Above Ground Level

[18 km, 79 km, 408 km, 35 786 km]

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Fig.1: Preliminary study of the dromological machine's ambiguous forms.

<u>Abstract</u>

Air Space has become an increasingly commodified and militarized landscape that is heavily occupied by machines. The acceleration of technology by state and corporate powers has resulted in an unequal relationship between private and public property distribution and operation in supersurface space. This investigation uses Paul Virilio's analysis of dromological space as a conceptual framework to understand spatial politics in air space, and how private citizens might reclaim this territory in order to build agency within it. Paul Virilio refers to dromological space as space governed by the acceleration of technology–specifically tied to machinic advancements sustained by the military industrial complex. These values are reflected in recent developments in air space–specifically hybrid technologies such as Google's Project Loon which are designed to evade legal and technological classifications in order to ambiguously occupy air space. This research provides four provocations; tales told through architectural objects at 18 km, 79 km, 408 km, and 35 786 km which aim to question systems of power *Above Ground Level*.

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Part II: Above Ground Level

Prelude to AGL

The Earth's Dimension

18 km AGL

79 km AGL

408 km AGL

35 786 AGL

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Above Ground Level:

18 km, 79 km, 408 km, 35 786 km xiv

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On Dromology



Key Figures

3



Paul Virilio On: Dromocratic Territory



Bruno Latour On: Factishes



Lebbeus Woods On: Anarchitecture, Utopia



Trevor Paglen On: Surveillance, Gaze



Eyal Weizman On: Politics of Verticality



Liam Young On: Future Machine Species







Speed and Politics By Paul Virilio



Landscape Futures Edited by Geoff Manaugh

Fig. 8-13.

Fig. 2-7.



The Eye of War By Antoine Bousquet



Other Space Odysseys By Greg Lynn, Michael Maltzman, Alessandro Poli

Bruno Latour



Down to Earth Politics in the New Climatic Regime

Down to Earth: Politics in the New **Climactic Regime** By Lebbeus Woods



Close Up at a Distance: Mapping, Technology, and Politics By Laura Kurgan

Above Ground Level: 18 km, 79 km, 408 km, 35 786 km



Fig.14. Dromological machine development.



Property Law is adapted.

Field of Inquiry

A chronological analysis of strata in vertical space in conjunction with emerging airborne technologies revealed that this trajectory is heavily influenced by military operations. Prior to its wide dissemination, airborne technology is typically perfected and mass-produced by a state power during war times. This mass-production typically leads to reforms in property law which affect the ownership and operation of vertical space.

Thus, as Eyal Weizman describes, air space becomes a "...discrete dimension absent from political maps. But it is a space of utmost importance - cluttered with civilian and military airways, allowing a vantage observational point on the terrain under it, denying that position to others" (2002.) Architecture has an opportunity to level playing fields between state or large corporate interests and the public-addressing surveillance concerns as well as providing an argument for equitable access to air space. Issues in air space reflect sociopolitical and economic inequalities experienced at ground level--heightened due to a lack of physical access to these infrastructures.

Emerging aerial technologies are currently posing the largest challenge to privacy and property law in Canada. These problems are further exacerbated by the speed at which drone and satellite technologies are becoming smaller, less detectable, and easier to operate. Drones offer threats to public space and reasonable expectations of privacy. State and corporate actors have already begun to exploit privileged positions offered in the skies by launching hidden stationary drones to collect data (Butler), and monitoring indigenous protests in Northern Ontario (Bowman.)

Above Ground Level seeks to build on the trajectory of Virilio's notions on dromology in supersurface space by creating provocations designed to illustrate the limitations of current property law, privacy law, and the geopolitics of airborne technology legislation; in order to declassify air space for public benefit.

Architectural Issues

The Politics of Verticality

7

Eval Weizman coined the term 'Politics of Verticality' in a series of blog posts exploring the privileged position of the Israeli military from Israeli-occupied airspace. These concepts can be transferred and understood in a projected future wherein airspace is only occupied by dominant state and corporate powers. Airspace has historically been licensed and operated by privileged actors with few exceptions. Additionally, the trajectory and dissemination of airborne technologies has been accelerated by military operations-further establishing the skies as state-controlled space.

The Economics of Verticality

Airspace offers speed, efficiency, and discretion; as well as widespread access to resources used to create or control data-thereby attracting corporate power. Increasingly companies such as Amazon and Alphabet are becoming major players in the transformation of vertical space. Furthermore, aerial territory offers access to natural resources in abundance, as well as opportunities to operate in an extraterritory away from public gaze. This research explores the commodification of airspace and offers provocations for how it may impact architectural discourse and the built environment.

Surveillance Technology/ Computer Vision

Future airborne technology will not simply utilize cameras to scan landscapes. Surveying and surveillance techniques have altered the manner by which landscapes and territories can be processed by machines, and architectures of the future will reflect this reality. There is also a duality between the naked human eye looking upwards and seeing very little, and surveillance technologies designed to evade this gaze that are able to capture ground activities with increasingly precise detail. This has been explored by artists and researchers analyzing computer vision.

Technonatures/ The Politics of Ecology

With the spread of human and machine activity deeper into aerial territory, new natures are created away from the Earth's surface. This research specifically explores the manipulation of the atmosphere's inherent properties (magnetization of the ionosphere, for example) as well as the possibilities for 'technonatures' to exist, wherein the wealthy recreate highly perfected images of the earth with the aid of machine technology. This reflects humanity's realization that nature's abundance will cease to exist on Earth. Only the rich and powerful can afford to displace it above ground level. In addition, themes of resource extraction at and above ground level are explored, as they further inequality and allow for the creation of technonatures by the elite.

Blurring of Private and Public Space

Emerging technologies have caused significant ambiguities in Privacy Law and Property Law in Canada. Corporations have begun to exploit these gray areas and are blurring distinctions between private and public space. Canada's civil air navigation system is run by a private corporation, Nav Canada. Airborne technologies pose a particular threat because they are increasingly undetectable and can collect data unbeknownst to private citizens.

Factishes in the Air

In Bruno Latour's On the Modern Cult of the Factish Gods he theorizes that human beings can be ruled by what they create with their own hands, and that modern technology has come to replace idolatry.

Architectural imaginaries have been exploring freedom from gravity from centuries. Historically, this work has been tied to utopian future visions wherein the occupation of the air, and freedom from the ground plane symbolized invention and progress. However in 1967, Herbert Marcuse proclaimed the 'end of utopia', stating that technology and ideology had progressed to a point which allowed for the eradication of human afflictions, and that freedom was possible. In his Anarchitecture: Architecture as a Political Act, Lebbeus Woods theorizes that Utopia is impossible as it presumes that there is an ideal which will satisfy all actors. Building on these trajectories, this design project proposes a projected reality which accelerates current trends, as opposed to a utopic vision. Freedom from the surface will be understood as a realistic possibility as opposed to a utopian vision.

