

Dromology AC

Technology is not inherently negative, but it always contains a **potential** for accidents. While accidents before were smaller, acceleration in capitalism increases the probability and severity of accidents to create the information bomb, the accident of the internet waiting to happen. Previously, we had enough time to deal with the risks of technology, but in an age of constant speed, the potential for accident only grows in magnitude.

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The accident, in Virilio’s philosophy, is the negative potentiality inherent in every technological system. If the history of technoscientific innovation is conventionally understood as a progressive lineage, in which human capacities are incrementally augmented, enhanced and extended, then Virilio is determined to highlight the

fact that **every such advance necessarily brings into existence, as its ineradicable shadow, new risks , dangers and threats.** As he puts it in conversation with Sylvère Lotringer in *Pure War* (2008):

Every technology produces, provokes, programs a specific accident. For example: when they invented the railroad, what did they invent? An object that allowed you to go fast, which allowed you to progress – a vision à la Jules Verne, positivism, evolutionism. But at the same time they invented the railway catastrophe. (PW, 46) The accident, then, is central to Virilio’s sceptical approach to technology. The roots of Virilio’s notion of the

accident lie in the philosophy of Aristotle. Whereas in Aristotelian metaphysics, however, ideas of the accident concern that which is secondary, relative, contingent or – precisely – **accidental, in Virilio’s ontology the potential for the accident**

is a necessary and essential property of any object or process. Similarly, Virilio fully mobilises the term’s connotation of a destructive malfunctioning – a malfunctioning that is also, at the same time, the realisation of the phenomenon’s true character: The word accident, derived from the Latin *accidens*, signals the unanticipated, that which unexpectedly befalls the mechanism, system, or product, its surprise failure or destruction. As if the ‘failure’ were not programmed into the product from the moment of its production or implementation. (Virilio 1993 [1982]: 211–12; emphases in original) More idiosyncratically and

contentiously, perhaps, Virilio’s conception of the accident also draws on his ‘Judeo- Christian religious background’ (he is a practising Catholic): ‘it is obvious to me’, he remarks, ‘that one must link any definition of the accident to the idea of original sin [. . .] [T]his idea of original sin, which materialist philosophy rejects so forcefully, comes back to us through technology: the accident is the original sin of the technical object’ (Virilio

1998b: par. 8). While **'[e]very technical object contains its own negativity'** (1998b: par. 8), however, **its destructive potential may be anything from negligible to cataclysmic.** One of Virilio's

key claims is that the scale of the accident has vastly expanded in the period since the Second World War. **Earlier accidents, such as those spawned by the 'transportation revolution' of the nineteenth and early twentieth centuries, while often devastating, nonetheless remained 'localized in space and time: a train derailment took place, say, in Paris or Berlin; and when a plane crashed, it did so in London or wherever in the world' (Virilio 1996b: par. 2). In a radical break, however, the advent of the atomic age at Los Alamos and then – catastrophically – at Hiroshima and Nagasaki materialised on the horizon as the prospect of an 'integral', 'generalised' or 'global' accident that would '[take] place somewhere' but 'might destroy everything' (Virilio and Armitage 2001a:**

32), for the horror of radioactive fallout lies in its unfurling of a shroud of sickness and death across vast expanses of terrain. **It is not only the development of atomic and nuclear energy and weaponry that 'makes the accident global', however, but also 'the revolution of instantaneous transmissions brought about by telecommunications' (Virilio 1998b: par. 2). 'To invent the electronic superhighway or the Internet,' Virilio claims, 'is to invent a major risk which is not easily spotted because it does not produce fatalities like a shipwreck or a mid- air explosion. The information accident is, sadly, not very visible. It is immaterial like the waves that carry information' (Virilio 1999: par. 6). The 'information accident' or 'information bomb' is no less destructive for its invisibility and immateriality, however, as contemporary phenomena ranging from computer viruses to stock market crashes abundantly demonstrate.** Similarly, as

Steve Redhead notes, the new communication technologies such as satellite television mean that **a disaster such as the collapse of the World Trade Center in New York in September 2001 'was not simply a local, catastrophic event but a global "accident" shown "live" [. . .] around the world at the same moment' (Redhead 2004a: 4).** Virilio has proposed several responses to the pervasive presence of the accident in modern life.

