

Table of Contents

0.0 Introduction_2

//Thesis Structure

1.0 Situating the Stack_5

//Defining Cyberspace as Realm of Planetary-Scale Computation

//Explaining The Stack

//Cyberspace as Immaterial Territory

//Bratton's Geopolitics/Design

//Modernity/Coloniality and Schmitt's Nomos

//End of Physical Territory and the Anthropocene

//Reconceptualizing Bio-Geo-Geonto-Politics>World and Life-Making

//Immateriality and the Gap between Eras

//Chapters Outline

2.0 Modernity, the Anthropocene, and Planetary-Scale Computation_22

//Introduction

//Man of Modernity, Man of Anthropocene

//Human-Inhuman

//Computation Moving Beyond Bio-Geo-Geonoto-Politics

//Computability of Entities and Datafication

//Subjects to Entities

//Design as Infrastructure, for Interoperable Entities

//Closing

3.0 *Pig Simulator* and World-Making in VR_44

//Introduction

//Theoretical Framework

//Threshold Room and In-Between the Manlimbs

//Reading the Threshold

//Truck Bed to Factory, Getting Left Behind

//What Makes me Knowable?

//I make it to the Factory, sometimes

//Embodiment with No Subject

//Worldlessness as Method

//Affectsphere

//Becoming computational/ interoperable

//Being not by Life

//Purging for the post-anthropocene

//Closing

4.0 Holly Herndon's *Home* and Life-Making_68

//Introduction

//Theoretical Framework

//The Video

//Local and Global Occurrence of Home

//Affective Proximity between the Immaterial - Material

//The Occurrence of Home

//Affectsphere from Self-Data as Creative Force

//NSA Data Rain and Datafication

//Multiplication of Self

//Making an Embodied-Immaterial user

//Closing

5.0 Thesis Closing_97

6.0 Bibliography_103

0.0 Introduction

In the wake of planetary-scale computation, the organization and operation of global powers shift. Theorist Benjamin Bratton works with the geopolitical effects of planetary-scale computation, what he describes as the “...various species of contemporary computational technologies as so many different genres of machines...,” that range from micro to meta in form and scale (*The Black Stack*).¹ Bratton proposes a design plan for understanding these technologies to be in coherence, what he calls *The Stack*. This design permits the interoperability of inhuman and human, inorganic and organic agents, as *users of platforms* that produce this proliferation of immaterial data.²

In this thesis, I assume Bratton’s concept and design plan for planetary-scale computation and investigate how it permits the movement away from the anthropocene, problematically and popularly nominated as the “...current epoch in which humans and our societies have become a global geophysical force,” to the post-anthropocene, an era yet to be (Steffen et al., 614). I further refine Bratton’s concept of the user, which in its currently remains too closely to traditional human subjects of modernity, like citizens of nation-states, economic consumers/producers, and beings (inhuman and human) measured against these subjects. I reveal the potential of the emergence of the user to displace these geopolitical subjects through the analysis of the virtual reality game *Pig Simulator* and Holly Herndon’s music video *Home* as new cultural narratives for instead *becoming a computational user agent*.

¹ Throughout my thesis I reference a full range of Bratton’s range of content: his book *The Stack: On Software and Sovereignty* (which I refer to as *The Stack SS* for in-text citation), online journal articles, online lecture videos, personal recordings of his lectures, interviews, and so on. Much of this content or full articles are replicated in full in his book on the Stack. I reference based predominantly on when and where I first encountered the ideas (for example, the e-flux articles *The Black Stack* and *Some Trace Effects of the Post-Anthropocene: On Accelerationist Geopolitical Aesthetics* I read a year before the book was published); and where I simply like best how an idea is phrased. Most of the non-book references do not have page numbers in their citation as they are found online and function via infinite-scroll. Or they are existing in web (without page numbers) and print form, in which case I site them based on which format in which I predominantly read it, this is typically online).

² Bratton capitalizes this architecture and its layers. While I have yet to encounter him specifically discussing this choice, I presume this is because for Bratton the Stack takes precedence as an architecture/design, in which it acts as a proper noun. Theorists, philosophers, do not typically make a practice of posing concepts, theories, or discourses as proper nouns in the aim for them to be workable/played with/pushed further. My engagement with Bratton’s work is to extend it more as a concept and theory to be in active use, and challenge its edification of structures of modernity, I do not use these terms as proper nouns throughout my text, except for the Stack. I recognize its nomination as a historical demarcation. I reiterate this practice in the layers of the Stack, which Bratton also makes proper nouns. I predominantly make use of “user” and the “cloud” as a concepts rather than a layer.

If we take the contemporary moment as a gap, an in-between the anthropocene and whatever its post- may indicate, then the Stack is only an embryo of the effects of the immaterial (Bratton, *The Stack SS*). I propose that its development and nomination marks the end of material territory and opens multiplicities of temporalities, spatialities, which modernity/coloniality and the nomination of the anthropocene universalized. In its current formation, the Stack represents time(s) and space(s), developed from these technologies and the modern regimes of globalization that escalated them into a critical global infrastructure. The Stack symbolizes a collapse of techno-politico-economic immaterial information upon the world. Conceptually, this collapse may be read as erasure of an exteriority. Making and reinforcing exteriors is traditionally a tool of the colonizer. While indeed this collapse disturbs power regimes and is seen as a territory by some, the collapse of the computational upon us also marks a unique philosophical moment ripe with potential. The Stack currently misses this potential by focusing on the proliferation of interiors and exteriors in contest in the disturbance to global structures.

In this opening, I ask how the immaterial and material, inhuman and human of planetary-scale computation reorient the requisites of being (ontology) away from *life* and the material inhuman. How does it reorient the relationships of beings (as agents) to accountable and/or modern orchestrating powers, world-and life-making structures: such as nation-states and economic institutions or corporations. Can we operate *not* in the method of conquering, but rather in the method of designing infrastructure for emerging, affective, user agents?

I expand upon Bratton's proposition of *platform user subjects* through my analysis of VR game experience and Herndon's music video the effects of being a user subject, potential qualities of becoming a user agent, and how this may differently shape the relationship between users and the Stack. I suggest this is necessary in order to move beyond traditional and materially oriented parameters of the governance of life: bio-, geo- and geontopolitics (the latter coined by anthropologist Elizabeth Povinelli to articulate biography and geography into orchestrating power dynamics). Bratton's Stack indicates the potential of technological computation in this

new scale and reach. To help realize its potential, I propose to conceptualize the Stack as a design within the realm, rather than the Stack creating the realm. This is to help conceptually remove computation from the limited vantage point of user is to platform and interface, which often reinforces anthropocentrism, and expose different constitutions of the user. This is necessary to reconceive systems and languages of world and life making for imagining a post anthropocene.

Thesis Structure

Bratton's work on planetary-scale computation permits the intersection of integral concepts and discourses for understanding the contemporary and future world. In order to further detail and open the discussion for the future as effected by this computational, immaterial turn, I try to draw some of the lines of this intersection.

To commence, I describe key terms, concepts, and pertinent differences between them. In my first chapter, I theoretically situate the discourses and objects, and outline the conceptions of the realm of cyberspace and immaterial turn. What I call cyberspace is what Bratton refers to as the verticalization of sovereign, horizontal, space, in which the cloud takes shape. In my second chapter, I expand on the potentials and dangers of the immaterial turn through an analysis of cyberspace and the Stack within the discourses of modernity/coloniality, the anthropocene, and material-based politics, as understood by Walter Mignolo, Kathryn Yusoff, and Elizabeth Povinelli. It is crucial to note that immaterial turn, and material-based politics, are not mean to ostracize either. They are deeply intertwined and have incredible weight upon one another. I ask how the immaterial turn troubles the spatial and temporal grips of modernity as universalized by the human-subject.

Then, I conduct close readings of the virtual reality game *Pig Simulator* and Holly Herndon's music video *Home* as different cases of transitioning into post-anthropocene. *Pig Simulator* engages with the displacement of human-subject by *becoming-* an interoperable computational user-entity among other entities. *Home* deals with becoming-user from being an

exploited political subject as permitted by internet surveillance. Through these objects manifest necessarily ambiguous, embodied yet immaterial, cultural narratives for new grounding as we enter the post-anthropocene in the site of cyberspace.

1.0 Situating the Stack

Cyberspace as Realm of Planetary-Scale Computation

Bratton's project as geodesign, the "...larger, ongoing, collaborate megaproject to reconfigure our ecological, geoeconomic, and geopolitical condition through an active redesign of The Stack itself" is politically and spatially based in the contemporary moment's divergence from Carl Schmitt's *nomos*, in which territorial order is physically grounded (371). Bratton proposes the verticalization of territorial order by the Cloud Layer, which is constituted by "computing and transmission hardware on which the Stack software depends [like wireless network technologies]...and Cloud Platforms [like Amazon]" (*The Stack SS*, 369). He describes a possible *Nomos of the Cloud* as the geography of information (*The Stack SS*, 372).

I use cyberspace close to its dictionary form, as an "...environment in which communication of computer networks occurs" (dictionary.com). I cut out the "notional" that the dictionary includes because it is a very real space made possible by material and navigational coordinates and dimensions. Unlike misconceived notions of "free soil" of past spaces colonized by global powers which were exterior territories, and in which an exterior of the aboriginal was kept as a demarcation of power, cyberspace is not an exterior but something that is simultaneously upon the world. I argue that cyberspace is made by the technological capture of computation, and the Stack as a design of its functioning, is just one capture of cyberspace. In its current scale and reach that is confusing the powers that have shaped it, both cyberspace as a realm and the Stack as an infrastructure confuse the method of making exteriors as it is birthed through the interior.

