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The Black Stack

Planetary-scale computation takes different forms at different scales: 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 overdetermined by self-quantification and exploded by the arrival of legions of nonhuman users (sensors, cars, robots). Instead of seeing the various species of contemporary computational technologies as so many different genres of machines, spinning out on their own, we should instead see them as forming the body of an accidental megastructure. Perhaps these parts align, layer by layer, into something not unlike a vast (if also incomplete), pervasive (if also irregular) software and hardware *Stack*. This model is of a Stack that both does and does not exist as such: it is a machine that serves as a schema, as much as it is a schema of machines.1 As such, perhaps the image of a totality that this conception provides would—as theories of totality have before—make the composition of new governmentalities and new sovereignties both more legible and more effective.

The façade of Inntel Hotel Amsterdam-Zaandam, Holland, is designed by WAM architects.

My interest in the geopolitics of planetary-scale computation focuses less on issues of personal privacy and state surveillance than on how it distorts and deforms traditional Westphalian modes of political geography, jurisdiction, and sovereignty, and produces new territories in its image. It draws from (and against) Carl Schmitt's later work on *The Nomos of the Earth*, and from his (albeit) flawed history of the geometries of geopolitical architectures.2 "Nomos" refers to the dominant and essential logic to the political subdivisions of the earth (of land, seas, and/or air, and now also of the domain that the US military simply calls "cyber") and to the geopolitical order that stabilizes these subdivisions accordingly. Today, as the *nomos* that was defined by the horizontal loop geometry of the modern state system creaks and groans, and as "Seeing like a State" takes leave of that initial territorial nest—both with and against the demands of planetary-scale computation3—we wrestle with the irregular abstractions of information, time, and territory, and the chaotic de-lamination of (practical) sovereignty from the occupation of place. For this, a *nomos* of the Cloud would, for example, draw jurisdiction not only according to the horizontal subdivision of physical sites by and for states, but also according to the vertical stacking of interdependent layers on top of one another: two geometries sometimes in cahoots, sometimes completely diagonal and unrecognizable to one another.4

The Stack, in short, is that new *nomos* rendered now as vertically thickened political geography. In my analysis, there are six layers to this Stack: *Earth, Cloud, City, Address, Interface,* and *User.* Rather than demonstrating each layer of the Stack as a whole, I'll focus specifically on the Cloud and the User layers, and articulate some alternative designs for these layers and for the totality (or even better, for the next totality, the *nomos* to come). *The Black Stack,* then, is to the Stack what the shadow of the future is to the form of the present. The Black Stack is less the anarchist stack, or the death-metal stack, or the utterly opaque stack, than the computational totality-to-come, defined at

this moment by what it is not, by the empty content fields of its framework, and by its dire inevitability. It is not the platform we have, but the platform that might be. That platform would be defined by the productivity of its accidents, and by the strategy for which whatever may appear at first as the worst option (even evil) may ultimately be where to look for the best way out. It is less a "possible future" than an escape from the present.

Above: The militaristic tower of the new Mac Pro descends on the assembly line in a factory in Austin, Texas. Below: Manganese nodules contain rare-earth minerals used in disk drives, fluorescent lamps, and rechargeable batteries, among other things. Photo: Charles D. Winters.

Cloud

The platforms of the Cloud layer of the Stack are structured by dense, plural, and noncontiguous geographies, a hybrid of US super-jurisdiction and Charter Cities, which have carved new partially privatized polities from the whole cloth of de-sovereigned lands. But perhaps there is more there.

The immediate geographical drama of the Cloud layer is seen most directly in the ongoing Sino-Google conflicts of 2008 to the present: China hacking Google, Google pulling out of China, the NSA hacking China, the NSA hacking Google, Google ghostwriting books for the State Department, and Google wordlessly circumventing the last instances of state oversight altogether, not by transgressing them but by absorbing them into its service offering. Meanwhile, Chinese router firmware bides its time.

The geographies at work are often weird. For example, Google filed a series of patents on offshore data centers, to be built in international waters on towers using tidal currents and available water to keep the servers cool. The complexities of jurisdiction suggested by a global Cloud piped in from non-state space are fantastic, but they are now less exceptional than exemplary of a new normal. Between the "hackers" of the People's Liberation Army and Google there exists more than a standoff between the proxies of two state apparatuses. There is rather a fundamental conflict over the geometry of political geography itself, with one side bound by the territorial integrity of the state, and the other by the gossamer threads of the world's information demanding to be "organized and made useful." This is a clash between two logics of governance, two geometries of territory: one a subdivision of the horizontal, the other a stacking of vertical layers; one a state, the other a para-state; one superimposed on top of the other at any point on the map, and never resolving into some consensual cosmopolitanism, but rather continuing to grind against the grain of one another's planes. This characterizes the geopolitics of our moment (this, plus the gravity of generalized succession, but the two are interrelated).