First, as a self- professed 'critic of the art of technology', he argues that the **accident should simply be confronted and acknowledged as an integral dimension of technological modernity, rather than occluded, marginalised or dismissed**, as it is in progressivist narratives of technoscientific change. Second – and more pointedly and provocatively – he has called for the institutionalised examination 'of the havoc wreaked by progress' (OA, 25) in a university, laboratory or (most often) museum of the accident, a vision at least partly realised by the exhibition 'Ce Qui Arrive', which Virilio (UQ) co- curated at the Fondation Cartier pour l'art contemporain in Paris in 2002. As Virilio explains in The Original Accident: in order to avoid shortly inhabiting the planetary dimensions of an integral accident, one capable of integrating a whole heap of incidents and disasters through chain reactions, we must start right now building, inhabiting, and planning a laboratory of cataclysms, the museum of the accident of technological progress. (OA, 24) Finally, in a more pragmatic and interventionist vein, Virilio urges scientists and policymakers to strive at least to mitigate the dangers of the accident by learning the lessons of 'the previous development of transport technologies'. Whereas 'engineers of the 19th century [. . .] invented the block system [. . .] a method to regulate traffic so that trains are speeded up without risk of railway catastrophes', 'traffic control engineering on the information (super)highways is conspicuous by its absence' (Virilio 1995: par. 11). While the actual and potential accidents that face us today might be curbed, however, the logic of **Virilio's work makes**

it clear that – inherent as they are to our technological way of life – we will not rid ourselves of such accidents without relinquishing that way of life itself.

Fear of the accident, encounters with the other, and natural instincts of security create growing anxiety. In response, the capitalist elite, instead of waging wars elsewhere, turn inwards and colonize every moment of ordinary life. Endo-colonization employs technology everywhere to soothe the fear, yet never solves it. Fear of the accident is inevitable as more endo-colonization gives rise to more anxiety. This is the accelerationism of the modern world: where elites create a cycle of anxiety to control the populace.

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Virilio suggests that **in a ‘chronopolitical’ time – when weapons of destruction appear to have put an end to war between great powers – the ‘military elite’ turns its attention inwards, toward the individuals, ‘mobs’, networks and failed/rogue states that pose a threat to the order and security of liberal capitalist society.** This

can lead to an interpretation of his position – fuelled by some of his comments – in terms of **an ‘all-powerful’ military class that constantly finds new threats and enemies to maintain its position in society. I suggest that Virilio’s position points to many sources that push for the endo-colonization of society: the endocolonization of society is also driven by the citizenry’s desire for security, by the ‘ideology of security and health’ in what he calls a ‘trans-political’ condition (a time when politics is increasingly obsessed with the ‘basic instincts’ of security, health and consumerism); and endo-colonization is driven by the technologists and protection sciences that design new technologies of security.** Virilio suggests that **endo-colonization is made possible by a degraded political culture, a ‘democracy of emotion’ that is obsessed with dangerous otherness and difference, distorting our perception of insecurity. His comments on the democracy of emotion – and the ‘synchronization of affect’** – can be easily misinterpreted: Virilio could be interpreted as suggesting that politics and security

is increasingly driven by basic emotional responses that are circulated by all the media that surround us; on this view, the Bush administration was driven by emotion (anger, revenge) in its response to 9/11 – and we were carried along with emotion, our desire for revenge. I suggest that while this ‘synchronization of affect’ can ‘capture’ us – and there have certainly been moments when I have been captured by this synchronization of affect, the standardized responses to events circulated by different media – there are limits to this interpretation: states and militaries, simply put, might create policies that respond to the fears and emotions of the citizenry but there can be strategic, economic and ethical limits. I suggest that Virilio’s lines of inquiry on the synchronization of affect and the democracy of emotion require some clarification: as I suggest through an encounter with Félix Guattari’s writings on fascism and capitalism, capitalist states do not want collective emotions to get

out of control, to descend into the desire for unending war and fascism. What Virilio is suggesting **is a culture of fear dominates our sense of living with otherness and difference (the poor,**

immigrants, minorities): and this fear permeates our lives, our being-in-the-world. What Virilio is suggesting though his use of the concept of endo-colonization is this: states might not be concerned with conquering territory or distant populations but they are concerned with policing the messiness of a world order that is generating what Zygmunt Bauman calls the human waste of the global economy. And while we might have a fear of terrorists that can result in wars and the endo-colonization of society, the pervasive 'background noise' of post Cold War societies is a fear and anger toward those who are viewed as the mess and waste of contemporary life: this concern with policing the circulation of human waste and the 'dangerous classes' is one of the enduring

ethico-political concerns in Virilio's writing since the 1970s. Virilio has never bought into the optimistic liberal story of progress, of a world where technological innovation and the expansion of capitalism will improve the human condition on a global scale: it might create more and more spaces of the 'good life' around the planet but it will continue to produce populations that will pose problems for increasingly paranoid citizens/consumers. These fearful citizen/consumers will desire more endo-colonization, more technological solutions to the insecurity they feel.