The notable update to the definition of “cyberspace” in the U.S. Strategic Command’s lexicon for cyber warfare is particularly telling. Prior to 2008, the U.S. Strategic Command articulated cyberspace as “*A domain characterized by the use of electronics and the electromagnetic spectrum to store, modify, and exchange data via networked systems and associated physical infrastructures*” (8, typo in original PDF). The lexicon now defines cyberspace as “...a *global domain within the information environment* consisting of the interdependent network of information technology infrastructures, including the Internet, telecommunications networks, computer systems, and embedded processors and controllers” (U.S. Strategic Command, 8, italics mine).³ Most distinguishing is the turn of scale (from no scale to global scale) and a solidification of site (situated within intertwining information networks rather than being characterized by electronic use). From Bratton’s vantage, the cause for these changes in definition may be the growth in the computability of entities and relations of the planet (planetary-scale computation).

As a domain cyberspace adds a realm of an immateriality to the material earth and materializes the immaterial.⁴ An important specification here is that cyberspace is a discourse and idea that may indicate it as specific to the internet - this is not how I am using it. I mean it close to how I read Bratton’s use of the “verticalization” as a territory of digital-things, actions, specifically the semi-immaterial arena of planetary-scale computation. Bratton talks about the cloud, and the cloud polis, which are specific to applications, programs, interfaces, which help organize and structure this area of cyberspace: as does the Stack. This is Bratton’s architecture for understanding how he sees the relations and movements, the infrastructure, of the key markers of this realm currently function. The Stack is one of many possible ways to understand the current and future organization of cyberspace at large.

³ An important consideration is that cyberspace falls under the focus of combat, as the U.S. Strategic Command is one of the nine U.S. combat commands. This might be in opposition of it as a utility, or expand what a utility might implicate.

⁴ One example of the latter is the Space Commerce and Expo, SpaceCom: <http://spacecomexpo.com/about/>, one reference to the ‘new kind of space race.’

Explaining The Stack

Bratton describes what I am referring to as cyberspace, the sphere of planetary-scale computation, as constituted by objects, systems, relations, and beings. This includes:

...energy grids and mineral sourcing; chthonic cloud infrastructure; urban software and public service privatization; massive universal addressing systems; interfaces drawn by the augmentation of the hand, of the eye, or dissolved into objects; users both over determined by self-quantification and exploded by the arrival of legions of nonhuman users (sensors, cars, robots) (Bratton, *The Black Stack*).

Bratton proposes that rather than seeing these computable entities and technologies "...as spinning out on their own, we should... see them as forming the body of an accidental megastructure" (*The Black Stack*). As a way to coherently organize the current and growing infrastructures of planetary-scale computation that envelope the world, Bratton develops the concept and design of The Stack. At its core, The Stack refers to the socio-political-geographic effects of planetary-scale computation's "...transformation in the technical infrastructure of global systems...[where] Unlike modern political geography, which divided up horizontal maps, Stack geography also vertically layers spaces on top of one another" (*The Stack SS*, 375). Bratton offers The Stack as "...a schema that refers to a technical system, and a technical system that demands different kinds of interpretive schema from us... a work of partially accidental geodesign that demands from us further, better deliberative geodesign" (*The Stack SS*, 375).

The Stack has six layers: User, Interface, Address, City, Cloud, Earth, that make up a chain of interactions starting with the User – to Earth, and then back up again (Bratton, *The Black Stack*). A simple example of this could be sending an email. In doing so, it initiates the chain of interactions through each of the layers, and then back up. Think of an automated email sent from mass email company like MailChimp by a large media company to thousands of recipients. As many agents human and bot alike, and other kinds of agents possibly) are compiled and necessary in making this email-sender entity, this can be understood as a composite User. This composite user activates the User layer as an agent by sending an email

that moves through nearly simultaneous interweaving interfaces [computer, internet browser, email provider].

Bratton defines the user as a subject-position and as the top and initiating layer of the Stack. As this is a crucial term to grasp, I quote Bratton at length from the glossary of *The Stack: On Software and Sovereignty*:

The *User*-subject is a position that can be occupied by anything (or pluralities, multitudes, and composites) capable of initiating a column, especially anything that can do so and respond to how The Stack communicates back to it. This generic universality of the *User*-subject is both how it can flatten or curtail the human experience of remote interactions and how it introduces otherwise unrepresented agents into mediated contact with the whole (Bratton, 376).

I read agents here as anything that may be turned into data, readable, computable. This may be “a category of agents,” human, animal, machine, inanimate object, and any compilation of the like, or a single agent that constitutes the User position (*The Stack SS*, 251). To be read as data, an agent-as-user must be able to communicate with the/a interface layer. The communication of the user to the interface layer is this position that users see, experience, the Stack and how the Stack sees users- that is, determined by the Interface. I quote Bratton at length again to make clear the implications of this design:

...the “user” has represented a contemporary technical image of the self, sometimes reduced to utilitarian frames and also sometimes allowing for unexpected new kinds of platform sovereignty. This includes both the exaggerated depiction of self that the *User* position may provide, as well as its equally radically fractured or dissolved reflection in multiple layers of data (Bratton, *The Stack SS*, 376).

A depiction of the user position may be mediated, for example, for a single person on a Facebook account. What the person sees of themselves (think someone looking at their own profile page and content), and of Facebook (its categories and design, functions, affordances- male female etc.), and of the mediated information through Facebook (friends social lives and opinions, events, news stories, paid advertising, complicated by the proprietary algorithms of much debate), is from the vantage point of the User-to-Interface- [to the Stack]. On the other side from the Stack-to user, the possible knowable information and “profile” of this user looks quite

different, and may be arranged and paired with information from other interfaces- the easy example is retargeted advertising.

The interaction from composite user to thousands of other users, possibly composite or not, have their own addresses. The address layer makes these interactions (and related users), as well as the multiple interfaces, identifiable and connectable. The Address layer provides “...*identity, exchange, and recursion*” to “...any “thing” (a device, a person, physical event, a piece of data, or some other abstraction) via a discreet address through an addressing system that is finite (although this can be hidden through proxy users, thanks to the horizontality of each layer)” (Bratton, *The Stack SS*, 367). Through hardware the address layer connects to the cloud layer, which makes computable and transmittable to the software of the Stack. Think data centers, transmission cables as well as “...*Cloud* platforms such as Google and Amazon” (*The Stack SS*, 370). The cloud layer relays to the earth layer, “...the point by which the planetary perch of the Earth itself is subsumed into the geographic frame of The Stack” (*The Stack SS*, 371). The earth layer contains the materials like metals, minerals, power, and so on, from which platform electronics extract (and are powered) (*The Stack SS*, 371).⁵ The MailChimp email activates each of these layers quite quickly, and then goes back up through them for each receiving recipient. Bratton calls this activating a column.

In this design, Bratton connects the very material to the immaterial realities of cyberspace. I am less focused on the architecture of the Stack and its layers, nor their organization. Rather, I find them most useful as ideas to play out the effects of the computational turn on being, power, and the implications of the conditions for how planetary-scale computation came to be. Where the Stack as “accidental megatstructure” is a design with layers constituted by computational technology of wide scope, cyberspace is the territory of computation, the geography, which the Stack acts as a geodesign.

Cyberspace as Immaterial Territory

⁵ To put into context the traditional function of “horizontality” for Bratton, the earth layer “It is where the horizontal subdivision of land by normative Westphalian state sovereignty is broken down by emergency challenges to the governance of a synthetic ecology with local causes and effects but translocal scope” (*The Stack SS*, 371).

In being constituted by semi-immaterial networks, infrastructures, systems, the sphere of the Stack, and cyberspace, are unlike like traditional spaces (land, water, space). These traditional spaces predominantly, if not only unwillingly, served as new territories for existing powers to enter. In this sense, the Stack as “... one massively distributed machine ...[that] envelops the planet [as a]...geopolitical armature...” is a different kind of approach to cyberspace as immaterial and immanent site, rather than physical territory (Bratton, *The Stack SS*, 367). As “...the technologies of its layers cohere into an emergent order that is largely the result of unintended, unplanned, unpredicted, and unmanaged technical and social interactions at different scales and as part of different histories,” it represents the opening of multiple temporalities (*The Stack SS*, 367).

Bratton describes in the cloud layer chapter in *The Stack SS* that “Throughout the colonial era of globalization, the basic description of a “new” territory over which a state [sovereigns] might wish to internalize into its jurisdiction, and over which it contests control...[has simply long been the assumption of claim] and enforced the right to name and objectively represent the territories they govern” (*The Stack SS*, 119 - 120). He goes on to articulate the confusion of this mapping between the state and company, citing Google as example of a “*Cloud* [platform] functionally displac[ing] states by assuming their functions” (*The Stack SS*, 120). To further complicate this, he briefly states that while cloud platforms and the state as domains become

...dramatically less distinct from one another...producing emergent institutional forms not reducible to the direct combination of the two...

That governing logic, privileging the *Cloud* layer as timekeeper and space maker, is built into the technical architecture of The Stack and imposes itself on states and traditional geopolitics as much as the inverse...*Cloud* platforms not only have geopolitical ramifications and implications; they are a geopolitical condition and constitution in their own right (Bratton, *The Stack, SS*, 121-220).