This research has studied and considered theoretical architectural works influenced by advancements in aerial technologies. Airborne technology was often seen as a means to rapidly reimagine society and was believed to have profound possibilities for reforming urban social structures and modes of operation. Prominent contributors include Ledoux, Le Corbusier, Buckminster Fuller, Archigram, Superstudio, and Lebbeus Woods.

<u>Relevance</u>

9

As Bruno Latour notes, our political systems are changing with the 'new climactic regime.' The spatial ramifications inherent in this shift represent new opportunities for the field of Architecture to explore and engage with systems of power.

Architecture has often interfaced with infrastructure, but rarely with the systems of technological supremacy which enable it. This work explores how architectural objects can be appropriated to reveal these phenomena.

Architecture has the unique capacity to spatialize systems of power concealed from our gaze-decoding them for public consumption. Although vertical space has historically been romanticized, Above Ground Level seeks to decode supersurface natures and their real operation in order to engage with them critically.

Although AGL primarily explores four altitudes, these episodes are microcosms of larger geopolitical trends and extend vertically above and below the sites that are the focus of this study. 18 km, 79 km, 408 km, and 35 786 km represent provocations and opportunities for further study aimed at demystifying vertical space and understanding how and why it is inhabited by the rich and powerful; and the factors which drive the development of supersurface territory.

Fig.15 (right.)



Above Ground Level:

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"For the dromocratic state, mastery over the earth is already the mastery over its dimensions" (Virilio 92.)

Dromological (Air)Space

Virilio describes dromology as "the study and analysis of the increasing speed of transport and communications on the development of land-use" (Virilio 8). In a Virilian view, State powers use the acceleration of technology and the resultant collapse of space-time to their advantage-in order to impose absolute control on their populations (see Fig. 14), resulting in a banal and constant 'total war' condition. Virilio utilizes air space and orbital space in order to demonstrate the effects of speed on the occupation and control of territory. Aerial territory which has been designated for state and corporate use is an appropriate testing ground for dromological progress and results in 'despairing populations blocked by the inferiority of their technologies' (Virilio 70). Canada's civil air navigation system was transferred to a private corporation, Nav Canada, for \$1.5 billion in 1996; Nav Canada now controls 18,000,000 square kilometers of Canada's navigable airspace (Nav Canada.)

A chronological analysis of developments in air property, air technology, and war, (see Fig.46-62, 87) revealed that war was the major accelerant of technological advancement in the air. The militarization of airborne technology generally leads to its post-war mass production, and as a result property laws are adapted. These trends have shifted the balance in vertical property law towards increasingly limiting vertical private property by stratifying and classifying it for military or commercial use. Architects have historically proposed Utopian schemes in the air which advocate for the occupation of airspace by private citizens (see Fig.24-33.) In reality, it is increasingly difficult for private citizens to operate in the air. Journalists, activists and researchers have already begun to experience the criminalization of their use of the drone-such as the 2015 arrest of three Allazeera journalists in Paris (Graham 93). A Japanese police force has already tested a drone prototype with a large net designed to intercept civilian drones (Mogg) (see Fig.31.)

Prior to the dissemination of the hot air balloon, the 'ad coelum doctrine' was widely adopted in Western society, claiming that property owners possessed their parcel of land vertically from the depths of hell to the heights of heaven. However, with each emerging technology this column has been limited and stratified-with the acceleration of these processes proportional to the rapid development of airborne technology. For example, the Geostationary Orbit (approx. 35,786 km AGL) which allows for surveillance technologies to orbit the Earth at the exact speed of the Earth's rotation is only a few kilometers wide and contains a finite amount of 'slots' regulated by the International Telecommunications Union (Paglen 65).

Another example of the stratification of aerial territory is United States v. Causby (1946) wherein a farmer complained that his chickens were dying from low-flying military aircraft which were trespassing over his vertical private property. As a result, the United States Supreme Court nullified the Ad Coelum doctrine. The United States Supreme Court set the highest boundary of private property in



Ad Coelum Doctrine

"Cujus est solum eius est usque ad coelum et ad inferas...'

Fig.16: Pre and post Ad Coelum

Post-Ad Coelum

Rights limited as technology emerges.

Causby property.

As part of the dromological condition of our world, State powers and corporations have used war as a means to accelerate the development and usage of weapons, surveillance technologies, and airborne machines. These technologies are increasingly integrated into our lives outside of designated war zones. For example, Aerostat RADAR technology developed for use along the US-Mexico border was improved by Lockheed Martin for the US invasions in Afghanistan and Iraq then brought back to US soil with increased efficiency (Paglen 60). Virilio notes that there are no longer battlefields, as airborne technology exists in an outlaw territory where 'orbital space supplants territorial space' (Virilio, Strategy of Deception 13) and allows activities in air space to extend beyond sovereign borders both literally and figuratively. According to Stephen Graham, drones have turned the world into a 'free fire zone' (73.) Temporally, war zones have also extended to a point of near-banality where occupations last for decades with no real end in sight-elongating the viability of military testing grounds. For example, in Northern Pakistan, drones hover over villages 24/7 (Graham 76) essentially becoming vertical extensions of CCTV cameras with the discernible difference being the ability to strike (See Fig.32.) Put simply, as the practice of targeting becomes more globalized and individualized, the notion of distinct temporal and spatial bounds for the exercise of armed force becomes untenable (Bousquet 4). This has resulted in a condition where the acceleration of technology is designed to aid in a 'global information dominance' (Virilio, Strategy of Deception 17) and technology becomes obsolete as soon as its successor is able to obtain information or strike a target more efficiently (see Fig. 17-18.) Global information dominance in airspace results in an imperative to cover and analyze as much territory as possible, and to target with increased precision. The gaze of the state therefore is an extension of its war strategy.

The acceleration of airborne technology has also created a knowledge gap which is the result of air space becoming a classified territory-difficult to access by private citizens. Not only does gravity place a physical barrier on access to air space, governments and corporations also limit access to knowledge generated in air territory. Laura Kurgan describes the practice of 'selective availability' (40) wherein governments downgrade satellite information for use by private citizens in order to maintain their hegemony in air space. This gap is further exacerbated by the government's ability to calibrate satellite information with other technologies in order to produce more precise readings-technology which remains unavailable to the citizenry (Kurgan 40). Corporations such as Google also maintain a veil of secrecy over their operations in air space. For example, Google's Project Loon (see Fig. 33) which aims to launch a network of balloons into the stratosphere remains a secret from most Google employees (Butler). Furthermore, licensure procedures in air space often require substantial funding

the United States at eighty-three feet, the height the lowest plane flew over the

and technical training which are cost-prohibitive and largely inaccessible to private citizens.