Endocolonization is not simply a response to 'imaginary' fears (although fear and insecurity is distorted in the public sphere);

endo-colonization responds to the fragility and insecurity produced by the globalization of neoliberal, networked societies in the post-Cold War world. This

chapter introduces these themes with an optimistic story about the future of security, technology and global politics: the story provides a way of introducing and explaining the logic of Virilio's negativity about tendencies that underpin the propaganda of progress about the future of society.

The ever-present state in endo-colonial society marks the end of all individual choice. Think about how the Patriot Act was meant to make citizens more safe, but turned out to be a disguise for the state to infiltrate every living moment and surveille minorities.

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Virilio outlines the idea of endo- colonisation in Pure War (Virilio and Lotringer 2008) to explain the shift from traditional forms of external or 'exo-colonisation', whereby the state invades other territories, to a new form of intensive or endo- colonisation, where the state progressively attacks its own territory. In Virilio's thought, this shift takes place against the backdrop of processes of globalisation, which have seen modernity run up against the limit of

terrestrial space, so that there is nowhere else for the modern state to go, but to turn back upon itself and start to march into its own territory. Apart from this statist interpretation of endo- colonisation,

Virilio also offers a more general notion of the process of intensive colonisation related to the ways in which science and technology have run up against their external limit in processes of globalisation and have now started to occupy the human body itself. As Virilio argues in a conversation with John Armitage, the endo- colonisation of the human body by technology is an invasion and an attempted control of the body by technology (Virilio and Armitage 2001a: 42). However, the primary meaning of the idea of endo- colonisation remains the state's assault on its own territory and its own

population. To explain this process, Virilio starts by describing the idea of deterrence and the way this relates to the notion of total peace. In his view, **deterrence enables total peace through the creation of a permanent threat of war. The danger of war is always there and the population lives in a state of fear of the enemy.** For Virilio, **this is the military society, which entails the control of the population through the creation of fear and state intervention into their**

everyday lives. Virilio (PW, 106) points to 1970s' Cambodia and Pol Pot's Khmer Rouge regime, which waged war on its own population. In his view, Khmer Rouge Cambodia represented the suicide state par excellence and was a perfect example of what endo- colonisation means: the translation of external colonisation into a new internal form of colonisation, which involves the insinuation of state power into the everyday lives of the population. Apart from Cambodia,

however, the notion of endo- colonisation clearly has other applications. For example, **Virilio calls attention to Latin America, including countries such as Brazil, where state and society are militarised as laboratories of endo- colonisation. Here, Virilio's endo-colonisation resonates with Mike Davis's (2006) concept of the militarised society from his book on Los Angeles, City of Quartz, where military police power is deemed necessary to hold society together and to prevent complete chaos from breaking out. Indeed, in much the same way that Davis draws links between violence and economy in his work, Virilio also shows that deregulation leads to the creation of an armed state, which has to control the unruly masses.** Thus, the term 'deregulation' not only refers to economic deregulation in the neo- liberal economic sense of the term but also in its broadest social meaning, which is in many respects a consequence of the endo- colonisation of society

by the market. In other words, **Virilio suggests that society has become progressively deregulated as a result of the advance of modernity, capitalism and globalisation and that this has coincided with the inward turn of the state as colonial power. The irony of the process of deregulation is, therefore, that far from leading to a minimal state and more individual freedom, it actually produces a maximum state, which intervenes in every area of the individual's life to produce what Virilio (PW, 110) calls a 'state of inevitability'. Put another way, there is no sense of possibility in the endo- colonised society, since everything is now under the sway of inhuman market forces and disciplinary state control.**