Bratton focuses on the temporal and spatial qualities of cloud platforms as governing logics for the architecture of the Stack in its entirety, and I agree with him here. But, my interests lie in the immaterial implications of computation harnessed by powers of modernity/globalization, and its potential for differently informing the frameworks of these

powers through the lens of *user*. That is, the datafication of the planet and its openings for new ontological developments in its multiplication of what constitutes a being as data-producing agent, rather than being as one particular kind of human. I dedicate my first chapter to the weight of the immateriality of cyberspace as a new territory juxtaposed and co-emergent with the seeming end of material territory.

Politics in the Stack are relationally positioned between the material and immaterial. Jurisdictions overlap without clear determination in cyberspace, as a user and action may cross multiple physical and spatial layers and spheres. For example, “What if a data object is originated in Beijing by a Japanese citizen, uploaded to a server off the shores of Vladivostok in international waters, and then used by a kid at an Internet café in Las Vegas to commit a crime in Brazil?” (Bratton, *The Stack SS*, 113-4). This disturbs the claims (universalized concepts of being, temporalities and spatialities) of modernity and jumbles the problematic yet edified literacies that have been in practice the traditional areas of bio- and geopolitics. Considering the U.S. lists cyberspace as an official critical infrastructure (as it is also for fundamental contemporary global activity), what is the mode of response to this disorientation as something we are already within and rely on? Bratton uses “geodesign” to directly address the “megaproject to reconfigure our ecological, geoeconomic, and geopolitical condition through an active redesign of The Stack itself...from the recognition that the ultimate career of computation as core infrastructure is still embryonic” (*The Stack SS*, 372).

Bratton’s Geopolitics/Design

To imagine this geopolitical reconfiguration, Bratton references *nomos* as the precursory act of making a territorial order through claim and occupation. This is the earth as “...the dominant and essential logic to the political subdivisions of the earth (of land, seas, and/or air, and now also of the that the U.S. military simply calls “cyber”) and to the geopolitical order that stabilizes these subdivisions accordingly” (*The Black Stack*). *Nomos* is a concept of German political theorist Carl Schmitt, which Bratton extends to the vertical, sectional, and virtual

formation of bio-and geo-political orientations, possibly to become a *nomos of the cloud* (*The Stack SS*, 373).

In his usage, for his distinction of the orientation of power shifting from relations literally tethered to the physical earth to something between material and immaterial (cyberspace), Bratton states Schmitt's nomos indeed as modern and inadequate for ecological (and beyond) governance (*The Stack SS*, 142). He reinforces the ineptitude of the current geopolitical order's replication in what he calls the cloud and potential cloud polis, with his reference of Westphalian model of sovereignty. This model derives from the Peace of Westphalia doctrine of 1648 ending the 30 years war in continental Europe, in which power is divided amongst nations by territorial lines on land.

Additionally, Bratton uses Schmitt's term *Grossraum* "...“the Large Space,” of a regional, supernational domain of sovereign control, like the Monroe Doctrine..." predominantly in describing Google's (current and potential) territorial influence as cloud platform (*The Stack SS*, 371-2). Bratton's usage of the geopolitical exposes what is problematically inscribed into the current model of The Stack. This is where I try to expand upon how cyberspace and its current functioning is imbued with regimes of modernity/coloniality (as described by Bratton's Stack). While “The *nomos* of the *Cloud* is characterized partially by a “delamination” of practical sovereignty from ...[Schmitt's] grounding,” it the conception of carrying into a (third) nomos may secure the carrying forth the second nomos' geopolitical order rather than rethinking a different concept for territorial inscription that computation as a force may permit (*The Stack SS*, 376; 78).

Modernity/Coloniality and Schmitt's Nomos

For example, through a close reading in his forward of the text *The Anomie of the Earth: Philosophy, Politics, and Autonomy in Europe and the Americas*, Walter Mignolo articulates that Schmitt's nomos is a second nomos, one that in its nomination makes singular and linear the temporal and spatial multiplicities of the planet existing prior to the “discoveries” by Europeans.

“Modernity/coloniality is articulated... on the ontological and epistemic differences,” the making exterior temporalities, spatialities, of peoples and peoples land, measured against the universalized man-as-subject (Mignolo, *The Darker Side of Modernity*, 46).

Modernity/coloniality marks “...a double colonisation of time and of space...[by the simultaneous invention of the Middle Age in the process of conceptualising the Renaissance...[and the latter linked]... to the conquest of the New World...]” as described by Walter Mignolo in *The Darker Side of Modernity* (39, 41-2). As such, “The construction of *the colonial difference* goes hand in hand with the establishment of *exteriority*: exteriority is the place in which the outside (e.g., *anthropos*) is invented in the process of creating the inside (e.g., *humanitas*) to secure the safe space where the enunciator dwells” (Mignolo, *The Darker Side of Modernity*, 47). The nomos that Bratton works from is specifically an act of European erasure of non-European temporalities and spatialities, inherently implemented within modernity/coloniality’s divisions of land, water, and later, space. In the following chapter, I propose that by way of the anthropocene, the Stack’s formation merges *humanitas* and *anthropos* as a point of disturbance to the powers that birthed it.

I emphasize a few intersections here. Schmitt’s second nomos is an act of modernity and coloniality. It is substantiated by traditional materially oriented determinations of life (man as human subject); and planet-territory. This substantiation universalizes concepts of life, territory, temporality, and spatiality of the past, present, and future. The way forward within this orientation relies on external lands in which to claim, and the maintenance of an outside, exterior. The future of the second nomos extends from “...civilization that was built upon the foundations of the second nomos (e.g., Western civilization) capitalized in “newness” (e.g., the New World) and “change” (progress, development)” (Mignolo, *The Anomie of the Earth: Philosophy, Politics, and Autonomy in Europe and the Americas*, xiii).

End of Physical Territory and the Anthropocene

Powered by these orientations, acts of (modern) progress result in two crucial coinciding developments that seem to seat the contemporary moment at the seeming end of physical, exterior territory to conquer and map. First, planetary-scale computation marks the end of an exteriority by its enveloping the planet via turning into data and potential information the entirety of it (think Google Earth, or merely its mission statement as Bratton references multiple times: “to organize the world's information and make it universally accessible and useful,” which arguably includes not just organizing but making it as well) (google.com).⁶ Second, there is a seeming end of physical territory to map by the mode of conquering and making *others* out of entities not recognized by the conquering sovereignty. The extremity of the latter is marked by the nomination of the anthropocene, which “...names an age in which human industry has come to equal or even surpass the processes of geology, and in which humans in their attempt to conquer nature have inadvertently become a major force in its destruction” (Haraway et al 1. paraphrasing Crutzen & Stoermer 2000; Steffen et al). As anthropologist Katherine Yusoff argues, the nomination of the anthropocene marks the humanizing, and universalizing of the geologic it “...carries forward and edifies” (Yusoff, 15). By this imprint of the universal, modern, human, she states that

The Anthropocene is then between times – it is neither the Holocene, nor quite something else; and if the Anthropocene is something we can diagnose in the present it is also something that is ceasing to be; that is, there is an unconfined element that is only just on the cusp of understanding and awaiting a new language to be forged (that must at the same time decolonize the language that carries it) (Yusoff, 22).

I suggest that this in-between, or ceasing, is importantly *the* marker of the colonization of the man-made exterior, an end of (material, physical) territory: “The name of the Anthropocene is a deprivation of an outside to human time – the removal of deep time as a ground and measure against which human finitude is exposed” (Yusoff, 9). In this ending of exteriority, space and time, signifies the byproduct development of cyberspace.

⁶ See Bratton’s section about Google’s and other cloud platforms he analyzes as cases in the Cloud Chapter in their “shopping sprees” for other companies. This includes Google being able to buy raw energy(!): *The Stack SS* (134; 125-145).

So, coinciding with the nomination of the anthropocene and as a byproduct of the orientations and actions that realized it, cyberspace is the second crucial development pertaining to the end of physical territory. The thickening of computation to the point of its becoming a critical sphere for social and sovereign functioning is the shift of cyberspace to a site. As a site, which is not yet coherently territorialized, it opens multiple spatialities and temporalities as it subsumes and houses contemporary critical global infrastructure and planetary-entities. In its ability to “map us,” it collapses upon the material (as always, the “us” here needs to be vigorously and continuously challenged). To reiterate, I am proposing that development of cyberspace as a site

1) Coincides with the end of physical space to territorialize (a metaphoric “end” of the landscape of material exteriorities);

2) Is a byproduct of the orientations and actions that realized this end of physical space (in being a result of modernity/coloniality marking the geologic as its own, as being driven by orientation of conquering, becoming-master, by imposing his own narrative as the world);

4) Changes the parameters of this singular narrative of modernity/coloniality and conquering as method by moving away solely material to also the immaterial (life as being > data as being) and therefore makes multiple spatialities and temporalities (inhuman and human- the constitution of planetary-scale computation);

5) This shift to immaterial alters the constitution of life and territorial determination.

Reconceptualizing Bio-Geo-Geonto-Politics > World- and Life-Making

As Mignolo articulates, “The ideology is clear upon close inspection: if you “control” change and progress you control the destiny of a civilization, and you hide and repress the fact that “change” always happens whether you want it to or not” (Mignolo, *The Anomie of the Earth: Philosophy, Politics, and Autonomy in Europe and the Americas*, xiii). In using the concept of geopolitics predominantly through, Bratton may inadvertently hide the development to geopolitics that he calls for with the Stack. Likewise, Povinelli’s geontopolitics (as

emphasizing the distinctive agents of life and nonlife) does not include the pivotal addition of the immaterial, both as site and ontological reconstitution.