<u>2001</u>

<u>World War II</u>

Fig.17 (left): "During World War II, roughly 108 planes were needed to take out a single target. By the time of the airstrikes over Afghanistan in 2001, the ratio flipped; each plane was destroying 7.07 targets on average per flight" (Singer 100)

Fig.18 (Right): "While it may have taken on average around nine thousand bombs to hit a given target from the air during World War II, one or two guided munitions are generally sufficient to accomplish a direct strike . today." (Bousquet 14)



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<u>World War II</u>

<u>Present</u>



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Above Ground Level:



Above Ground Level: 19 18 km, 79 km, 408 km, 35 786 km Payload Analysis (Expanding)



Infrared Thermography

Most useful for large objects and wide areas. Tools: precise direct-digital timing system, a 3-axis ring-laser-gyro and an inertial navigation system (INS), which is tightly-coupled to a real-time differential GPS satellite positioning system that provides x, y, z positioning of the sensor at all times. Payload orineted directly to the ground (NADIR.) Resolution:

Weakness: Easy to confuse sources of heat loss. High voltage objects can also be misleading (ie. power lines.) Best results at night.



Aerial Photogrammetry Creates digital surface model utilizing triangulation of common surface points. Tools: Large-format cameras, can be coupled with GIS Resolution: Weakness: Reflective objects, low contrast surfaces, cloud cover.



LiDAR (Laser Mapping)

Utilizes airborne lasers to measure distance between the laser scanner and the ground and/or objects on the ground. Highly penetrative (can capture elevations in a dense forest) Tools: Leica RCD30 precision digital camera Resolution: 1.5" pixel resolution at 500 feet AGL Weakness: Heavy rain, low-hanging clouds, high sun angles, reflections, unreliable for calculating water depth/ breaking waves, laser may affect human eye, operating altitude is low (500-2000m), inability to penetrate through very thick vegetation.

SAR (Synthetic Aperture RADAR)

Utilizes radio waves to measure distance to ground. Compared to RADAR, SAR has its own microwave illumintor, allowing it to operate in any wether or light condition.) Can create 2D or 3D results. Does not require sun illumination. Tools: Microwave illuminator, Resolution: 1.5" pixel resolution at 500 feet AGL Weakness: Reliant on orbit precision and accurate incidence angle calibration. Fig.20-23 (left): Expanding catalogue of aerial scanning technologies.

Fig.24-28 (right): Expanding catalogue of prominent satellites.

Satellite Analysis



<u>Corona 1959-72</u> Payload: Cameras 16km x 193km coverage



SPOT 1986-Present



<u>GeoEye-1 2008- Present</u> (Remote sensing) (Private)



Landsat 1972-Present Not Active: Landsat 1 (1972): Return Beam Vidicon (RVB) and Multi spectral Scanner (MSS) Landsat 2 (1975): Return Beam Vidicon (RVB) and Multi spectral Scanner (MSS) Landsat 3 (1978): Return Beam Vidicon (RVB) and Multi spectral Scanner (MSS) Landsat 4 (1982): Multi Spectral Scanner (MSS) and Thematic Mapper Active: Landsat 7 (1999): Enhanced Thematic Mapper Plus Landsat 8 (2013): Operational Land Imagor (OLI) and

Landsat 8 (2013): Operational Land Imager (OLI) and Thermal InfraRed Sensor (TIRS) 170km x 185km coverage

Ikonos 1999-Present 11.3 km coverage



Above Ground Level:

21 18 km, 79 km, 408 km, 35 786 km

Satellite Resolution

x100 scale

Landsat 1972-Present 15 m2 resolution

Satellite Coverage

x1,000,000 scale

SPOT 1986-Present 1.5 m2 Corona 1959-72 1.5 m2

Fig.29. Analysis of Satellite resolution over time.

Ikonos 1999-Present 111.3 km x 11.3 km

Fig.30. Analysis of Satellite coverage area over time.



Landsat 1972-Present 170km x 185km

GeoEye-1 15 km coverage

22





Fig.31 (a-c): "Drone-catching drone" introduced by Tokyo Police force after a drone was found on the Prime Minister's roof.



Above Ground Level: 18 km, 79 km, 408 km, 35 786 km



Fig.32: Americans in Pakistan protest USA's drone regime on behalf of Pakistanis who are 'suffering'. The American Military is not officially at war with Pakistan.



Fig. 33: Project Loon pictured with payload which includes solar panel for energy generation, drone, and camera. This technology can neither be classified as a drone or balloon and operates in the stratosphere where it cannot be seen or easily held accountable.

"...by plunging into the heart of the machine, we may obtain a truer sense of the potential and limits of our agency within it, political or otherwise." (Bousquet 11)

Air Machines

"No machine has ever been invented to go slower. Speed is growth, slowing down is decline." (Violeau 12)

The history of air territory is a history of machines designed to move faster and target with increasing efficiency—eventually leading to their autonomous operation. This machinic history contains overlaps with weather predicting technology, innovations in camouflage, and cybernetics. The striking fact about air machines is that they have only been manned In order to function— States have implemented unmanned technologies at every opportunity and are increasingly doing so. Virilio notes that astronauts—the great heroes of the Space Race—will be extinct as soon as they are able to be replaced with machines (Virilio, The Information Bomb 81). This will eventually result in a binary relationship between ground territory occupied by humans and air territory occupied solely by machines. This juxtaposition is highlighted by patterns of predictability and unpredictability—where technologies are designed to offer a high degree of accuracy and precision but rely on methods of concealment and unpredictability to target effectively.

Air machines have increased their efficiency at exponential rates—with the primary goals of technologies (speed and target efficiency) being met on increasingly shorter timescales (See Fig. 17-18.) This exacerbates differences between technology invented or improved by private citizens and the speed at which governments are able to improve their machines—air space offers a privileged viewpoint with far superior technological capabilities.

Air machines are also becoming more ambiguous and difficult to detect. For example, Google's Project Loon is designed as a hybrid drone-balloon and operates in the largely unregulated stratosphere, allowing it to take advantage of physical and spatial extralegality simultaneously. The Loon is able to escape drone regulations by claiming it is a balloon, and balloon regulations because it is an unmanned machine which evades this classification. Additionally by combining technologies, the balloon is able to leapfrog technological advancements and take advantage of drone technology which allows for autonomous operation as well as light surveillance payloads.

Air machines have been largely funded by military institutions such as DARPA and Israeli defense labs who have invested hundreds of billions of dollars in research pertaining to aerospace and surveillance technologies (DARPA). Many of these innovations are transferable between domestic and military applications and are designed to be reconfigurable or multifunctional. These create what Deleuze and Guattari refer to as 'machinic assemblages'—organisms continually growing and shedding their individual components (Deleuze and Guattari) and cutting across the 'organic, mechanical, and social strata of reality' (Bousquet 16). Air machines essentially act as suspended infrastructures of surveillance with particular machines serving specific objectives defined by the assemblage. Satellites are able to control drones, airplanes, etc. and machines are designed to fulfill a myriad of functions within the apparatus. For example, drones can be repurposed from military applications to survey property for the real estate industry (senseFly), to track whales for marine biologists (Offord), and to follow protestors and drug traffickers by police organizations such as the Ontario Provincial Police (Bowman). Components within these machinic assemblages are often able to communicate with one another utilizing technologies such as shortwave radio which allows satellites to synchronise "global infrastructures, oceanic air traffic control, and weather reporting" (Paglen 63). Additionally, weather forecasts accessible by private citizens have become more accurate due to high resolution satellite data designed to make warfare more predictable (Lele XIV).