However, this form of state control is of a very particular kind. Virilio is not a new right critic of the welfare state. On the contrary, he is supportive of the welfare state as representing a politics of lasting duration. For Virilio, the welfare state is about creating a sustainable society. By contrast, his view of the deregulated society is that it is a society of the instant and that it has no conception of time as extension, but, rather, regards time as entirely intensive. There is then no idea of duration in the deregulated society, but only ever a concern for the intensity of the instant, which can be made ever more 'productive', 'pleasurable', violent, etc. Thus, it turns out that it is not only the state that is endo- colonial, but also the market, which seeks to mine the instant for ever more

value. Against the twin forces of endo- colonisation, which are the disciplinary state and the market, Virilio tells us that **the citizen has no chance of escape. There is no social management of society. Citizens are not in control. Instead, they must face up to the hyper- centralisation of social management, of the market, and of the state and console themselves with the fantasy of self-management that this situation produces.** The problem with the fantasy of self-management, which Virilio finds in 'autonomous Marxism' (see, for example, Wright 2002), is that it is completely in line with the dualistic tendency of the endo-colonial process – the fragmentation of the social under pressure of deregulation and the concentration of power in the abstract forms of market and state. What this means is that it is clear that the turn to autonomy is by no means revolutionary when we consider that this is exactly how endo- colonisation works. It breaks the social apart and works on the individual, insinuating itself into their life, transforming them into a person who acts, albeit in line with market and state dictates. In this respect, Virilio's concept of endo- colonisation cannot help but remind the reader of Michel Foucault's (2010) theory of bio- power, which describes the way the state dominates the individual, and Louis Althusser's (2005) theory of 'interpellation', which similarly shows how the individual is constructed in ideology. For Virilio, **it is important that this endo- colonial process is understood, because it represents a form of systematic state terror and the rise of a kind of thanatological war machine committed to the destruction of true independence.**

I affirm the resolution: The appropriation of outer space by private entities is unjust.

The only solution to endocolonization is one of **Grey Ecology**, where we withdraw from systems of technology and **slow down** to distance ourselves from the Accident. This is the only survival strategy in the endo-colonial society, as we are no longer ruled by fear and anxiety, and have the time to process and test new innovations, not accepting them on face. Technology and fear has left us unable to relate properly to the world, so all that is left to perceive is **the end of the world**—when we cannot comprehend anything about the natural world, all we can understand is its destruction.

Reid 13 [Julian Reid, (Julian Reid is Professor of International Politics at the University of Lapland, Finland.) "Grey Ecology" in "The Virilio Dictionary" Edited by John Armitage, 5-31-2013, <https://global.oup.com/academic/product/the-virilio-dictionary-9780748646838>, DOA:12-24-2018 // WWBW recut]

Grey ecology is best understood as Virilio's alternative to green ecology. Green ecology refers to the sciences and movements oriented around the problem of the pollution of natural environments on which living organisms rely for their wellbeing. **Grey ecology is concerned with the pollution of the self- created environment of the specifically human organism, its cosmos and culture, without which humans are no longer human. While green ecologists are generally concerned with the question of how to save the planet, the question for grey ecologists is that of how to save the humanity of human beings. Virilio's Open Sky (1997 [1995]: 60) criticises green ecologists for their failures to recognise the pollution not simply of the natural environment, but of human culture and the human cosmos, caused by forms of scientific and technological 'progress',** especially the 'empire of realtime communications' he associates with the information-communication revolution and phenomenon of globalisation. Likewise, Virilio argues that the ecological crisis with regard to the security of the natural environment is itself only understandable on account of the more profound crisis in the human environment. The temporal contraction or foreclosure that determines the process of globalisation, achieved through the ongoing acceleration of reality established by new technologies of information and communication, has functioned, according to Virilio's Grey Ecology