I try to emphasize the effects of planetary-scale computation within key enunciations of global power and being in the hopes to push beyond the materially oriented frames of geopolitical and geonotopolitics. To do so, I reference Mignolo's four domains of "enunciation," "...disguised by a constant and changing rhetoric of modernity..." as the sites of modernity/coloniality narratives, as an act of mastery in their enunciation and practice. For Mignolo, these domains are the management and control of subjectivities; authority; economy; and knowledge (*The Darker Side of Modernity*, 49).

To describe these domains, and what Bratton and Povinelli include within their terms, I use the terms *world-making* and *life-making*. *World-making* indicates a frame, parameters, a coherent narrative for a making-sense of, or ordering the world in which entities may become, act, and are governed. And, I use the term *life-making* to reference the basic and critical elements framing a human-life. As these terms allow me to reference governance and entities (or agents, actors, I use these terms interchangeably although not to mean explicitly entity-is-human) within a frame that may have an orientation to the *gap* in eras. World-making and life-making emphasize the confusion and ambiguity of entities and governance as a result of planetary-scale computation. The terms help detach from an inherent designation of the future continuing the universalized human, time, and space of modernity; as bio-and geopolitics do. As well, it helps to start a rhetorical break from nomos.

Immateriality and the Gap between Eras

The new immaterial determination of world-and-life-making, as well as representing the "site" that must be orchestrated or worked through as the non-exterior but not-yet-determined space, implicate the inadequacy of bio-and geopolitics. And geonotopolitics, as it is still oriented to the geologic which is already (problematically) claimed by the nomination of the anthropocene and subsumed by the collapsing of cyberspace. This is the new gap as *the*

immaterial turn: it has multiple and layered vantage points, as I explore in my case studies, and it is the threshold of departure from the anthropocene to the post-anthropocene.

I use the *immaterial turn* to reference thickening of technological computation to the point in which the Stack takes shape, the reason for cyberspace's definition update as a critical global environment and infrastructure for the U.S. Defense. This is the collapse of technological computation upon its makers of this particular formulation, as part of algorithmic capitalism, the ecological crises, attributable to regimes of modernity/coloniality and globalization. In this scale and reach in reigning power systems, it is unique and intertwining the immaterial with the material, and the Stack helps unite these two qualities. The to-be-determined effects of the immaterial turn can be more than just the verticalization of horizontal divisions of power.

This gap between eras puts into question the problems of modernity/coloniality, parents to its accidental creation. This makes its lineage of the utmost importance to explore so as to better understand the potential dangers and reactions in moving forward. And, to gain insight into the immaterial's effects on the future and the method of entering it. The subsumption of the traditional material world and sovereignties in cyberspace surfaces collisions of spatialities, temporalities, and data-agents of all kinds, and the datafication of the human and planet. As contemporary art writer and theorist Suhail Malik affirms in the introduction to *dismagazine's Post-Contemporary Issue*, "If the leading conditions of complex societies are systems, infrastructures and networks rather than individual human agents, human experience loses its primacy as do the semantics and politics based on it."

So, as planetary entities become more and more possibly knowable, the *development of the language* of its orchestration, distribution, and use, and its *narratives of being*, are crucial determining forces in what makes a world (how power is distributed geographically and cyberspatially); and what makes a life (which powers govern what parts of "life," what is counts as a life, what is necessary for that life to maintain); and, how the relationship between nonlife

and life develops (in their growing proximity and co-constitution as equally computable entities).

This is what is at stake in *becoming-user*.

This is important in my reasoning for using the term language, which implicates a human focus. This is problematic as it suggests the imposition of the human upon the inhuman, extending a human function to the inhuman, rather than the human meeting the inhuman in a different kind of space, or the inhuman extending knowledge to human communication. I use language to reference a communication that makes possible the interoperability of agents within a system. Language as a system-design, computational language, these are all troublesome approaches when conceiving intra-agent, autonomous entities co-determining and communicating.⁷ This is also what makes the Stack function as a platform, inspired by a TCP/IP stack, where modules and their containments may move or change as long as they can be comprehended by their borders.

As I am writing about humans-becoming-users, I use the term language to indicate these blurry borders and to reinforce that as the orientations of life changes, life retains a weight between the institutions that make it a subject. Language retains the relationality of communications across differently constituted sites and agents: inhuman and human, immaterial and material. Herndon's *Home* strongly deals with this relationality and its legitimization via tactile sound-making from her immaterial datafied-self. The understanding of narrative and language's accountability as relational within the widening of agential forces of the threshold of the post-anthropocene is important to communicate with, between, and by- other entities. Not to reduce either life or data to one another in their leveling. Therefore, retaining the use of language for relational communication may be helpful. This is a small window in which to reflect upon narratives that may refute the development of subject-as-master in mentality and design. This is what I try to develop further in my following chapter.

⁷ I think that theorist Karen Barad's term "intra-activity," would be worthy for engagement with the idea of interoperability. Intra-activity means that all entities—bodies, beings, materials, and occurrences—are the perpetual manifestation of emerging agencies: "*Embodiment is not a matter of being specifically situated in the world, but rather of being of the world in its dynamic specificity*" (327, italics original).

In starting from this in-between moment with points of the anthropocene, planetary-scale computation, the post-anthropocene, and its effects on the global re-orchestration of power through planetary-scale computation, I take Bratton's design and concept of The Stack and try to go beyond its use as a design to consider how we can deepen our understandings of the future in its presence. That is, to rethink subjectivity as interoperable entities (determined by data), rather than in terms life. And to rethink the future not as temporal but immaterially situated upon us. Both of these shifts lie with the future as the geographic site of cyberspace *in* and *by* this era change from the anthropocene to the emerging post-anthropocene.

Bratton provides a meta-design to understand this in-between, which helps capture to the confusions of simultaneous sovereignties/ layered jurisdictions in the strata of the vertical layers. For example, I am Google account holder and U.S. citizen, both which organize and monitor my life and activities. Bratton uses the term "geoscapes" to define the "territory of territories...[the competition] over the right to describe the reality of location, distance, borders, and juxtaposition of the whole territory itself" (*The Stack SS*, 372). And, Bratton's use of Gilles Deleuze and Félix Guattari's geophilosophy permits his geopolitics to "...[name] the ways in which a society attempts to assemble itself, thinks its own terms, its own ethics, its own models of operation, its own logics of value, in relation to how it is situated on its planetary perch" (*The Stack SS*, 372). This helps situate an opening for assemblages not to the parameters of Schmitt's second nomos, but needs further defining away from column-thinking, which conceptually blocks the assemblages the horizontality of the Stack's modular layers afford.

Indeed, The Stack calls for a purposeful redesign, which I try to approach by asking how might we take on these bio-geo-onto-political effects of the post-anthropocene as a *becoming* rather than residing within them and reacting to them as an anthropocentric subject? And, how can the openings in *becoming*-user influence the method of design-as-infrastructure? Mignolo makes clear that "Postmodernity and altermodernity do not get rid of coloniality. They only present a new mask that, intentionally or not, continues to hide it" *The Darker Side of Modernity*,

43). Entering into cyberspace, as the colonized exterior as not yet-coherently ordered governed space to move into, may be self-reflexive in its displacement of the man-as-subject (even if accidentally self-induced). Or, this movement may continue to edify versions of the second nomos into the vertical (refer to *The Black Stack*, *Trace Effects*, and/or the last two chapters of *The Stack SS* for Bratton's ideas on this).

The latter is the current reality. For example, in the interfaces of the most popular life-making platforms (such as Google, Facebook); and these platforms forming an oligarchy (think American conglomerate Alphabet International) of such global life-making interfaces (sites in cyberspace). And, in the infrastructures across the material systems that run it, and the melding of the politics and geographies as world-making entities between such corporations and nation-states on horizontally (traditional geopolitics of material earth) and vertically (cyberspace). As both *Pig Simulator* and *Home* show through their analysis, though, in these formations of *becoming-user* as something crucially different than a human-subject is ambiguous. It is their ambiguity that keeps the development of a mastery or universalizing narrative at bay, but also keeps open the shaping of political agents within the developing infrastructures.

Chapters Outline

In my second chapter, I connect planetary-scale computation, and its infrastructure as formed currently in Bratton's model the Stack, to modernity and the anthropocene in order to situate and expand upon the contemporary moment as a gap in-between eras as described by Bratton, Mignolo, and Yusoff, among others. My claims are meant to detail implications from this meeting point. They are based in reorientations of the political divisions of the planet as caused by the immateriality of cyberspace and its subsumption of the traditionally material-oriented politics. These implications are the end of material space for potentially colonizing; that the future, as and from a universalized spatial and temporal concept stemming from modernity, shifts to the partially immaterial realm of cyberspace (the realm of The Stack, and planetary-scale computational infrastructures); that this is a relational turn, in that the only place forward is

through a self-created territory (in that cyberspace is the byproduct of modernity and the anthropocene as claiming the geologic as a final physical frontier, and therefore colonized space and time); and, that the method for moving forward is organization, specifically design as infrastructure. This is opposed to an immediate conquering (as cyberspace is self-reflexive, as it is innately already conquered as product of modernity, and as this is an immaterial layer that is already organizing the planet).