In Bruno Latour's On the Modern Cult of the Factish Gods, he writes that modern man has replaced idolatry with the fetishization of machinic objects which are a 'product of their own human labour' (Latour 8). The use of aerial technology is especially susceptible to this due to its ability to offer a 'God's Eye View.' Surveillance technologies have often appropriated names from Greek mythical characters-such as the Gorgon Stare, named after a creature who could turn its observers into stone; the ARGUS IS-named after Argus Panoptes, a Greek 'many eyed giant' who would serve Hera by surveying her subjects (Bousquet 103) (see Fig. 34-36.) The fetishization of surveillance machines extends into the political sphere, with US Congressman Brian Billbray declaring that drones should be seen as 'American Folk Heroes' (Graham 71) and that if a Predator drone registered as President "both parties would be trying to endorse it" (Bennett). The 'factishness' of surveillance machines may also be due to the human endeavour to 'endow machines with perceptual facilities of discernment that would match (and exceed) our own' (Bousquet 103). Latour alludes that this will lead to a form of life wherein humans are unable to make distinctions as to which objects they have created, and which objects already existed in the 'outside world' (29).

Above Ground Level:





Fig. 34-5: Gorgon Stare is a surveillance technology which consists of nine cameras in a spherical composition attached to a drone. It is named after a mythical Greek creature who could turn observers into stone.







Fig.36-7: The Autonomous Real-Time Ground Ubiquitous Surveillance Imaging System (ARGUS-IS) is a US Military surveillance technology which boasts 'high resolution images' as well as embedded processing algorithms. Its namesake is an Ancient Greek mythical giant with one hundred eyes.



Fig.38: Catalogue of War Devices which expanded military surveillance capabilities. (Expanding.)



Fig.39-40: Above: Japanese General inspecting acoustic locator during WWI; Below: Acoustic devices used for locating and contacting planes used by U.S. Naval Air Service.

"Where you sit in relation to the lens and which side of it you are looking through shapes who you are, your position in the universe, and your place in the City." (Liam Young, 2018)

Vision

The automation of human vision has been accelerating since the invention of the telescope in the thirteenth century (see Fig.19, 38.) The telescope spurred an era of dromological change wherein the human sense of sight would become increasingly mechanized, detached, and precise. This 'one-way hierarchy of vision' (Weizman) has come to define how we watch our world as well as how we are watched.

The act of 'seeing' by airborne technology has been equated to military surveillance because the calibration required in order to 'see' inherently surveils and records the terrain below (Virilio; Bousquet; Manovich; Weizman). According to Graham, airborne technologies such as satellites are increasingly instantaneous and are designed to view objects in the landscape as targets because these technologies were developed for military applications (29.) The 'target' view generally reflects a State or corporate agenda. Aerial surveillance is inherently designed to provide a privileged view of the world to its operators and extends the arm of the powerful up. As Graham and Weizman note, this has resulted in an Orientalist gaze towards the landscape and disproportionately targeting people of colour-purposely 'bringing them into visibility where they can be destroyed' (Graham 70).

In his analysis of military perception technology, Bousquet divides surveillance into a three-step process: sensing, imaging, and mapping (8). The imperfections in airborne surveillance technologies largely reside in the 'imaging' and 'mapping' processes which require manmade algorithms and calibrations to produce useful data-correcting distortions and layering information into a single composition. This includes processes aimed at recognizing three-dimensional objects from a two-dimensional view (photogrammetry) as well as facial recognition procedures, etc.

> Where maps are now widely understood to be subject to bias and error, satellite images are still widely assumed to present a simple, direct, and truthful correlation of the Earth. This occurs even though there is a history of such images being so imperfect and uncertain-and as so manipulated mislabelled and just plain wrong -that it is necessary to be skeptical about such claims. (Graham 31)

Just as the 'latest weapons systems miss their intended targets' (Bousquet 13), surveillance technologies with human interpreters often result in intentional or unintentional increases in civilian fatalities (Shaheen). It is in the State or Corporate power's best interest to portray their technology as incredibly precise in order to legitimize their activities. For example, in 2012 Whitehouse spokesperson Jay Carney lamented that counterterrorism efforts are 'exceptionally precise and surgical' (Graham 71) in another claim of 'ethical superiority' designed to subjugate the surveilled (Bousquet 13).

of the weapon used to apply force: gaze. (Bousquet 5)

Large technological advancements towards the autonomous operation (and vision) of airborne technology using Artificial Intelligence are designed to improve the manageability and operation of these machines. With the proliferation of AI, large amounts of data created by constant surveillance will be processed and imaged more efficiently (Graham 78). This will result in the complete removal of the human eye from the skies and will essentially automate conflict and surveillance around the globe without the burden of human consciousness. Computer vision will not only reflect the state's agenda 'abroad', but will also represent 'fourth generation warfare' initiatives (Graham 84) by supporting the militarization of police forces, and national security defenses such as border patrol. States will continue to claim that the use of autonomous machines with their own vision will save US personnel, and will complete the transformation of conflict space into theatre space (Virilio, War and Cinema). Bousquet notes that the emphasis on precision has overtaken the significance

If aiming is more important than the weapon itself, it is understood that one day deterrence will no longer be caused by the weapon but by the

"Airspace is a discrete dimension absent from political maps. But it is a space of utmost importance – cluttered with civilian and military airways, allowing a vantage observational point on the terrain under it, denying that position to others." (Weizman 2002)

Counteroccupations

Bousquet notes that camouflage was developed by militaries in response to the advent of air machines in wartimes (157.) Camouflage development accelerated during the First World War and led to innovations such as 'dazzle ships' (Fig.43) which were designed to distort the outline, size, heading, speed of ships when viewed by submarine periscopes (Bousquet 165). During the Second World War, Architects replaced painters as the camouflage experts of choice due to their understanding of shading and perspective (Zardini and Cohen). This led to the increased development of the art of 'perpendicular camouflage' wherein soldiers would practice concealing three-dimensional objects at perpendicular angles. Thus, three-dimensional objects were made two-dimensional– reversing the imperatives of photogrammetry and surveillance technology.

Camouflage has also included such bizarre inventions as 'observation post trees' in No Man's Land (Manaugh) (Fig.41-42), smoke generators to hide cities from aerial bombing (Bousquet 164), as well as using papier mâche sniper heads to deceive the enemy (Imperial War Museum) (Fig.44.)