(2009b: 50), to pollute the sense of distance between the human and its world that humanity relies on for its creative strength. The lack of effort required in teletechnologies for hearing, seeing and acting at a distance destroys our sense of the vastness of the world, a precondition of our ability to have meaningful experience of the world, and without which our perception of the very nature of the world and what is entailed in being in the world becomes debased. Instead of being situated in the world, moving from place to place, as well as being moved, animated, desiring and loving elements of the world around us, we are delivered over to a condition in which all we perceive is the end of the world. While this end is fundamentally temporal it is also phenomenological. 'Everything is déjà vu or at least déjà explore: been there, done that' (OS, 65). What is polluted, therefore, in the context of the ongoing ecological crisis, is not simply the natural environment, but the relation with the geophysical environment on which we rely in order to be able to create new ways of living (politics). We have exhausted not only the sense of distance of the world but also the time of the world, without which we lose all sense of the future. Without a sense of a future, which emits from the experience of distance, we will not be able to find a way out of the ecological predicament, or, literally, the 'end of the world', because we are faced with an era of apparently apocalyptic processes. This 'end of the world' condition that now haunts humanity emerges from its false understanding of what constitutes the conditions for the development of human strength and security. The predicament of human subjection to the ecological crisis results from the hubristic desire of the species to master its world; to conquer and exploit it, most significantly through technological and scientific endeavour. Overcoming this predilection for mastery requires humanity to recognise its fundamental humility in relation to the world, and, just as significantly, the 'finitude', both of humanity and of the world it inhabits. To recognise the finitude of the world is not simply to acknowledge that the world will end, Virilio argues, but also to recognise that we will have to learn to live after 'the end of the world'. Accepting the finitude of itself and the world gives, paradoxically, both the human and its world a future. It allows us to survive 'the end of the world' by recoiling from that end. It is a different kind of security device from that which has previously driven the history of human progress. Finitude is the ineradicable condition of (human) being, which elicits its resistance to the spatial-temporal contraction that threatens it. Facing the truth of its finitude and fundamental humility in relation with its world means that humanity must cast off the false faith in technoscientific 'progress' that has driven its historical development, the subsequent colonisation of time and space, and the establishment of the end of the world. Facing finitude allows the human to confront the end of the world and discover another path beyond it. This act of facing finitude can only occur, Virilio argues, in the form of revelation: 'Grey ecology is revelatory' (GE, 43). Its purpose is to open us up to a new way of thinking and living. A way of thinking that will allow us to 're-civilize science', by making it come to terms with its exterminating dimension (GE, 47). Most especially, it requires us to address the militarisation of science that accounts for the exterminating dimension. Grey ecology exists in this sense in a necessary conflict with military intelligence and the art of war that has conditioned the technoscientific development of humanity. How we are to achieve Virilio's project of grey ecology remains an open question because we have not yet understood either finiteness or how to respond to its revelation. But the links that Virilio makes

between the grey and green ecological problematics that humanity is faced with and with the art of war are necessary starting points. For in establishing these links Virilio asks us to understand the extent to which the militarisation of science and technological progress have functioned as extensions of an art of war that operates not for but upon humanity. For in destroying its own relation with the world, humanity has

effectively waged war on itself, and, in doing so, is in the process of destroying itself. **The task now is for humanity to face that catastrophe, confront it in its reality, not simply in proclamation of horror at it, but in order to step back from it, evade and move beyond it, by recovering a distance from it. The pollution of distance is the problematic of grey ecology, and the development of distance its task.**

Appropriation of outer space accelerates the propaganda of progress, creating interconnectedness and technology to universalize the anxiety we feel from the accident. This is the information bomb: the Accident is now broadcasted everywhere, furthering public fear and refueling endo-colonization.

Estes 20 who does not agree with the terminal conclusion of the AC [Adam Clark Estes.

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<https://www.vox.com/recode/2020/9/26/21457530/elon-musk-spacex-starlink-satellite-broadband-amazon-project-kuiper-viasat>. Accessed 12-18-2021]

In early March, just days before cities across the US shut down due to the pandemic, **Elon Musk shared the latest details about his plan to build a satellite broadband service called Starlink. Speaking at a satellite conference in Washington, DC, Musk described how a constellation of Starlink satellites will "blink" when they enter low-Earth orbit. As described, they almost sound like streaks of glitter in the night sky, or magic bands of flying gadgets that can beam internet down to anyone on the planet. Combined with improvements to existing technology like DSL, cable, and fiber — not to mention 4G and 5G cellular networks — futuristic satellite broadband stands to bridge the digital divide in the US and elsewhere. And because the pandemic has prompted explosive demand for better, more widely available internet connectivity, fast progress seems more inevitable than ever.** Musk's new satellites went online in early September, giving beta testers download speeds that rival those of terrestrial broadband. SpaceX has now put 700 Starlink satellites into orbit in the past 16 months and has plans to deliver as many as 30,000 more in the next few years. More **satellites mean more bandwidth and faster speeds, and eventually, SpaceX says, its low-Earth orbit satellite constellations could deliver high-speed internet to the entire US. Amazon, Facebook, and several startups have made similar promises in recent years. The concept of satellite-based internet service is actually decades old. However, the innovative low-Earth orbit satellite technology being**

developed by SpaceX and others could be essential, if not transformative, for everything from telemedicine to remote learning in places that aren't already connected. Satellite broadband could also be very profitable for whichever company figures it out first. One could imagine Amazon using satellite broadband to boost its Amazon Web Services (AWS) business, or Facebook using it to ensure that more people get on its platform.