In my third and fourth chapters, I analyze the virtual reality game *Pig Simulator* and Holly Herndon's music video *Home* as two different cultural narratives of *becoming-user*. These objects present two non-ordered changes in being a computational agent. *Pig Simulator* starts at the edge of the anthropocene's frame. This edge is the game-player's affective departure from being constituted as or in reference to the universalized human as subject-master to its abstraction as one user-agent among many. The game-player leaves the position of subject (universalized human)- master (as someone who dominates, orchestrates, defines) and becomes a computational agent. It is about the ambiguous interoperability of agents, pushing through the singular concept of human-subject and their temporal and spatial reality. This immaterial ontological reorientation levels the inhuman and human as agents who interoperate within the user position. It is not a human-subject narrative (*no* Facebook profile) referring back to particular human bodies. Instead, *Pig Simulator* creates a nonnarrative, a space of worldlessness that reflects the openings of computational data to multiple and codetermining agents emerging within an interface.

Alternatively, in her video *Home* Herndon starts from the question of what constitutes a political body as life-making relationships change with nation-states and cloud platforms. The video addresses the new and confused relational conditions of the human-subject to traditional institutions based on the NSA revelations. A second effect of the immaterial turn of the political body is the shift from the citizen-economic-subject to platform-user, while inhabiting all of these

positions. Bratton states that we are each of these (citizen subject, economic subject, and platform user) in the Stack's current design (Bratton, *Machine Vision*).

Herndon presents the "growing pains" of this cross-constitution and through the video's analysis I challenge outdated expectations of citizenship and economic producer/consumer to

Each of these objects is situated in the interaction of the user and the interface, the site of which "...constructs and configures the diagram of possible action that *Users* can make on The Stack and that The Stack can make on *Users*" (Bratton, *The Stack SS*, 229). They surface two transitions of being and power in this contemporary gap. The objects are equally unresolved, and as such, keep open the potential in asking what it is to be determined by and within technological computation. Bratton is interested in the additional subjectivity of platform-user to existing citizen-and economic subjecthoods, again determinations of more traditional bio- and geopolitical design. In my analysis of *Pig Simulator* and *Home*, I aim to further question how approaching *becoming-user* as an ontological repositioning rather than addition to might reveal for the potential of the immaterial turn. In the contemporary gap between eras, how can the opening of temporalities, spatialities, and constitutions of being away from life be activated in the method of entering into cyberspace? How can this help imagine a less anthropocentric future and alternative narratives of being?

2.0 Modernity, the Anthropocene, and Planetary-Scale Computation

Introduction

In the reorientation of the modern subject and global powers by the proliferation of computational technology, theorist Benjamin Bratton imagines the era to come as the post-anthropocene marked by "...another eco-economic order" that rather than a concept chained to post-capitalism, also "...articulates in advance the displacement of the human agent from the subjective center of its operations" (*Some Trace Effects*). In this chapter, I use decolonial theorist Walter Mignolo and human geographer Kathryn Yusoff's concepts of modernity/coloniality and

the anthropocene to analyze planetary-scale computation, cyberspace, and Bratton's design model The Stack as a current infrastructure of and for it. Through the collision of these concepts, I find new temporal, spatial, and ontological multiplicities opened in contemporary moment as a gap in-between eras. This opening calls for a moving beyond a bio, geo, and geontopolitics (the latter by way of Elizabeth Povinelli). The intertwining of immaterial and material across the geologic, social, and political planes effects the assumed method of entering the future away from conquering, as method of and towards design-as-infrastructure.

In *The Stack: On Software and Sovereignty*, Bratton outlines that the paradigmatic cultural invention of the twenty first century is documenting, sorting, capturing, and making content (125). And, these activities "...[serve the] rationalization and capitalization of these of archived reservoirs" (*Bratton, The Stack SS*, 125). He describes that "Google absorbs existing spaces into its purview by capturing and consolidating images of all territory at various scales, from street to satellite and back, and rendering them into the platform's comprehensive interface of rationalized space...[creating a] universal layer beneath the particular claims of any one entity in a thickened geographical stack" (*The Stack SS*, 144). Bratton asks how "Cloud-based delineation (or absence of delineation) of land, identity, energy, value, territorial interiority and exteriority, and so on, come to mutate the overlapping layers of everyday law and life?" (*The Stack SS*, 121).

Bratton's makes a quick transition from here in which he states that the cloud layer is both the governing logic, as a "timekeeper and space maker," as well as being "... the networking of information between locations..." (*Bratton, The Stack SS*, 122). As such, cloud platforms have both "geopolitical ramifications and implications [and act as] a geopolitical condition and constitution in their own right" (*Bratton, The Stack SS*, 122). Bratton explains the ontological, spatial, and temporal effects of planetary-scale computation within the architectural layer of the cloud, which enables him to link to platforms, or companies, as entities that built this effect.

I argue that because of cyberspace's commencement from the end of material space, that is made of systems, infrastructures, and data-constituted agents (as opposed to human-subject). As such, I consider the future as a site in cyberspace marks the shift in era away the anthropocene. And, the movement to what it is to be a datafied-agent in this territory, and therefore how to better design for it rather than human-subject, must be explored - what I aim to contribute to in my case studies in my following chapters. This is heavily linked to leaving the method of conquering, or territorializing, and different embodiment in *becoming-user* rather than merely adding being a user to an already territorialized subjectivity. That is, to challenge the edification of the modernity/coloniality narratives in these infrastructures, what it is to *become*, rather than merely take the position of, user in this world of planetary-scale computation.

While the introduction of planetary-scale computation removes universalized human as its subject and force, the language of its forming infrastructure, as method, is of the utmost importance in keeping-complicated the political entity in the post-anthropocene. Bratton urges to "...forget human-centered design; we need to design for what comes next, what comes outside, what has already arrived, for the synthetic *User*-subjects for which another geopolitics is derived..." (289). In my analysis of the Stack, I hope to contribute a different approach for the linking of the mutations from the realm of cyberspace (rather than the Cloud layer) to the method of design-as-infrastructure by understanding its spatial and temporal implications.

Man of Modernity, Man of Anthropocene

Le Corbusier's declaration that a house is a machine for living poetically amplifies to "the imperial rhetoric of modernity (e.g., white, Eurocentric, heterosexual, and Christian/secular)'s" understanding of the earth as a machine for living, the effects of which give birth to the nomination of the anthropocene (Mignolo, *Citizenship, Knowledge, and the Limits of Humanity*, 312).⁸ I refer to Mignolo's frame of "Man" as human as the leading figure of the contested term anthropocene, meaning the "...age in which human industry has come to equal or even surpass the processes of geology, and in which humans in their attempt to conquer nature

⁸ Literary theorist Niall Martin brought this Le Corbusier reference to my attention in his guidance on my thesis.

have inadvertently become a major force in its destruction” (Mignolo *Citizenship, Knowledge, and the Limits of Humanity*; Haraway et al.; Crutzen & Stoermer 2000; Steffen et al. 2011).

Where “Modernity appears when Europe affirms itself as the ‘center’ of a World History that it inaugurates: the ‘periphery’ that surrounds this center is consequently part of its self-definition;” man as subject presumes the interior position of world-maker and life-maker (as defined in chapter 1.0).

This man as subject self-narrates and reproduces the rhetoric of modernity from “...a *racial and patriarchal underlying organisation of knowledge-making (the enunciation) put together and maintain the colonial matrix of power...*” (*The Darker Side of Modernity*, 49, italics original). While Mignolo acknowledges this becomes “...less visible because of the loss of holistic views promoted by the modern emphasis on expertise and on the division and subdivision of scientific labour and knowledge,” agents and institutions enunciate the matrix of modernity/coloniality in the act of continued territorializing (*The Darker Side of Modernity*, 49). The territorializing of modernity, i.e. in the method of conquering, extends to point of the nomination of the anthropocene in which there is no more (apparent) physical space which to territorialize. This “edge” is concurrent with the ecological crises of the anthropocene. Its scientist nominators anthropocentrically forewarn, “Global warming and many other human-driven changes to the environment are *raising concerns about the future of Earth’s environment and its ability to provide the services required to maintain viable human civilizations*” (Steffen et al., 614, emphasis my own).

In its nomination, modernity/coloniality territorializes the geologic periphery, and concurrently creates a flag of failure of its inadequacy to serve and secure its colonizers’ future. Also in this material end, the immaterial sphere of computation proliferates as a new (semi) man-made periphery and simultaneous potential constitution of planetary agents rather than human subjects.

