished who dwell beyond the guarded walls.

Intriguingly, other visions of escape from risk but also of 'freedom' from conventional forms of urban settlement and governance, are exploring the viability of 'life' in virtual, outer and non-land-based spaces.

### *Seasteading and tech islands*

In an essay for the Cato Institute, venture capitalist Peter Thiel (2009) wrote of his libertarian vision and of three technological frontiers that might create spaces for freedom. First, *cyberspace*, pointing to ideas like PayPal as the basis for a 'new world currency—the end of monetary sovereignty', although acknowledging that 'new worlds' of the internet are 'virtual' and any 'escape may be more imaginary than real'. Second, *outer space*—a 'limitless frontier', offering 'limitless possibility for escape from world politics' but not something that could happen 'before the second half of the 21<sup>st</sup> century'. Finally—*Seasteading*—defined by Thiel (2009: para. 10) in the following visionary terms:

Between cyberspace and outer space lies the possibility of settling the oceans. To my mind, the questions about whether people will live there (answer: enough will) are secondary to the questions about whether seasteading technology is imminent. From my vantage point, the technology involved is more tentative than the Internet, but much more realistic than space travel.

However, as Denuccio (2015) noted, the Seasteading Institute came to 'appreciate that the middle of the ocean is less inviting than early renderings' suggested and began to seek 'shelter in calmer, government-regulated waters'. Tahiti is now the proposed location, offering space and legitimacy for a new economic enclave that will give 'Blue Frontiers', the commercial arm of the Seasteading Institute, the opportunity to build a 'start-up society' based upon an 'innovative' model of governance that particularly values personal freedom, economic freedom and a commitment to being 'environmentally restorative' (see Chinn 2017). This last ideal is particularly interesting as any extension of the Seasteading project would eventually mean an encounter with the plastic discards and other detritus so seriously polluting the oceans, products of an expanding consumer capitalism that has paid (sometimes via Thiel's PayPal) for the ability of the elite to retreat (Brisman and South 2017b). The alternative way of viewing such a project is in terms of what Veracini (2016: 136) refers to as 'pre-emptive displacement as a solution to the prospect of growing social tension and upheaval'.

These floating techno-communities may materialise and prosper—or they may be an example of what Sze (2014) has called a 'fantasy island'. Sze applies this term to a case that may be instructive: the widely applauded then much postponed and, finally, never built, Chinese eco-city of Dongtan.

### *Fantasy islands and eco-cities*

Promoted as what would be the world's first eco-city, with great publicity about plans for opening in time for the Shanghai World Expo in 2010, the Dongtan eco-utopia was a project involving British engineering firm Arup, various planners, architects, engineers and the Chinese government. It was hugely ambitious and represented a range of wish-fulfilment narratives to sign up to, most notably that technology would solve the problems and pollution *caused* by technology (Brisman and South, 2013, 2017b). Along the way, little happened to show signs of the necessary financial or political commitment. The local Communist Party project coordinator

was jailed for corruption and Arup withdrew their association with the project. According to Sze's (2014) assessment of this 'fantasy project', the only expressions of ecological futurism to be found at Dongtan today are 10 wind turbines. However, if we remember what is happening to the enclosure and privatisation of green spaces elsewhere in China and various cities around the world, there is a further disappointment here. This is the realisation that to build exclusive, high-investment, secure housing and technical compounds, members of the communities already living in these places must move out. This has happened at the planned Eko Atlantic site in Nigeria, and the clearing of the Dongtan site, with some locals paid small economic incentives, and others simply being forced out. Members of these communities would certainly not be able to afford to move back when these projects were completed (Zhou, personal communication 2017) but, of course, these ecotopias are not being built for them.

## Discussion

These examples tell different stories. In one story, the future architecture of the elite will promise elysian sanctuaries, enclosed in bubbles, off-shored on islands, or gazing down from the peaks of mountains, served by engineered micro-climates and the supply of pure water, fresh food and unpolluted air. Enclosed ecotopias and floating cities will rise as Disneyesque escapes from the realities of the state of the planet. In another story, all of this simply represents the shaping of a new world of 'eco-shelters' that evolve as a new ecological variant of tax havens. The accompanying prospect is that of a form of 'climate apartheid', providing spaces 'in which the rich and powerful exploit the global ecological crisis to widen and entrench extreme inequalities and seal themselves off from its impacts' (Lukacs 2014). As shown here, some initiatives have already proved political and financial fantasies, but there is also serious investment in various prototypes, and some major developments are certainly underway.