And if Musk gets his way, his Starlink constellations will generate billions of dollars in profits to fund his mission to colonize Mars. This all sounds futuristic, but satellite broadband is already a very real thing. In fact, if you've ever connected to wifi on a plane or cruise ship, you've probably used it. The basic idea is that ground stations connected to the internet, known as gateways, can send data up to a satellite which then relays that data to antennas somewhere else on the ground — or on a ship or an airplane. The problem with this technological feat is that it's all very expensive. It can cost hundreds of millions of dollars to launch satellites into space, and that's not even taking into account what it takes to get over regulatory hurdles. Plenty of companies have tried and failed to crack the business model in the past 20 years. But rather suddenly, the space internet game has changed. **"The Covid-19**

crisis has significantly accelerated attention to and investment in satellite technology," Babak Beheshti, dean of the College of Engineering and Computing Sciences at the New York Institute of Technology, told Recode. Beheshti added that the number of launches had gone up tenfold from last year to this year. "Why?

Because schools, local governments, and others suddenly needed to have broadband internet access in areas where there was really no infrastructure in place." This might sound like proof that satellite broadband is finally on its way to solving the digital divide, but the situation remains tenuous. As SpaceX started firing up its Starlink satellites, Amazon in July received approval from the Federal Communications Commission (FCC) to launch 3,236 low-Earth orbit satellites for a constellation of its own called Project Kuiper. Meanwhile, longtime satellite broadband industry leaders like Viasat can't seem to get new satellites into the sky fast enough to keep up with demand. And along the way, the federal government is pledging billions of dollars in subsidies to companies that bring broadband to rural America. In some ways, the dream of connecting everyone on Earth has never been closer. In other ways, it's hard to tell whether the latest innovative ideas will suffer the same pitfalls as those of years past. Satellite broadband, briefly explained Satellite broadband is exactly what it sounds like: **broadband**

internet access delivered via satellite. The basic idea hasn't changed much since the heyday of satellite TV in the late '90s when companies would beam internet connectivity to the same dish that received your HBO signal at speeds that were faster than dial-up but still slower than today's broadband. In 2020, there are two main ways companies deliver satellite broadband. The key difference between them is how high the satellites orbit. Geosynchronous satellites, which orbit about 22,000 miles above a fixed place on Earth's surface, is an older technology that companies like Viasat use for broadband connections. You've probably used this tech for airplane wifi. Then there are low-Earth orbit constellations, which are made up of hundreds, if not thousands, of smaller satellites that orbit between 300 and 1,200 miles above Earth. This is the approach that's getting all of the buzz lately, and the one SpaceX and Amazon are taking. Geosynchronous satellites are the more mature, more proven technology. Viasat and a company called Hughes, which is the former parent company of DirecTV, have been around for decades. (DirecTV actually used its dishes and infrastructure to offer a satellite internet service called DirecPC back in the late '90s.) Viasat and Hughes are also the two companies that most likely offer satellite broadband in remote parts of the US right now. If you're someone who lives in the New Hampshire wilderness, where there are no terrestrial broadband options, you can get a version of DSL, which operates on existing copper telephone lines, that's essentially as sluggish as dial-up. Or, you can sign up for geosynchronous satellite broadband through Viasat or Hughes and get speeds comparable to basic broadband: about 25 megabits per second. Plans start at \$40 to \$50 a month and get more expensive if you want more bandwidth. Though they are dependable, these geosynchronous satellite systems have some issues. The main one is latency. The satellites are thousands of miles above Earth's surface, so it takes time for data to travel — and that might mean a slight delay between sending and receiving. This isn't a problem if you're just browsing the web. It's a significant problem if you're trying to stream video games or do video calls, something we're all doing more than ever before. Just think about remote TV news correspondents who have to wait

half a beat between when the anchor in the studio asks the question and when they hear it in their earpiece, as the **signal travels**