Human-Inhuman in the Anthropocene

In her article *Anthropogenesis: Origins and Endings in the Anthropocene*, human geographer Kathryn Yusoff complicates the (now blasé) irony of the anthropocentrism of the anthropocene. Two pillars of her argument are that its nomination marks "...1) the production of a mythic Anthropos as geologic world-maker/destroyer of worlds, and 2) a material, evolutionary narrative that re-imagines human origins and endings within a geologic rather than an exclusively biological context" (Yusoff, 3). Yusoff captures the equally arrogant act of universalizing the actions of human/anthropos and homogenizing all of human beings and life to one kind of human (Mignolo's man) (15). Yusoff argues that the anthropocene opens up inhuman space, albeit in a backwardly. That is, by "...a shift in register from humanist thought, which characterized the inhuman [the geologic] as a dehumanizing force, to a concept of the inhuman as materially constitutive of the possibilities of life" (5). This is backwards in that the articulation of the inhuman geologic as materially constitutive of life, i.e. human imposing himself into the geologic strata as a strata, births the geologic failure for this human's future. This undifferentiated human currently and problematically stamps this inhuman space with its own signature, rather than realizing himself as manifest from the cross-temporal and material range of forces, geologic and beyond. As Yusoff describes, the

Anthropocene authors name humans as an end in themselves – both as a distinguishable trace in the geologic strata and as author of the end – a stratigraphic writer, reader, and agent of geology and nature...[it] has a heterogeneous identity, poised as it is on the threshold of new geophysical and geophilosophical conditions and late Holocene humanism (and its attendant structures of thought and definitions of modes of being that imagine a singular nature for the human subject) (Yusoff, 2; 6).

Many others, like Jason W. Moore and Donna Haraway, contest the term anthropocene as geologic epoch and social concept in considering in its various vantage points it conceals when posited as a scientific statement, such as its historical development, relationship to capitalism, global trade systems, and intra-activity across temporal and spatial matter. In its contestation, additional and alternative terms have been posited, such as Capitolicene, Plantationocene, and

Chthulucene (for an overview of this see the article *Anthropologists Are Talking- About the Anthropocene*).

While Yusoff's undifferentiated human harks of "man" from a feminist vantage point, man being "...an uncritical unifying patriarchal term for the human species without an understanding of sexual difference and the continued gendered production of knowledge;" Mignolo describes "...*man* [standing]... for *human being* (at the expense of women, non-Christians, people of color, and homosexuals)" to the constructs of humanity, and citizen, as a "...[formation] during the Renaissance and was one of the constitutive elements of the colonial matrix of power" (*Citizen, Knowledge, and the Limits of Humanity*, 312). These conceptions retain the focus on undifferentiated body-as-life, and the material inhuman. Yusoff points out these conceptions problematically open the geologic as inhuman still within the frame of the human. To expand on this formation, anthropologist Elizabeth Povinelli calls for the complication of the universalized political body in acknowledgment of the agency of nonlife in geography and ontology.

Computation to Move Beyond Bio-Geo-Geonto-Politics

Povinelli argues that the use of biopolitics, and biopower, no longer serves as the most productive analytical nor political concept for engaging with what is at stake in the current world of late liberalism and the anthropocene. She articulates the range of theoretical understandings of biopolitics while keeps as a fundamental understanding its possibly most common reference to Michel Foucault as the "set of mechanisms through which the basic biological features of the human species became the object of a political strategy, of a general strategy of power" first made in his 1975-76 Collège de France lectures (Povinelli, *Geontologies*, 1).

Povinelli suggests that the world has transitioned into a different formation of power, what she calls geolontological or geontopower. She uses this term to "...intensify the contrasting opponents of nonlife (geos) and being (ontology) currently in play late liberal governance of difference and market" (Povinelli, *Geontologies*, 3). That is, to underscore the "biontological enclosure of existence" and "account for the moment in which a form of power long self-evident

in certain regimes of settler late liberalism is becoming visible globally” (Povinelli, *Geontologies*, 3). She asserts that where biopower “...operate[s] through the governance of life and the tactics of death,” geontopower is “... a set of discourse, affects, and tactics used in late liberalism to maintain or shape the coming relationship of the distinction between Life and Nonlife” (Povinelli, *Geontologies*, 3). Within the scope of geontopower is the relationship of the human and the planet, considering growing ecological crises again as marked so by humans opening the inhuman geologic strata as failure as a life support as well as rival. Again, as Crutzen claims the anthropocene as

...the evolution of humans and our societies from hunter-gatherers to a global geophysical force...[which] suggests that the Earth has now left its natural geological epoch, the... interglacial state called the Holocene. Human activities have become so pervasive and profound that they rival the great forces of Nature and are pushing the Earth into *planetary terra incognita* (Crutzen et al, *The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature?* 614; emphasis my own).

Povinelli’s project takes into account the geologic in relation to the biopolitical (the life - nonlife dichotomy; referencing conatus, zoe, bios in her texts), which might help disrupt a universalized man as the geologic, “...understood as an undifferentiated trace in the strata...” (Yusoff, 4-5). This project compliments Yusoff’s emphasis of altering “...how humanity is deployed as a method of erasure that obfuscates climate racism, social injustice in fossil fuels, and differentiated histories of responsibilities through homogenization in a ‘we’ of the Anthropocene” (Yusoff, 6).

Yusoff aligns with Povinelli’s argument by indicating the opening of the inhuman in this claim, as it permits a geologic subject (even if as result of anthropogenic thought) (Yusoff, 6). Their arguments suggest an opening to leave the biopolitical, the focus of life as the world-making narrator for the planet. In Yusoff’s call to consider the “social and geologic strata together; as geosocial formations... of power (Yusoff, 7; Clark and Yusoff), though, she remains still within the material, even if inhuman and inorganic, just as Povinelli’s geontopower.

I draw two indications from Yusoff and Povinelli’s arguments call for renegotiation of the ontological and geologic. In their opposing stances, the scientist/nominators of the

anthropocene and Yusoff and Povinelli, remain within the material world, inhuman and human. As well, they remain very much entangled within the “human developments” as determining the nomination and geologic effects attributed to the anthropocene. This is the *opposite* of *planetary terra incognita* as Crutzen claims above. Rather, as planetary entities are and become increasingly more computational, I suggest that the nomination of the anthropocene indicates the planet as possibly completely knowable and mappable. What is not yet mapped or known is the geographic space of cyberspace and the infrastructure of the Stack. Simply, the planet becomes more mapped and known within the development of cyberspace: Bratton describes

Google’s mapping ambition...is foundational and inclusive of territory-in-total, and thereby it may be seen as interfering with an absolute last instance of sovereign identification that states might otherwise enjoy. Its descriptive reason extends beyond land masses, even deep into the Amazon river basin to oceanic underwater canyons, and beyond the planet, including Mars and Earth’s moon, and offering them up through its own versions of the Blue Marble Earth, now interfacial regimes for the Google Earth publics (*The Stack SS*, 144).

It important to move away from the planetary-crises Crutzen claims humans have caused as an end or coming apocalypse, that can be remedied by being more earth friendly (so it wants to be friends with us back...to serve us for generations to come). All snark aside, there are two (among many) very simple but crucial dangers if this mentality encroaches further into contemporary and future infrastructures. That is, this mindset maintains a universalized human subject still as the focal point. And, it disregards the development of the immaterial, as constitution of being and critical global infrastructure as a very real place spawned by and reconstituting the parameters of humanitas-geologic force.

To emphasize: global trade, and global powers, and thus, global infrastructure have been in existence long prior to computational technology.⁹ The development of computational technology and its infrastructures to the extent of becoming planetary, was made possible, and by, the meta-scale of the (problematic universalized concept of) human to the point of him becoming a geologic force (materially); and bio-and-geopolitically. As the planet is more and

⁹ The line of where computational technology begins and ends can be argued – here I reference it in its more contemporary form, as in computer-era.

more mapped and organized, the immaterial realm must be treated as inherently codetermining, or intra-determining in world-and life-making with the material inhuman and human. This is crucial for this to be incorporated when rethinking terms of governance embedded in the making of the planet's immaterial to material inscription.

While the “gap” in era for Yusoff and Povinelli remains as an in-between the human-subject and geologic, it implicates the geosocial formations of power as the reaching of a material, planetary, edge. Through the movements to meeting this edge, as global formations of power and their orchestration, stems computational technology (as making the meta-scale of global communications and systems possible). In its development, it reinforces the edge by making-knowable the material on a planetary-scale (again, the *opposite* of what Crutzen's formation of the anthropocene as geologic era suggests). So, the future for modernity/coloniality is based in territorializing and constructing exteriorities, by the human-geologic formation of power as marker of the end of physical exteriorities (i.e., Crutzen's construction of the anthropocene as new, human-born, geologic era). But, in face of the end of physical space, and in the simultaneous thickening of cyberspace rather than just a set of systems helping orchestrate the material, it turns into a site (as Bratton argues, and I support, albeit through different conceptions). Further, I suggest that by the end of the material exterior, and the mappability of the planet by its computability, cyberspace is the site of the future for the post-anthropocene. It is equally present, encapsulating, and self-reflexive. As it subsumes the material, it creates a turn away from of “human,” and brings to fore the multiplicity of previously exterior (to human-subjects) temporalities and spatialities turned upon the planet. Combined with no more physical space to map, this is the site of the future. And, it calls for a different mode for entrance in that it is both a reconstitution of being and a site of critical global infrastructure.

This is where Bratton discusses the cloud layer and its platforms as “...having both geopolitical ramifications and implications [and act as] a geopolitical condition and constitution in their own right” (122), and where I depart from these ramifications within the Stack's

architecture and established institutions (state or nonstate). I emphasize the importance of tying together the shifts and openings based on immaterial infrastructure and content growth as determining spatial, temporal, and ontological constitutions of the world (being) and life (inhuman and human) to more fully understand what is at stake in this gap in epochs.