Although the speed and efficiency of airborne machines and their surveillance payloads have drastically improved in the last century, many of the underlying technologies used still present the same weaknesses. For example, RADAR technology is still sensitive to orbital calibration, and laser mapping is sensitive to cloud cover—although these weaknesses have reduced in magnitude (Fig. 45).

Additionally, Bousquet outlines certain 'hiding' strategies such as scattering, creating false targets, and creating unpredictable life patterns (184.) Bousquet also remarks on the infrastructural and external forces which are required by air machines and surveillance technologies in order to operate, such as ground stations for satellites: "technical objects are stabilized by their degree of internal coherence and the strength of their external relations" (16.)

Recently Artists and Architects have begun to explore updated means of camouflage as responses to our everpresent surveillance culture. For example, artist Adam Harvey created a line of 'Stealth Wear' with prosthetics designed to evade facial recognition software and a 'drone burqa' which conceals the heat signature of the wearer (Harvey). Architect Asher J. Kohn designed an anti-drone 'Muslim city' with minarets designed to thwart drone attacks and buildings with the ability to confuse heat signatures. Trevor Paglen painstakingly observed and recorded 1,400 secret 'black' military satellites in geostationary orbit and became a whistleblower for orbital space.

Figure 45 illustrates initial cataloguing of camouflage and hiding strategies designed to make aerial surveillance technologies less perceptive.

44

Above Ground Level: 18 km. 79 km. 408 km. 35 786 km



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Fig.41-2: Fake plastic spy trees were constructed by military forces as observation posts during World War I.



Fig.43: World War I battleship in 'dazzle camouflage' used to distort the speed, heading, and scale of the ship.

Above Ground Level: 18 km, 79 km, 408 km, 35 786 km



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Fig.44.: Manufacture of papier mache fake sniper heads made from Plaster of Paris (Imperial War Museum).

Above Ground Level: 51 18 km, 79 km, 4<u>08 km, 35 786 km</u>

Fig.45: Catalogue of techniques for evasion of surveillance technologies (expanding.)







Fig.45 (b): Catalogue of techniques for evasion of surveillance technologies (expanding.)

ambiguously shaped prosthetic (6) Use ambiguous shapes to avoid recognition. \sim 7 Move fast. insulation _ (8) Confuse thermal scans with false heat signatures.



54



1783 First 'modern' hot air balloon flight in Annonay, France by Montgolfier brothers. Fig.46-7 (left): The hot air balloon illustrates a historical trajectory which was relatively commonplace prior to the first world war. It was the first technology to limit the 'ad coelum doctrine' when in 1815, an English judge claimed that trespassing airspace which was of no practical use to a property owner would not infringe on their rights.

Fig. 48: Simultaneously, radical French architect Ledoux conceived of an airborne cemetery where bodies occupy the airspace above Chaux–suspended in the air with no visible support like hot air balloons.



1794

Battle of Fleurus: Reconnaissance balloons first used by French.

Lord Ellenborough:

"if this board overhanging the plaintiff's garden be a trespass, it would follow that an aeronaut is liable to an action of trespass quare clausum fregit, at the suit of the occupier of every field over which his balloon passes in the course of his voyage. Whether the action may be maintained cannot depend upon the length of time for which the superincumbent air is invaded. If any damage arises from the object which overhangs the close, the remedy is by an action on the case. Here the verdict depends upon the new assignment of excess in cutting down the tree."

1815 Pickering v. Rudd.




1900

Luftschiff Zeppelin LZ1 made its first flight on Lake Constance in Germany. (Developed by German military.) Germans make balloons for Americans as part of WWI reparations. Fig. 49 -50 (left): The zeppelin represents the first major airborne technology invented by the state. It was developed by the German military and used for offensive tactics including surveillance during World War I. Immediately after the war, the 1919 Paris convention recognized the rights of sovereign nations to control the airspace above their territory.

Fig.51 (right): A frontispiece for a book by Moses King published during this period depicted zeppelins and elevated roadways in a futuristic vision of New York. Private citizens could use vertical space in the city for daily transportation.



1914-18 WWI: German military made extensive use of Zeppelins as bombers and scouts, killing over 500 people in bombing raids in Britain.

1919

Paris Convention

First international convention to address the political difficulties and intricacies involved in international aerial navigation. It recognized the rights of sovereign nations to control the airspace above their territory. "The contracting States recognize that every State has complete and exclusive sovereignty over -the airspace above its territory."





Wright Brother's flight.

Fig. 52-3 (left): The Italian invasion of Libya in 1911 represented an increase in the severity and scale of air warfare which ushered in a new type of warfare in the skies. This led to Air Navigation Acts in Great Britain which created the first restricted air spaces and placed further limitations on foreign aircrafts flying above British land and water.

Fig. 54 (right): This influenced Russian Constructivist Architect Georgy Krutikov who proposed airborne communes flying above the city with mobile living pods containing every human comfort.



Italian invasion of Libya.

1911-13 1911, 1913 Air Navigation Acts (Great Britain)

Stated Great Britain's right to set up prohibited areas in its territory over which no foreign aircraft might fly and to control the terms under which such foreign aircraft might enter the airspace over its land and waters.



61



1957 Soviet Union launches Sputnik 1

Fig. 55-7 (left): The development of Sputnik by Russia and the resultant Space Race led to accelerated developments in airborne technology and furthered the establishment of a dromocracy. As Virilio notes, "there is not democracy, only dromocracy; there is not strategy, only dromology."

Fig. 58 (right): Polli of Superstudio described Interplanetary Architecture as a scheme to move valuable masses from the Earth to Outer Space and to give people a chance to start over in outer space, leaving the earth only for the extraction of natural resources. Superstudio [ironically] advocates for a dromology working to benefit the masses.



1957-75 Cold War/ Space Race



1967 Treaty on Principles Governing the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies





1916

Hewitt-Sperry Automatic airplane developed for the US Army and controlled by radio. It became known as 'the flying bomb.'



2001

United States Air Force (USAF) attempts killing of Taliban Supreme Commander Mullah Muhammad Omar in first remotely-piloted lethal drone strike.



SPECIAL PLIGHT OPERATING CERTIFIATE (SPOC) APPLICATION Arryon Scont UAS Annual Applection

The March 2010



Strategy and St

2007

Transport Canada begins to require licenses (Special Flight Operating Certificate) for UAVs flown in national airspace over a specific weight. Fig. 59-61 (left): The development of the drone has been driven by private contractors working for the US Military. Drones evolved from remotecontrolled technology such as reconnaissance satellites and use surveillance technology to navigate autonomously. Recent developments in drone technology have made them smaller, less detectable and able to operate for longer durations on renewable energy sources.

Fig. 62: Liam Young's film "in the Robot Skies" focuses on the transgressive behaviors of two teenagers kept apart by police who send messages to each other with hacked drones.