up to a communications satellite and then back down to the surface. Low-Earth orbit constellations, like the ones SpaceX and Amazon are building, promise to solve the latency problem. Because the satellites are closer to the ground, the data doesn't have to travel as far. Musk says this means SpaceX's Starlink satellites, which will orbit at around 340 miles above the surface, will offer low latency, thus reducing the risk of lag. The latency question is a big deal to the FCC and its decision to hand out billions of dollars in subsidies, by the way. The agency says it will prioritize networks that offer low latency when giving out funding. Still, there are other unanswered questions about just how fast and dependable newly designed low-Earth orbit constellations will be. Unlike geosynchronous

satellites, which are fixed above one spot, low-Earth orbit satellites circle the planet every 90 to 120 minutes. **They're designed**

to stay connected to the ground station and to the end user by staying connected to each other, but if this chain gets broken, it would disrupt the connection. These constellations are also made up of thousands of relatively small satellites — Starlink satellites weigh less than 600 pounds — which means they require multiple launches, which are expensive. “As more satellites go up, they optimize the network architecture,” explained Manny Shar, head of analytics at Bryce Space and Technology.

“In the next couple of years, we should see decent improvements in rural areas where there’s really limited capability, and there’s limited competition to improve that. So at the very least, there will be an alternative option that those rural users can take advantage of.” Shar’s point about limited competition is an important one. Many parts of the United States, for instance, have access to slower DSL connections thanks to telephone lines, but because upgrading that infrastructure is so expensive, the telecom companies that serve those areas often have little incentive to do so. That leaves residents depending on a mix of poor wired connections and often spotty cellular networks. New technology like

5G could ostensibly bring faster cellular speeds to remote areas, but again, building that infrastructure takes time and money. **Satellite broadband, meanwhile, can beam fast, reliable, and potentially affordable internet access down to nearly anywhere on Earth.** This also requires time and money, but what we’re

seeing in 2020 is that the pandemic is attracting all kinds of investment in the technology, which means more satellites are launching. Both geosynchronous and low-Earth orbit satellite broadband systems have pros and cons. The former is already viable, albeit not perfect. The latter holds promise, albeit unfulfilled. But to reach that goal of connecting more people, it will all come down to money.

The Standard is embracing critical dromology.

Dromology is the study of speed, the pervasive and all-encompassing force behind modernity. Acceleration has infiltrated every facet of modern life to shape both our epistemic thought processes and our material realities. That necessitates a dromological analysis—only it can explain both the historical and epistemological basis for the spread of capitalism.

Ebert 13 [John David Ebert, (John David Ebert is an independent American scholar and author of five books) "Dromology" in "The Virilio Dictionary" Edited by John Armitage, 5-31-2013, <https://global.oup.com/academic/product/the-virilio-dictionary-9780748646838>, DOA:12-24-2018 // recut WWBW but recut]

From the Greek word dromos for ‘race’ or ‘racetrack’, **dromology is a science invented by Virilio for the study of speed and its impacts upon human cultural and technological systems. Speed, according to Virilio, exerts a number of transformative effects upon human culture, sometimes in very subtle ways, such as, for instance, the phenomenon of the gradual enclosure of the human individual inside the automobile as it moves ever faster, first with goggles, then with the windscreen and finally the complete enclosure of the body within the sedan.** Indeed, for Virilio, **speed is the decisive factor in human technological evolution. In Negative Horizon (2005a [1984]), he surveys the course of**