From here we see that contemporary Cloud platforms are displacing, if not also replacing, traditional core functions of states, and demonstrating, for both good and ill, new spatial and temporal models of politics and publics. Archaic states drew their authority from the regular provision of food. Over the course of modernization, more was added to the intricate bargains of Leviathan: energy, infrastructure, legal identity and standing, objective and comprehensive maps, credible currencies, and flag-brand loyalties. Bit by bit, each of these and more are now provided by

Cloud platforms, not necessarily as formal replacements for the state versions but, like Google ID, simply more useful and effective for daily life. For these platforms, the terms of participation are not mandatory, and because of this, their social contracts are more extractive than constitutional. The Cloud Polis draws revenue from the cognitive capital of its Users, who trade attention and microeconomic compliance in exchange for global infrastructural services, and in turn, it provides each of them with an active discrete online identity and the license to use this infrastructure.

Early personal computer advertisement promises an easy way out of a future technological swamp.

That said, it is clear that we don't have anything like a proper geopolitical theory of these transformations. Before the full ambition of the US security apparatus was so evident, it was thought by many that the Cloud was a place where states had no ultimate competence, nor maybe even a role to play: too slow, too dumb, too easily outwitted by using the right browser. States would be cored out, component by component, until nothing was left but a well-armed health insurance scheme with its own World Cup team. In the long run, that may still be the outcome, with modern liberal states taking their place next to ceremonial monarchs and stripped of all but symbolic authority, not necessarily replaced but displaced and misplaced to one side. But now we are hearing the opposite, equally brittle conclusion: that the Cloud is *only* the state, that it equals the state, and that its totality (figural, potential) is intrinsically totalit*arian*. Despite all, I wouldn't take that bet.

Early personal computer advertisement promises an easy way out of a future technological swamp.

Looking toward the Black Stack, we observe that new forms of governmentality arise through new capacities to tax flows (at ports, at gates, on property, on income, on attention, on clicks, on movement, on electrons, on carbon, and so forth). It is not at all clear whether, in the long run, Cloud platforms will overwhelm state control on such flows, or whether states will continue to evolve into Cloud platforms, absorbing the displaced functions back into themselves, or whether both will split or rotate diagonally to one another, or how deeply what we may now recognize as the surveillance state (US, China, and so forth) will become a universal solvent of compulsory transparency and/or a cosmically opaque megastructure of absolute paranoia, or all of the above, or none of the above.

Between the state, the market, and the platform, which is better designed to tax the interfaces of everyday life and draw sovereignty thereby? It is a false choice to be sure, but one that raises the question of where to locate the proper site of governance as such. What would we mean by "the public" if not that which is constituted by such interfaces, and where else should "governance"— meant here as the necessary, deliberate, and enforceable composition of durable political subjects and their mediations—live if not there? Not in some obtuse chain of parliamentary representation, nor in some delusional monadic individual unit, nor in some sad little community consensus powered by moral hectoring, but instead in the immanent, immediate, and exactly present interfaces that cleave and bind us. Where should sovereignty reside if not in what is in-between us—derived not from each of us individually but from what draws the world through us?

For this, it's critical to underscore that Cloud platforms (including sometimes state apparatuses) are exactly that: *platforms*. It is important as well to recognize that "platforms" are not only a technical architecture; they are also an institutional form. They centralize (like states), scaffolding the terms of participation according to rigid but universal protocols, even as they decentralize (like markets), coordinating economies not through the superimposition of fixed plans but through interoperable and emergent interaction. Next to states and markets, platforms are a third form, coordinating through fixed protocols while scattering free-range Users watched over in loving, if also disconcertingly omniscient, grace. In the platform-as-totality, drawing the interfaces of everyday life into one another, the maximal state and the minimal state, Red Plenty and Google Gosplan, start to look weirdly similar.

Our own subjective enrollment in this is less as citizens of a *polis* or as *homo economicus* within a market, but rather as Users of a platform. As I see it, the work of geopolitical theory is to develop a proper history, typology, and program for such platforms. These would not be a shorthand for Cloud Feudalism (nor for the network politics of the "multitude") but models for the organization of durable alter-totalities which command the force of law, if not necessarily its forms and formality. Our understanding of the political economy of platforms demands its own Hobbes, Marx, Hayek, and Keynes.5