CBCNEWS

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Ontario police defend use of drone cameras over protests

Number of SFOCs Issued by Transport Canada



Fig. 63: The Ontario Provincial Police have been using drones to surveil protestors and for drug trafficking investigations (Bowman.) The superimposed graph illustrates the increase in Special Flights Operations Certificates (SFOCs) issued since 2012 and projects increases based on a linear projection to 2023. Flying drones in Canada requires obtaining a license which can be a laborious and expensive for individuals. However there has been a sizable increase in Special Flights Operation Certificates obtained by the government and by corporate actors. This creates a privileged class of operators in our air space. The aerospace industry is the top R&D stakeholder among all Canadian manufacturing industries, with investments totaling \$1.7 billion in 2017.





Fig. 64: Photogrammetry technology study. Twenty low quality images were able to produce a three dimensional model using Agisoft's Photoscan software. Movement and low contrast elements produced inaccuracies.

68

Precedents





High Houses Lebbeus Woods [Fig. 68]



75

Blur Building Diller Scofidio [Fig. 69]







Speleological Pentograph Smout Allen [Fig. 71]





Above Ground Level: 18 km, 79 km, 408 km, 35 786 km



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Above Ground Level: 18 km, 79 km, 408 km, 35 786 km

83

Proposal for the exterior of the spacecraft Mir Galina Balashova [Fig. 77]

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84

Above Ground Level: 18 km, 79 km, 408 km, 35 786 km

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Étienne-Louis Boullee [Fig. 79]

(2)



Prelude to AGL



The Earth's Dimensions

94 18 km, 79 km, 408 km, 35 786 km

Earth Scale 1 / Fig. 82 1: 60 000



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96 18 km, 79 km, 408 km, 35 786 km

Earth Scale 2/ Fig. 83 1: 700 000



[ozone layer]



98 18 km, 79 km, 408 km, 35 786 km

Earth Scale 3/ Fig. 84 1: 2 000 000


100 18 km, 79 km, 408 km, 35 786 km

Earth Scale 4/ Fig. 85 1: 40 000 000



The spaces above us are inaccessible. Yet, since Ancient Times, humanity has been fascinated by what exists beyond our reach.

Now that the rich and powerful have occupied air space and tried to bend it to their will, only they can exist in this space. Gravity works to their advantage.

Information dominance happens out of our sight and consciousness. The Earth's elite reach through the atmosphere and into outer space, reclaiming extratoerritories for their benefit.

The Blue Marble is a shared vision of the Earth. The Blue Marble ideal is a falsity spread through airwaves owned and operated by the technosupremacy.

> Blue marble/ Fig. 86 nts



1 [18 km AGL] Stratosphere *Migrant Floatilla*

2020



Fig. 87.

Brexit. Border wall construction commences on the US-Mexico border. Trump is re-elected in 2020.

2022

Countries in Sub-saharan Africa, South Asia, and Latin America experiencing high levels of population growth and extreme climate change events see increasing levels of mass migration.

2026

Western countries continue to block climate migrants at borders which result in large refugee camps at international borders. **2028** The EU is completely dismantled due to the threat of climate refugees entering its borders.



2030

The Canada-United States Safe Third Country Agreement is dismantled.

UNHCSS The UN Agency for Climate Safety

2035

Anticipating the number of climate migrants, the UNHCSS (United Nations High Commission for Climate Safety) is formed.

() 2039

The UNHCSS begins to secretly distribute the Climate Refugee Flying Machine at border camps.

2042

The Climate Refugee Flying Machines are used widely by refugees until teleportation is possible. The first episode occurs in the stratosphere, at approximately 18km above ground level. 18 km represents the Armstrong Limit, the height above which humans cannot survive in an unpressurized environment.

The stratosphere is home to a long history of technologies designed to evade legal and technological classifications, often marketed as weather balloons. These 'pseudo-satellites' take advantage of layered wind patterns in the stratosphere, where each wind layer moves in a different speed and direction. Balloons are able to accelerate or decelerate and change direction by moving up or down onto carefully monitored currents—essentially sailing the winds.

Pictured here, is a visualization of Alphabet's Project Loon; which purports to launch a network of balloons into the stratosphere. Alphabet claims they will provide Wi-Fi to remote areas of the world—however, the full contents of the balloon's payload remain unknown. Is it a satellite, a balloon, or a drone?

The Loon thrives in this physical, legal, and technological grey space.

Fig. 88 nts



 Above Ground Level:

 109
 18 km, 79 km, 408 km, 35 786 km

At Okm AGL, the world's most vulnerable climate migrants are forced to navigate sovereign border restrictions and their movements remain highly visible and monitored. The UN predicts that by 2045 there will be 135 million migrants fleeing only due to desertification (United Nations Convention to Combat Desertification).

> Fig. 89 nts



According to the 1951 UN Convention on the Status of Refugees, Climate migrants are not officially recognized as refugees, unless an armed conflict is somehow triggered (Palmer, 2015.) This results in a condition wherein those fleeing the adverse effects of climate change are not entitled to protection, as they are unable to claim asylum.

While corporations responsible for the world's largest emissions contributions are able to operate in legal grey space and reap the benefits of globalization, refugees bear the brunt of national border restrictions.

The migrant floatilla envisages a post-Brexit future where wealthy countries experiencing growing waves of nationalism actively turn all migrants away at land borders.

The floatilla is a system designed and distributed by a grassroots UN agency–UNHCSS (United Nations Climate Safety Agency) which can no longer cope with the demands of growing populations of climate refugees. They choose instead to supply refugees with the same agency as a private corporation.

> Fig. 90 nts



Êtes-vous susceptible de devenir un réfugié climatique? هل تشمر أن من الإمكان أن تلجأ لبلد أخرى هربا من الطقس أو المناخ؟ Are you susceptible to being a climate change refugee? Es Usted susceptible a ser un refugiado por el cambio climático?



18 km, 79 km, 408 km, 35 786 km 113

> Migrant floatilla is a product which can be purchased or distributed in case of catastrophic climate change, and the resultant collapse of border treaties. It allows users to transgress borders in a safe and discrete manner.

> > Loon balloon with migrant payload/ Fig. 91 1: 100







18 km

SOLAR PANEL GPS TECHNOLOGY RADIO TECHNOLOGY *FULL PAYLOAD CONCEALED BY CORPORATION

Above Ground Level: 115 18 km, 79 km, 408 km, 35 786 km

> Each pod is outfitted with a system which is able to mix liquid nitrogen and hot water in order to produce camouflaging clouds when hiding from nearby devices with surveillance payloads, as well as provisions for twenty days in the stratosphere.

> > Plan of Loon balloon above Kutupalong Refugee Camp / Fig. 92 1: 10



117 18 km, 79 km, 408 km, 35 786 km

> Each pod is outfitted with a system which is able to mix liquid nitrogen and hot water in order to produce camouflaging clouds when hiding from nearby devices with surveillance payloads, and provisions for twenty days in the stratosphere.