## Conclusion

Featherstone (1990: 19) argues that 'consumer culture uses images, signs and symbolic goods which summon up dreams, desires and fantasies'. Associations with prestige and exclusivity are important. Spaces, places and the cost of residential addresses provide the means to mark who is allowed into the club and onto the ark, and who is not. One of the most impressive features of consumer capitalism is the way it adapts to its own failings and creates demand for new products that promise to solve old problems. In the future, to avoid the impact of environmental harms or effects of climate change, some will turn to the creation of life-worlds or bubbles designed for those who can afford such a strategy. In his cli-fi dystopia, Bacigalupi (2016) drew upon the ideas of Paolo Soleri (1969; Geere 2011) in constructing his version of 'Arcology'. What was once intellectually playful and aesthetically provocative is now viewed as an anticipation of how to survive imminent threats.

Marks, Matsha and Caruso (2018: 140) observe that 'walls' (and, of course, other devices of division) can be 'read as metaphors of a collective mindset, the symptoms of a deep rupture manifesting itself in the spatial organisation of neighbourhoods and cities' leading to Apartheid-style segregation, in which 'certain people are considered unworthy of entering into private and public-private spaces'. These are divisions that climate change and environmentally related future inequalities will reinvent and reinforce. In support, new exclusionist—even eco-fascist—environmental politics are emerging and may gather momentum, linking preservation of the natural environment (as an expression of the 'homeland' and 'purity') with preservation of security at national borders and anti-migration policies (Phelan 2018). Nature itself becomes a justification for filtering, requiring separation between what is to be conserved and what is alien, 'other' and to be excluded (South 2017: 561).

It is unwise, of course, to offer predictions of the future with too much certainty. There will be question marks about proposals for ‘tech islands’ and ‘eco-cities’, ‘elite retreats’ and life in domes. Are these constructions materialising at present? If not, this would not be the first time that fraud, fear and fantasy have left investors with worthless share certificates and little else (Button, Lewis and Tapley 2009). If they are already rising around us, is this happening slowly, or at an accelerating speed? Are such projects principally an expression of the vanity and libertarian yearnings of an elite? Or could they represent the blueprint for eco-salvation projects that might offer shelter to all in threatening times?

For Marks, Matsha and Caruso (2018: 149) the ‘establishment of walls in the Age of the Anthropocene ... challenges an evolving negotiation of a threshold between individual and collective security’. What is required instead of more ‘walls’ is a ‘reflective, mindful approach’ that would question ‘current technologies’, ‘mentalities’ and the ‘gratuitous and arguably futile quest for securitisation’ (Marks, Matsha and Caruso 2018: 144). Perhaps, as these authors envisage, one ‘future’ could follow these lines if greater understanding and acceptance of ‘our symbiotic relationship with constructed and natural landscapes’ could lead to innovations creating ‘new forms of connective space’ (Marks, Matsha and Caruso 2018: 150). This future requires the rejection of narratives and ‘solutions’ that are used by some to justify their exemption from the consequences of excessive growth, over-consumption and ecocidal irresponsibility (Higgins, Short and South 2013; South 2010, 2016). The alternative—the possible outcome of trends outlined here—is that instead, there are national and global sources of momentum towards support for non-traditional systems of governance, the creation of new ‘economic enclaves’ (Caldeira 2001; Ferguson 2006: 13) and the construction of ‘ecological arks’ for the elite.

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<sup>1</sup> For observations on relationships between water, security, conflict and crime, see Brisman et al. (2018); on the abuse of human rights, segregation and population control when rains fail, Brisman and South (2016); on ‘climate refugees’ and criminological relevance, Brisman, South and Walters (2018b).

<sup>2</sup> The idea of ‘Arcology’ as a ‘portmanteau of architecture and ecology’ is usually attributed to Italian architect Paolo Soleri (see e.g., Geere 2011; Soleri 1969).

<sup>3</sup> Tilapia are (usually) freshwater fish that consume aquatic plants, algae and other organic material that can deplete oxygen in water systems. Therefore, they are useful in aquaculture and aquaponics.

<sup>4</sup> Influential in the work of the 1832 Royal Commission on the Poor Law and introduced in the *Poor Law Amendment Act 1834*, this utilitarian principle—which essentially means ‘less desirable’ or ‘less attractive’—was explored by Jeremy Bentham in his writings on the balance between pain and pleasure, deterrence and incentive (Fraser 1983, 45).

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