User

One of the useful paradoxes of the User's position as a political subject is the contradictory impulse directed simultaneously toward his artificial *over-individuation* and his ultimate *pluralization*, with both participating differently in the geopolitics of transparency. For example, the Quantified Self movement (a true medical theology in California) is haunted by this contradiction. At first, the intensity and granularity of a new informational mirror image convinces the User of his individuated coherency and stability as a subject. He is flattered by the singular beauty of his reflection, and this is why QSelf is so popular with those inspired by an X-Men reading of *Atlas Shrugged*. But as more data is added to the diagram that quantifies the outside world's impact on his person—the health of the microbial biome in his gut, immediate and long-term environmental conditions, his various epidemiological contexts, and so on—the quality of everything that is "not him" comes to overcode and overwhelm any notion of himself as a withdrawn and self-contained agent. Like Theseus's Paradox—where after every component of a thing has been replaced, nothing original remains but a metaphysical husk—the User is confronted with the existential lesson that at any point he is only the intersection of many streams. At first, the subject position of the User overproduces individual identity, but in the continuance of the same mechanisms, it then succeeds in exploding it.

The geopolitics of the User we have now is inadequate, including its oppositional modes. The Oedipal discourse of privacy and transparency in relation to the Evil Eye of the uninvited stepfather is a necessary process toward an alterglobalism, but it has real limits worth spelling out. A geopolitics of computation predicated at its core upon the biopolitics of *privacy*, of self-immunization from any compulsory appearance in front of publics, of platforms, of states, of Others, can sometimes also serve a psychological internalization of a now-ascendant general

economy of succession, castration anxiety—whatever. The result is the pre-paranoia of withdrawal into an atomic and anomic dream of self-mastery that elsewhere we call the "neoliberal subject."

This smart data-collecting onesie for babies monitors heart activity and basic functions. It also activates other baby-gadgets according to the signals detected in the child.

The space in which the discursive formation of the subject meets the technical constitution of the User enjoys a much larger horizon than the one defined by these kinds of individuation. Consider, for example, proxy users. uProxy, a project supported by Google Ideas, is a browser modification that lets users easily pair up across distances to allow someone in one location (trapped in the Bad Internets) to send information unencumbered through the virtual position of another User in another location (enjoying the Good Internets). Recalling the proxy servers set up during the Arab Spring, one can see how Google Ideas (Jared Cohen's group) might take special interest in baking this into Chrome. For Sino-Google geopolitics, the platform could theoretically be available at a billion-user scale to those who live in China, even if Google is not technically "in China," because those Users, acting through and as foreign proxies, are themselves, as far as internet geography is concerned, both in and not in China. Developers of uProxy believe that it would take two simultaneous and synchronized man-in-the-middle attacks to hack the link, and at a population scale that would prove difficult even for the best state actors, for now. More disconcerting perhaps is that such a framework could just as easily be used to withdraw data from a paired site—a paired "user"—which for good reasons should be left alone.

Some plural User subject that is conjoined by a proxy link or other means could be composed of different types of addressable subjects: two humans in different countries, or a human and a sensor, a sensor and a bot, a human and a robot and a sensor, a whatever and a whatever. In principle, any one of these subcomponents could not only be part of multiple conjoined positions, but might not even know or need to know which meta-User they contribute to, any more than the microbial biome in your gut needs to know your name. Spoofing with honeypot identities, between humans and nonhumans, is measured against the theoretical address space of IPv6 (roughly 1023 addresses per person) or some other massive universal addressing scheme. The abyssal quantity and range of "things" that could, in principle, participate in these vast pluralities includes real and fictional addressable persons, objects, and locations, and even addressable mass-less relations between things, any of which could be a sub-User in this Internet of Haeccities.

So while the Stack (and the Black Stack) stage the death of the User in one sense—the eclipse of a certain resolute humanism—they do so because they also bring the multiplication and proliferation of other kinds of nonhuman Users (including sensors, financial algorithms, and robots from nanometric to landscape scale), any combination of which one might enter into a relationship with as part of a composite User. This is where the recent shift by major Cloud platforms into robotics may prove especially vital, because—like Darwin's tortoises finding their way to different Galapagos islands—the Cambrian explosion in robotics sees speciation occur in the wild, not just in the lab, and with "us" on "their" inside, not on the outside. As robotics and Cloud hardware of all scales blend into a common category of machine, it will be unclear in general human-robotic interaction whether one is encountering a fully autonomous, partially autonomous, or completely human-piloted synthetic intelligence. Everyday interactions replay the Turing Test over and over. Is

there a person behind this machine, and if so, how much? In time, the answer will matter less, and the postulation of human (or even carbon-based life) as the threshold measure of intelligence and as the qualifying gauge of a political ethics may seem like tasteless vestigial racism, replaced by less anthropocentric frames of reference.