> > Section through migrant pod/ Fig. 93 1: 20



10

11 12

13 ′

119 18 km, 79 km, 408 km, 35 786 km

Migrants are provided with a map which allows them to follow wind flows on latitudinal lines as they travel freely to their desired destinations.

> Reccommended migrant routes / Fig. 94 nts



40

30°N

20°N

10°N

 \cap

121 18 km, 79 km, 408 km, 35 786 km

The UNHCSS provides basic tools and food provisions—usually local food supplies and fuel sources that are cheap and readily available.

> UNHCSS Manual/ Fig. 95 nts





2 [79 km AGL] Ionosphere *Lead Cloud*
2021

A group of Chinese technoaivists decide to control the dissemination of their personal information from state power.

CHINA DAILY

ower

2024

The group begins to collect lead from cell phones when they are delivered to Guiyu, China in order to make lead machines.

2026 The group publishes their manual and constituents from around the world begin to make their own machines.

() 2030 Solar maximum. Solar flare allowed to temporarily interrupt radio service by lead cloud.

2033 own lead machines.



As facial recognition software is adopted by more governments, citizens around the world build their 2041 Solar maximum. Solar flare allowed to temporarily interrupt radio service by lead cloud.

(+7

The second episode occurs in the ionosphere, 79 km above ground level. The ionosphere is charged by solar and cosmic radiation which is ideal for reflecting and transmitting radio-based communications. From Earth, this results in radio stations used for transmitting codes to spies internationally known as shortwave radio stations.

These stations have been active since World War I and still operate today in countries such as the USA, Canada, Russia, China, Cuba, and Japan. Long periods of static, songs, and strings of number sequences can still be heard on shortwave radio. Governments have been attempting to biohack this ecology in order to increase their signal strength by artificially ionizing the atmosphere (see: Russia's Sura Ionospheric Heating Facility.)

> Lead Cloud Plan/ Fig. 98 1:5000



Above Ground Level: 18 km, 79 km, 408 km, 35 786 km 130

> Lead cloud investigates inequalities in the global supply chainspecifically disparities between sites of resource extraction and consumption-and how these are reflected in the ionosphere. In countries such as India, China, Ghana, and Indonesia, resources are illegally dumped by Western countries where they are handpicked for minerals by informal ewaste processors. This increases disparities in health and spatial justice between the developing and developed worlds.

> > Resource Extraction Cycle/ Fig. 99 nts





 Above Ground Level:

 132
 18 km, 79 km, 408 km, 35 786 km

In 2021, a group of ewaste workers in China transgress the state's military-surveillance complex by sending miniature lead machines into the atmosphere, creating lead clouds. As facial recognition software is adopted by other governments, a worldwide coalition of citizens work to create these clouds.

> Lead Cloud at solar minimum/ Fig.100 5:1



Above Ground Level:

134 18 km, 79 km, 408 km, 35 786 km

The lead cloud's components are assembled from 12mg of lead picked from a common cell phone, ineffective and undetectable as individual constituents, but capable of changing an ecology as an assemblage.

> Lead Cloud components and source parts/ Fig.101 10:1



Above Ground Level:

136 18 km, 79 km, 408 km, 35 786 km

By blocking solar waves, lead machines are able to scatter ionized clouds—thereby decreasing the state's signal strength.

Fig.102 nts

The New York Times

WORLD NEWS

E-waste Workers Weaken Ionosphere, Demand Environmental Rights

By ANNA KISSELGOFF

Indonesian police authorities are responding to calls from the International Telecommunications Union after an ITU employee claimed that he saw a black cloud hovering above his ranch.

Authorities suspect that this cloud is composed of a signal blocking material designed to weaken magnetization in the Ionosphere. Similar claims have been made recently in Ghana and China, although government officials have declined further comment.

Last month, an anonymous employee of the Chinese government claimed that state officials suspect that e-waste workers in Guiyu have been launching small devices into the Ionosphere, although there is no corroberation.

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State authorities in China suspect balloons used as launching devices.



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 Above Ground Level:

 138
 18 km, 79 km, 408 km, 35 786 km

The balloons reclaim sites of extraction and waste by displacing lead 79 km into the ionosphere, where global power operates.

Every eleven years at the solar maximum, the cloud components transition into a vertical position in order to allow naturally occurring high solar flares to interrupt radio service.

> Lead Cloud at solar maximum/ Fig.103 5:1





3 [408 km AGL] Lower Earth Orbit Space Treaty 2037

STOP TRUMP'S NUCLEAR ARMS RACE

2030

2018 Donald Trump

establishes Space Force as a new branch of US Armed Forces.

*: 2020

The core module of the Chinese Space Station, Tianhe-1 ("Harmony of the Heavens") is launched.

2024

International Space Station is decommissioned. Russia separates its modules from the International Space Station.

2025

2030 Roscosmos (Russian Space Agency) establishes its own space station.

SPACE WAR

2034

International coalition of Humanitarian Aid workers sent to orbit. Space objects fused together. **2037**

Art objects sent into space as per the 2037 Outer Space Treaty. The third episode occurs at 408 km above sea level—in the Lower Earth Orbit. The Lower Earth Orbit's relative proximity to the Earth's surface makes it ideal for mass surveillance. Satellites at this height are cheaper to operate and can be controlled from the ground, or by satellites operating in higher orbits. Paul Virilio refers to LEO as the Earth's cosmic dustbin.

The Lower Earth Orbit contains many smaller orbits which increases the chance of collision with other objects, and especially with space junk which can strike at speeds up to 57 600 km/hr. The Kessler Syndrome increases the potential scale of this destruction.

This future begins when the International Space station is decommissioned in 2024. Space stations for Russia, China, and the US have quietly been under construction. Donald Trump's Space Force furthers American imperialism in space. By 2030, the 1967 Outer Space Treaty is considered archaic, and international cooperation in space ends.

> ISS dismantling in 2024/ Fig.106 1:1000



An all-out war for resources in space ensues—increasing the probability of the Kessler Syndrome. The Kessler syndrome is an increasingly likely scenario in which space junk crashes into a satellite, and thus produces more debris to become part of an ever-growing spiral that inevitably makes it almost impossible to safely launch into space or satellite orbit (Futurism, 2013).

When the war finally ends in 2034, the clearing of space debris is made more complicated by Article 8 in the 1967 Outer Space Treaty which maintains the launching State's jurisdiction over objects it has launched into orbit (United Nations Office for Outer Space Affairs, 1967).

The Space War accelerates the violence and technological innovation between the three nations. Eventually, all three space stations are mutually destroyed. By 2045, lower earth orbit is a minefield of weapons and surveillance technologies. The uneven terrain of the earth's gravitational field makes the trajectories of space junk unpredictable and collisions occur-threatening remaining satellite infrastructures. An international coalition of humanitarian space workers are sent to disassemble floating weapons. Distinguishing the national origins of space junk heaps is a difficult and costly endeavor, and with public pressure brewing, aid workers decide to abandon the last vestiges of the 1967 treaty-permanently welding together space junk from various jurisdictions.