So, the entrance of computation is a core element of entering the operations of global power. This unsettles Povinelli's proposition from its planet-oriented focus and forces the consideration of cyberspace. With the addition of the determining immaterial field of computation, the materially oriented geological, biological, and ontological collide in this period. The world-and-life-making arenas (bio-geo-geonto politics) – mash up with planetary-scale computation – and bring the inhuman into its immaterial and material architecture. Bratton focuses on the convergence of geography, geology, and geodesy onto computational platforms, interlocking as information infrastructures (Bratton, *Benjamin Bratton: Geobiopolitics and Planetary-Scale Computation: Sensors, Abstractors, Governors*). Where the house is a machine for living, The Stack is a machine for computing (interoperability, interoperable agents).

Computability of Entities and Datafication

How does a machine for computation that envelops the planet look? What is the proliferation of computable entities to be governed, as constituting cyberspace, and the Stack? As planetary entities of all scales become more and more possibly knowable [i.e. a grain of sand in the desert might be able to be given a location through GPS], what constitutes the world, and the future, grows exponentially. I use *being knowable* in reference to technological computation, computability, a reading of an entity in the form of data. This is the world of Gilles Deleuze's "dividual," in which "The numerical language of control is made of codes that mark access to information, or reject it. We no longer find ourselves dealing with the mass/individual pair. Individuals have become 'dividuals,' and masses, samples, data, markets, or 'banks'" (*Postscript on the Societies of Control*, 5). As well, Bratton details further on knowing, having, and being, as a user:

This triumvirate of *User* identity is: “something you know” like a password, or a specific response to a specific question; “something you have” like an identification card, a dongle, key, or specific chip; and “something you are” like a fingerprint, retina pattern, or other hard-patterned information. These are the three sides of the triangle that individuates one *User* from a population: *knowing, having, being*. So long as something can know, have, and be, it can be a *User* (*The Stack SS*, 345).¹⁰

In her music video *Home*, Holly Herndon validates the reality of this *datafication* and legitimizes her multiplication of the self with her own agency, in addition to as a datafied citizen and economic subject through illegal NSA surveillance.¹¹

What determines the worthiness of knowing, of becoming data, whether that grain of sand, or Herndon’s Skype calls? Where might this information exist, on a social media platform, a military database, a research lab in a university? How may its existence may be read, based on the platform’s interface? What value this information may have (even profiling for terrorists) is based on who or what is potentially reading and translating it, affirming it exists at all and how it can or can’t act or serve. This is why Herndon’s technique of using data from her digital life-making movements as the auditory content for her song, that directly calls out the abuse of this activity from the illegal surveillance of her nation-state, is a powerful legitimization of *becoming-user* immateriality and platform use.

Rather than technology permitting the mediation of just “information,” the growth of computable entities includes the human and inhuman living things, nonliving things, and compilations across these categories, as information mediated together. This mediation permits a possible subsumption between the exteriority between *humanitas* and *anthropos*. This mediation of mixed entities as information does not refute life. Nor does it inherently erase representations or mentality of *humanitas* as *subject* on a platform. Rather, the immaterial-turn opens a possible *becoming-* a user-entity operating with, by, and through other user entities.

¹⁰ Bratton continues, “To some, that may seem unnatural; to me, that looks like universal suffrage. In order to design more robust transformations at the *User* layer, it is not enough to expand the criteria for admission only to who and what counts as a *User*; it also demands a shift in how (and indeed *if*) the *User* is made to account for the intentions and effects of every column that he, she, or it initiates” (*The Stack SS*, 345).

¹¹ In my third chapter I expand upon the term *datafication* in the discourse of data surveillance predominantly through media José van Dijk’s use.

The issues in this datafication as making entities are its representation of the movement of humanitas' organization of space and time into the anthropos exterior. While the anthropocene, as Yusoff argues, is the human marking the geologic, computational entities and infrastructures orchestrate with one another and human-based activities, behaviors, critical systems. It should be noted that the geologic has ecology that influences human-based activities, behaviors, and critical infrastructures. In computation, the humanitas and anthropos (whether organic or inorganic- anthropos as exterior), level in the immaterial field of computation. The lag-time remains in the approach of the humanitas negotiating this accidental yet self-induced displacement to something outside.¹² These issues constitute the current and prospective politics Bratton situates when describing the confused layers of “enclaves and exclaves jigsaw” parameters of platforms within the Cloud (*The Stack SS*, 309).

So, where “Modernity/coloniality is articulated...on the ontological and epistemic differences;” modern sovereignties made exteriors and others of temporalities, spatialities, of peoples and peoples land. In claiming the anthropos as humanitas and the geologic, this extends inhuman spaces like space, water, and earth. The nomination of the anthropocene as the signature of a single “Man” makes this epoch gap a colonization of material exteriors. This garners two results: first the end of proximate material territories and peoples to conquer, colonize. And second, the accidental semi-immaterial space from the proliferation of computation and its infrastructures (cyberspace) that is both a space and reorientation of what constitutes being.¹³

Subjects to Entities

The Stack's move from human/material subjects to immaterial entities indicating the gap between the anthropocene and post-anthropocene levels Heidegger's three distinctions of the

¹² Bratton quickly captures this issue of lag-time in his Tedx talk *New Perspectives- What's Wrong with Ted Talks*, viewable here: <https://www.youtube.com/watch?v=Y05cKRMJaf0>.

¹³ I say semi immaterial, as cyberspace “proper” is immaterial, constituted by information, data, and invisible. But part of its necessary infrastructure is indeed material with material needs for it's functioning. For example, data banks need to be cooled; technological devices that create interfaces need alloy and workers to put them together, and so on.

roles of entities in the world: [1.] the stone (material object) is worldless; [2.] the animal is poor in world; [3.] man is world-forming” (177). Planetary-scale computation overturns these distinctions of roles, in that it turns each of them into potentially world-forming agents by its. For example, in his lecture about “being mapped,” curator Anselm Franke highlighted the series of “deaths by GPS,” stories of people dying in the desert from getting lost in the desert by entrusting too much confidence into the logic of the GPS rather than making safer judgment calls indicated by their immediate material realities (*Mapping and Being Mapped*; Clark, Krissy).

This new era marked by planetary-scale computation points to the end of territory to be mapped and conquered and mastered, the anthropocene. I reiterate in its nomination the geologic turning both failure as a service to humans and as a rival to humans. With no more unknown territory (in the forms that are desirable enough to fulfill a human agenda) humans who once enacted the map are instead subsumed within the map of computation. In this disorientation, what becomes the stabilizing referent, and what is its language? As Franke well-framed, “What is our semantic toolbox in grasping the formulative processes of shaping and being shaped... What authorizes the language of governance its principles of emergence from the anthropocene”?

In assuming the world is orchestrated within and by the Stack, it permits the possibility to move beyond traditional biopolitics, as understood through Michel Foucault as the governance of life. It also permits the possibility to move beyond Elizabeth Povinelli’s critique of biopolitics through her geontopolitics, as inclusive of geography and ontology (organic and inorganic). Planetary-scale computation infrastructures messily congeal biopolitics and geopolitics, in which life is mapped within, among, and *in composition with* other computable agents. And, in the partially immaterial territory that spans the planet, and runs its most critical systems.

Bratton predominantly refers this congealing within a geo-affix frame and one that causes “...the displacement of the human agent from the subjective center of its operations...” (*Some Trace Effects*). I suggest that the post-anthropocene is something to be designed because of its

commencement from the end of material space, by way of the immaterial, computational sphere, vertical addition to the horizontal (earth), that is made of systems, infrastructures, and data-based entities (as opposed to human-subject). I consider the future as a site in cyberspace is a marked shift in era from the anthropocene. And it is momentous to consider how different entities emerge in the displacement of the subject. That is, what are the interfaces, and the infrastructures of the interfaces, by which entities emerge as user agents?

Pig Simulator helps frame the gap in which humanitas levels from subject with an exterior, a departure from world-maker and singular spatial and temporal orientation (of the subject), to computational entity-among-many by no consistent design or masterable narrative. In the experience of the nonnarrative of the VR, it translates the gap of this leveling in the move beyond the anthropocene in which humanitas faces immaterial relations rather than an exteriority. I suggest that by the Stack there is no more an exterior. That is, the future as cyberspace is an inward site and this is what is unique in the possible departure from a narrative of modernity by the opening of multiple kinds of being as interoperable agents. And, these agents interoperating within different spaces and times not human-subject determined.

For example, *Pig Simulator* presents to the game-player an experience of transitioning into this inward site by refusing a subject-centered *user*-design. Instead, it creates an affective space for departing from “That empty shell of the *User* position” and towards “... not just the negotiation among actors within the *User* position...[but the] durable interpenetration of [intelligent] actors, mutually embedded one within the other...the *User* position as itself a microplatform within the macroplatform of The Stack...”(Bratton, *The Stack SS*, 284-9). Likewise, *Home* presents the simultaneously occurring collisions of the possible exploitative openings in the datafication of being between users and life-making institutions.

Design as Infrastructure, for Interoperable Entities

What do exploring, learning, and mapping cyberspace as a different kind of future site and for the user look like? What determines the user entity’s understanding of its operability as

subjectivity? How does this relate to the frameworks of *becoming-user*? We enter this realm as a territory of the future in already being mapped by it, within it. In contrast to conquest, cyberspace as massive intertwinements of information already determines the planet; and its inhabitants and sovereignties; and as the only “territory” in which to place the future. Considering it is constituted by sets of relations, systems, networks, embedded within earth surfaces (land, water) to the solar system, and across different nation-state and corporate powers, I suggest it takes shape in the *organizing* for the *interoperability* of the constituting entities and powers. We must make sense of, rather than instate “anew” upon it (or merely conquer).¹⁴ This is may be why Bratton and others declare that this verticalization is a design problem, and I emphasize specifically not just design but design as organization and orchestration: i.e., *design-as-infrastructure*.