technological development, noting that there has been a gradual increase in speed throughout history, beginning with woman as the first pack animal to the mounted horse to the chariot and the road, and then onward to the automobile and the aeroplane. He points out that in the nineteenth century, a transportation revolution occurred which developed from the railroad to the automobile to the aeroplane, and that these technologies of relative speed tended to support industrial democracy. **The absolute speed achieved by the communications revolution, on the other hand, with the advent of electromagnetic technologies such as the telegraph, telephone, radio and TV tended to abolish the necessity for human physical movement and to reverse into the stasis of inertia of human individuals in their homes surrounded by the gadgets of their smart houses that provide so many services for them that they no longer have any need even to leave the house.** Virilio often points out the paradox of stasis resulting from the gradual increase in speed, as in the case of Howard Hughes, whom he discusses primarily in *The Aesthetics of Disappearance* (2009a [1980]), who spent the first half of his life rushing about the planet in his aeroplanes, only to end, in the second half, isolating himself in his hotel room from which he rarely ventured forth at all. **The effects of the transport revolution on military technologies, Virilio insists, have led to the gradual disappearance of the geostrategic battlefield,** so that the front is no longer to be found at the boundary of the territory, but wherever the vectors of mechanised transport are found. Where the mechanised vehicles are, there we find the state, for the country has today disappeared in the non- place of the state of emergency in which territorial space vanishes and only time remains. **Whereas in conventional warfare we could still talk about manoeuvres of armies in the field, today there is no field, since the speed of reaction time is so fast and the invasion of the instant now succeeds the invasion of the territory.** The countdown becomes the scene of battle now. **Reaction time and the time for political decision are reduced to nothing by nuclear deliverance. Today, speed is war. In *Speed and Politics: An Essay on Dromology* (2006 [1977]), where Virilio first developed the idea of dromology, he points out that the reason the West was able, through colonial genocide and ethnocide, to conquer other populations was because of its speed. It moved faster than these other societies because of its ever- increasing mastery first of the sea, then the rail, then the sky, etc. In *Negative Horizon*, he insists, furthermore, that because the Spaniards had the horse and the Maya had no pack animals other than women, this gave the Spaniards a dromocratic superiority which allowed them to conquer the Maya simply by their ability to manoeuvre much more quickly.** In *Speed and Politics*, he also points out how the increase in military speed has given preference to movement itself over the strategics of place, which has led to the disappearance of places themselves in what he calls 'vehicular extermination'. The strike power of the

navy in the 1940s, for instance, in which power was spoken of in knots gave way in the 1960s to machs with the advent of jet power. Geographic localisation has therefore given way to the speed of the moving body and the undetectability of its path. Furthermore, according to Virilio, it matters little whether what is sped up is information or physical objects, since in both cases it is the message of movement itself that is at issue. Acceleration, moreover, tends to produce accidents, since the faster a technology moves, the greater the likelihood that a crash of some sort will result. Dromological speed- up has affected both the realms of transport and of human data communications equally, for after the crashes attending the speed- up of rail and maritime accelerations comes the crashes of planes and cars, while after them, in turn, come the electromagnetic wave trains with their mediatic crashes of video and radio signals, in which news functions as what Virilio calls The Information Bomb (2000d [1998]). **Dromology is also tied in with Virilio's concept of the aesthetics of disappearance, since excess speed tends to correspond to a loss of information content. With the speed- up of war, as we have seen, the geostrategic front disappears, while the soldier himself disappears with camouflage. With the stealth bomber, the speed- up in flight has resulted in the actual disappearance into invisibility of the aeroplane off the radar screen. The increasing speed of the automobile leads, via the phenomenon of dromoscopy, to the impoverishment of the information content of its immediate milieu, which speeds past the observer and tends to take on a certain flatness in the process. Cities, too, are disappearing with mobile architecture and the rapidity of demolition of buildings that are not built to last for more than a dozen or so years. The speed- up in media, in addition, has led to the disappearance of deferred time, a kind of mental space in which thought could move about slowly enough to reflect upon the significance of events, into the advent of real time, in which events take place so fast that the mind cannot keep up with them, and written media, correspondingly, suffer a diminishment of information content.**

Space exploration is rooted in a worship of technological acceleration that makes the Accident seemingly inevitable.

Virilio 10 [Paul. Director of the Ecole Speciale d' Architecture in Paris (Paul, "The University of Disaster", Polity Press, pg. 130)]

In physics, **this situation goes by the name of SINGULARITY; whence the astrophysical quest for an eccentric planet that geo-engineering could possibly make habitable and adaptable to the 'future life' of the earthly genus , the genus humus - in other words , the human race. But when Stephen Hawking tells the BBC (in the summer of 2006), that, 'once we spread out into space and establish independent colonies, our future should be safe'**, he in fact denies the state of play of a knowledge

singularly damaged in what it has been based on ever since the world began: the geophysics of matter known as Whole Earth. Hawking takes his contempt even further , moreover, the salvation of history, after the abandonment of geography: If we used chemical fuel rockets like the Apollo mission to the moon, the journey to the nearest star would take 50,000 years. This is obviously far too long to be practical . . . However, by using matter/antimatter annihilation, we can at least reach just below the speed of light. With that, it would be possible to reach the next star in about six years. In those revealing words, where science and science fiction literally merge, the astrophysicist, a victim of postmodern illuminism, not only confirms the self-destructive urge of matter in attaining its goal. He unwittingly brings back sun worship - to the point of idolizing the acceleration of reality, this contemporary hubris of a NEOCREATIONISM that the famous BIG BANG seems to have allowed!