> ISS post-war reassembly/ Fig.107 1: 800





 Above Ground Level:

 149
 18 km, 79 km, 408 km, 35 786 km

In an attempt to reestablish international cooperation in space, a new treaty designed to protect international infrastructures sends humanity's most valuable artifacts into Lower Earth Orbit, where they will be preserved in dust-free space capsules and can be watched via live feeds from earth.

> Post-treaty Galleria dell'Accademia/ Fig.108 nts



Above Ground Level:

18 km, 79 km, 408 km, 35 786 km 151

> The 2037 Space Treaty uses as its model 'The Spoils of War World War II and Its Aftermath: The Loss, Reappearance, and Recovery of Cultural Property' Symposium which took place in New York City in 1995. Treaty Object no.1 live feed/ Fig.109 nts



Above Ground Level:

153 18 km, 79 km, 408 km, 35 786 km

Humanitarian space workers are selected to stay aboard the new stations in order to guard the works; and to continue to consolidate space junk to their objects as they travel through orbit—essentially becoming part aid worker, and part space prospector.

Plans of Michelangelo's David in Treaty Object and Galleria dell'Accademia/ Fig.110



 Above Ground Level:

 155
 18 km, 79 km, 408 km, 35 786 km

The value of space is thus made tangible through the displacement of a cultural object 408 km above the earth's surface. With the object, humanity's gaze is extended into space where it can monitor the decisions of governments and megacorporations.

> Sections of Michelangelo's David/ Fig.111 1:100



 Above Ground Level:

 157
 18 km, 79 km, 408 km, 35 786 km

Space Treaty 2037 asks whether the displacement of culture from the Earths surface can work to highlight environmental loss or imbalances in power—and explores the role of architectural space—both suspended and grounded—in telling these stories.

Aid worker in treaty object no. 1/ Fig.112 1:250





4 [35 786 km AGL] Geostationary Orbit *Blue Origin II*

2045 China commences construction on the first space elevator. Billionaires

immediately purchase remaining GSO slots.

() 2048

Jeff Bezos dies at the age of 84, is cryogenically frozen, and placed into his GSO tomb with his most valuable possessions.

2051

Space tourism opens for Jeff Bezos' ark, and begins to collect tariffs from tourists.

2059 Colonization on Mars of proven viable.

2060

() 2063

Bezos is unfrozen and travels to Mars. His ark detaches from the space tether and catapults into space.

2065

Global warming projected to reach 3oC above pre-industrial levels.

The fourth episode, Blue Origin II, investigates the flight of the rich and powerful from the Earth's surface into interplanetary space. The Geostationary Orbital Belt is located approximately 36,000 km above ground level. This belt operates directly above the equator at the Earth's speed and is ideal for telecommunications satellites as they do not have to rotate their antennae to communicate with Earth stations.

Operated by the International Telecommunications Union, the Geostationary Orbit is the most valuable real estate in the Earth's orbital space–containing only 1800 available slots. Future space elevator anchors will also be positioned in GSO due to its geosynchronous position. Pictured here, are the Geostationary orbital slots divided by the number of billionaires from the world's richest countries.

> Redistribution of GSO slots by billionaire/ Fig.115 nts



"...the elites have been so thoroughly convinced that there will be no future life for eveyone that they have decided to get rid of all the burdens of solidarity as fast as possible- hence deregulation; they have decided that a sort of guilded fortress would have to be built for those (a small percentage) who would be able to make it through - hence the explosion of inequalities; and they have decided that, to conceal the crass selfishness of such a flight out of the shared world, they would have to reject absolutely the threat at the origin of this headlong flight - hence the denial of climate change."

Bruno Latour (p.18, 2017)

Bruno Latour draws a direct link between the elite's fascination with interplanetary travel and the dissemination of consumer culture and climate change denial. Blue Origin II represents the next phase in Amazon CEO Jeff Bezos' luxury space company Blue Origin. It occurs in a future where anticipating the total destruction of the earth by climate change, billionaires (Bezos included) decide to cryogenically freeze themselves in geostationary orbit.

Billionaires are already working to cure aging through ventures such as Alphabet's billion dollar company, Calico. Cryogenic tombs in Geostationary orbit have two advantages: first: they will allow ageing billionaires to avoid orbital and environmental decay, and second: billionaires are able to monetize their space arks by using them as anchors for space elevators, collecting tariffs until the colonization of Mars is proven viable.

> Billionaire space elevator tombs/ Fig.116 nts



SLOT #989 CHARLES KOCH COUNTRY OF ORIGIN: USA NET WORTH: \$51 BILLION USD D.O.F. 2021 PLACE OF FREEZING: SCOTTSDALE, AZ SEX: MALE COLOUR: WHITE



One such geostationary tomb is Blue Origin II, an ode to Amazon's geodesic spheres, Boulee's cenotaph for Newton—and a shrine celebrating all things Bezos.

"The disparity of wealth in the United States will create a "class of immortal overlords. Because I'm a billionaire, I'm going to have access to better healthcare so... I'm going to be, like, 160 and I'm going to be part of this class of immortal overlords."

-Sean Parker [Former Facebook President at Cancer Innovation Conference] (Loudenback, 2017)

> Section through Blue Origin II/ Fig.116 1:10 000



Each satellite chamber reflects the most innovative headquarters of each billionaire on Earth so that private citizens accessing space can appreciate shrines to the Earth's largest industries. Bezos' tomb is anchored at the monument to the middle of the earth in Ecuador. Sitting directly above, his golden head splits the northern and southern hemispheres.

"Blue Origin believes that in order to preserve Earth, our home, for our grandchildren's grandchildren, we must go to space to tap its unlimited resources and energy."

-Blue Origin Website, 2019

Space tourist view of Blue Origin II Interior/ Fig.118 nts



Above Ground Level: 18 km, 79 km, 408 km, 35 786 km

172

Bezos' golden head tomb is surrounded by a Californian eden of palm trees to remind space tourists of his silicon valley routes. His head, nature perfected in his own image, contains nutrients, weapons, and embryos to ensure his future success. His nostrils contain jet propulsion packs to aid in his imminent escape into interplanetary space.

> Section through Blue Origin II Cryogenic Chamber Fig.119 1:1000



1. CRYOGENIC CHAMBER
 2. MUNITIONS STORAGE
 3. VALUABLE BELONGINGS
 4. MISSION CONTROL
 5. REPRODUCTIVE STORAGE
 6. NUTRIENT TANK
 7. AIR FILTER
 8. PROJECTION MACHINE
 9. ROCKET PROPULSION
 10. FUEL STORAGE

Above Ground Level: 18 km, 79 km, 408 km, 35 786 km

174

Like its predecessor, Blue Origin II believes in manufacturing new luxurious technonatures fit for billionaires. The technological elite deserve better than the spoiled and polluted planet Earth.

> Plan of Blue Origin II/ Fig.120 1:20 000







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