Specifically, design-as-infrastructure as the mode in which we imagine, and enter, the future as site in the immaterial, rather than conquering a material territory, as of modernity/coloniality. This can be observed in the contemporary wave of works by theorists and architects like Bratton, Keller Easterling, Shannon Mattern, among others. I use design as infrastructure rather than other forms of design or imaginings like programming, or systems-making, art, architecture. While these design practices (and infinite others) of course are relevant, I suggest that as future is within the scope of cyberspace and not a “traditional” material, designated space (i.e., something that can be physically contained and fenced off) that it calls for different kinds of parameters.

For the functionality of this space, for it to be locally and globally operable across such a wide range of elements and entities, it may have relations that are *decentralized*, *standardized*, *scalable*, and *situationally* and *subjectively determinable*, although these qualities are not inherent to its coming formation; for more on this see Bratton’s work on Cloud Feudalism).’ Key

¹⁴ By “anew” in quotes I mean to reference a history of colonizing on land that was chartered as “new” when in fact it was simply new for the colonizers. In instating anew, or colonizing, territorializing, and so on, labeling certain lives and societies as inhuman. While the decolonial and necropolitics discourses are critical now and for designing the future, it is not the focus of my thesis. I try to articulate my terminology that overlaps with it appropriately throughout.

to this design is trying to incorporate into it and maintain the multiple temporalities, spatialities, and constituents of being as data that the immaterial turn opens. This is in order to refrain from returning to the practice of one narrative as mastery, and why the ambiguity of the cases of *Pig Simulator* and *Home* is not something to be resolved but rather learned from. Learning from such ambiguity and considering how it may be incorporated into immaterial infrastructures is the challenge, of course. I do not pose answers to this, but try to surface the alignment and clashing of the contemporary presence of infrastructures. And, design-as-infrastructure as a necessary *method* into which the concurrent ontological reorientations in my cases must be considered. These reorientations are embedded within the immaterial and material infrastructures that are orchestrating the world and life-making determinants of the planet, and the planet as content.

As governing global powers (whether nation-states, institutions, corporations, and so on) continue to construct and organize cyberspace, and plan for its affordances and effects (which cross political, ecological, social-spheres), the discourse of “infrastructures” heightens across disciplines. The word’s dictionary definition is along the lines of the basic physical and organizational structures and facilities (like buildings, roads, power supplies) necessary for operation. This definition encourages the feeling of security in its necessity, objective in its functionality, and comprehensible in its system (even if difficult or hidden, as it produces an operation it can be deduced, like a math problem).

What this word means and what it makes relevant depends on the discipline; for example, city waste planner vs. radioactive waste manager vs. cultural theorist vs. artist vs. private equity financier vs. homeless shelter organizer vs. train driver vs. train passenger vs. so on. To reinforce this understanding, media studies theorist Shannon Mattern articulates that infrastructures are situationally and subjectively determined, even within the same cross-roads of the seemingly same infrastructure- think here about a train passenger vs. railroad builder vs. train conductor vs. train car engineer; and so on. “Infrastructure can easily flip between figure and ground...” Quoting Gregory Bateson, Star suggests that an infrastructure is a “relationship or an infinite

regress of relationships. Never a ‘thing.’” Infrastructures might have plenty of entangled material elements, but they can never be reduced to an essentializable “thing” (Mattern, Deep Mapping, 11). Design-as-infrastructure may permit a closer sense of being one agent within an open ended functioning of infrastructure, rather than closed loop narratives prescribed by cloud platform interfaces that reduce the capacity of the Stack to their preferred motive.

To consider the potential for design-as-infrastructure as method for entering the future, rather than conquering, I look to a key relationship in its determination between the user and the interface. That is, the interface as the meeting point of the user and the world-making infrastructure, The Stack. I find these two layers to be the most simple and clear for understanding the development and (two-way) effects of the developing design, language, design-as-language, negotiations of literacy, or leaving literacy, of understanding the infrastructural narratives of world-and life-making.

The interface is the filtering site for the underlying, complicated, system contents that are deemed unnecessary for the purpose of whatever the interfacial regime is meant to “do” (Bratton, *The Stack SS*). It is the meeting site and site of engagement between users and the Stack, and what it displays (the contents, language of the graphical interfacial regime) shapes the users understanding of the [world] (their reflection within that site- think, the profile), and what the user looks like and potentially can be in the [world] (Bratton, *The Stack SS*). It is also the site in which users may express a force, agency, and have effect – whether in accordance with the structure or by a disturbance to what is makes possible. In either scenario, the user is acting through the interface as an image of the world (Bratton, *The Stack SS*).¹⁵

Bratton often references s the 2010 Nicaragua-Costa Rica land dispute as one example to show what is at stake in not just the addition of computational space but in its proliferation and

¹⁵ Bratton articulates, “Interfaces can give local shape to The Stack’s aspiration to *nomos*, prototyping geography as a technology artificial distributed cognition, and through this, it constructs and configures the diagram of possible action that *Users* can make on The Stack and that The Stack can make on *Users*” // “Interfacial regimes are totality machines; it is an image of totality that when acted on actually effects it. As such, the *User* collaborates in the real remaking of the world according to that interfacial regime’s particular geographic vision and representations” (*The Stack SS*, 229).

therefore new ordering upon the material world and traditional forms of governance. The dispute was that Google Maps made an error in their border that attributed an area of about 2.7 kilometers of Costa Rica to Nicaragua. This land been contested between the countries from the mid-1800s, and Nicaraguan troops invaded the land (or from the vantage point of Maps, entered their new territory) and replaced the Costa Rican flag with their own. To keep in mind the simultaneous layers of geographic confusion, Bing Maps reflected the “proper” earth subdivision of the countries (Brown).

As Yusoff argues that the anthropocene as the universalized human deprives any measure beyond him which indicates his finitude. As the Nicaragua-Costa Rica confusions demonstrate, the immaterial turn, opens up a new sphere which in its layers of possible jurisdiction a top of the materially-claimed. In doing so, the universalized human’s finitude is reflected upon him.

Closing

The undifferentiated man as “human” has reached the edge of foreseeable, traditional spatiality and temporality (such as other beings, other physical territories). In this maxing-out, “Human as master of the planet ...[is] a stark reality” (Crutzen and Schwagerl). Effects of this activity, this maxing-out, have turned into an immaterial site of cyberspace and reconstitution of being. But, cyberspace as site creates the simultaneous layering of contesting and also simply different sovereignties within the material realm that were once designated only within the material realm. It does so also by opening the user-position to diverse agents across time, space, and materialities. In this

... incorporation of many different types of actors (human, machinic, bots, animals, infrastructures) into recombinant *User* assemblages, all with differing regular morphologies and temporalities, means that inside the *User* position itself... different kinds of platform logics between individuated actors can occur” (Bratton, *The Stack SS*, 284).

Man as universalizing concept of human and subject of modernity falls through his method of conquering (of modernity/coloniality) and into the plural assemblages of being beyond it.

Becoming-user is at once an inherently posthuman turn (by human being displaced as subject and

away from affirmationist agendas like Rosi Braidotti). It is as well a political turn, in that what constitutes a life moves from a set of assumed and designated institutional sovereignties (citizen, economic-subject) organizing across immaterial platform logics. The danger of this citizen/economic/man-as subject of modernity turn to platform user is the retaining of the former's logic in its design. The world-and-life-making arenas (bio-, geo-, geontopolitics) – mash up with planetary-scale computation – and bring the inhuman into its architecture. This shifts the future from material exterior to be conquered-something that can be looked forward to within a linearity conception of time and space. And instead, towards the non-linear, immaterial, and infrastructurally-determined realm of planetary-scale computation. As cyberspace surrounds us and determines us, we must look at it and “figure it out.” This makes cyberspace, and entering it within the mode of design-as-infrastructure, possibly self-reflexive.

I try to bridge these efforts by looking to how narratives of what it is to *become-user*, rather than merely take the position of user. How can different conditions of emergence challenge the edification of modernity/colonial narratives in these infrastructures? How can ontological reorientations alternatively determine the formations of “Planetary scale systems such as [Google’s American conglomerate Alphabet which now owns its own energy company, to]...the Kyoto Protocol and ISO standards to cloud computing” which are “...growing vastly in size and number” (Vickers et al.)? As “...algorithmic capitalism advances...” can orienting away from the human-and economic-subject challenge the forming world-order as “... megastructures begin to own and control more layers within infrastructure “stacks,” which are largely invisible but link us all in global neural networks...” (Vickers et al.)?

As Bratton calls for the fortification of user as the coming geopolitical subject, and if the user and the interface are co-determining, I examine two objects to consider the potential for the language of life-and-world-making platforms. These two objects, the virtual reality game *Pig Simulator* and Holly Herndon’s music video *Home* are moments of this pre-forming, emerging, narratives, the making of the language, of infrastructures to come. These moments are not

representations or illustrations. They are not designs or nor architectures. They are not speculations. They are specific captures of *becoming-user* by and through the current contemporary moment of cyberspace, its changes in orientations of global power, and for the future to come as the post-anthropocene. What the *post-* may end up meaning is based on the forming design-language, as global literacy, is what I hope to contribute to in my analyses.

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