The position of the User then maps only very incompletely onto any one individual body. From the perspective of the platform, what looks like one is really many, and what looks like many may only be one. Elaborate schizophrenias already take hold in our early negotiation of these composite User positions. The neoliberal subject position makes absurd demands on people as Users, as Quantified Selves, as SysAdmins of their own psyche, and from this, paranoia and narcissism are two symptoms of the same disposition, two functions of the same mask. For one, the mask works to pluralize identity according to the subjective demands of the User position as composite alloy; and for another, it defends against those same demands on behalf of the illusory integrity of a self-identity fracturing around its existential core. Ask yourself: Is that User "Anonymous" because he is dissolved into a vital machinic plurality, or because public identification threatens individual self-mastery, sense of autonomy, social unaccountability, and so forth? The former and the latter are two very different politics, yet they use the same masks and the same software suite. Given the schizophrenic economy of the User—first over-individuated and then multiplied and de-differentiated—this really isn't an unexpected or neurotic reaction at all. It is, however, fragile and inadequate.

In the construction of the User as an aggregate profile that both is and is not specific to any one entity, there is no identity to deduce other than the pattern of interaction between partial actors. We may find, perhaps ironically, that the User position of the Stack actually has far less in common with the neoliberal form of the subject than some of today's oppositionalist formats for political subjectivity that hope (quite rightly) to challenge, reform, and resist the State Stack as it is currently configuring itself. However, something like a Digital Bill of Rights for Users, despite its cosmopolitan optimism, becomes a much more complicated, fragile, and limited solution when the discrete identification of a User is both so heterogeneous and so fluid. Are all proxy composite users one User? Is anything with an IP address a User? If not, why not? If this throne is reserved for one species—humans—when is any one animal of that species being a User, and when is it not? Is it a User anytime that it is generating information? If so, that policy would in practice crisscross and trespass some of our most basic concepts of the political, and for that reason alone it may be a good place to start.

In addition to the fortification of the User as a geopolitical subject, we also require a redefinition of the political subject in relation to the real operations of the User, one that is based not on *homo economicus*, nor on parliamentary liberalism, nor on post-structuralist linguistic reduction, nor on the will to secede into the moral safety of individual privacy and withdraw from coercion. Instead, this definition should focus on composing and elevating sites of governance from the immediate, suturing, interfacial material between subjects, in the stitches and the traces and the folds of interaction between bodies and things at a distance, congealing into different networks demanding very different kinds of platform sovereignty.

Lady Liberty is on the go. Regram courtesy of the passerby Eva Franch i Gilabert.

The Black Stacks

I will conclude with some thoughts on the Stack-we-have and on the Black Stack, the generic figure for its alternative totalities: the Stack-to-come. The Stack-we-have is defined not only by its form, its layers, its platforms, and their interrelations, but also by its content. As leak after leak has made painfully clear, its content is also the content of our daily communications, now weaponized against us. If the panopticon effect is when you don't know if you are being watched or not, and so you behave as if you are, then the inverse panopticon effect is when you know you are being watched but act as if you aren't. This is today's surveillance culture: exhibitionism in bad faith. The emergence of Stack platforms doesn't promise any solution, or even any distinctions between friend and enemy within this optical geopolitics. At some dark day in the future, when considered versus the Google Caliphate, the NSA may even come to be seen by some as the "public option." "At least it is accountable in principle to *some* parliamentary limits," they will say, "rather than merely stockholder avarice and flimsy user agreements."

If we take 9/11 and the rollout of the Patriot Act as Year Zero for the USA's massive data gathering, encapsulation, and digestion campaign (one that we are only now beginning to comprehend, even as parallel projects from China, Russia, and Europe are sure to come to light in time), then we can imagine the entirety of network communication for the last decade—the Big Haul—as a single, deep-and-wide digital simulation of the world (or a significant section of it). It is an archive, a library of the real. Its existence as the purloined property of a state, just as a physical fact, is almost occult. Almost.

The geophilosophical profile of the Big Haul, from the energy necessary to preserve it to its governing instrumentality understood as both a text (a very large text) and as a machine with various utilities, overflows the traditional politics of software. Its story is much more Borges than Lawrence Lessig. As is its fate. Can it be destroyed? Is it possible to delete this simulation, and is it desirable to do so? Is there a trash can big enough for the Big Delete? Even if the plug could be pulled on all future data hauls, surely there must be a backup somewhere, the identical double of the simulation, such that if we delete one, the other will forever haunt history until it is rediscovered by future AI archaeologists interested in their own Paleolithic origins. Would we bury it, even if we could? Would we need signs around it like those designed for the Yucca Mountain nuclear waste disposal site that warn off unknowable future excavations? Those of us "lucky" enough to be alive during this fifteen-year span would enjoy a certain illegible immortality, curiosities to whatever meta-cognitive entity pieces us back together using our online activities, both public and private, proud and furtive, each of us rising again centuries from now, each of us a little Ozymandias of cat videos and Pornhub.

In light of this, the Black Stack could come to mean very different things. On the one hand, it would imply that this simulation is opaque and unmappable—not disappeared, but ultimately redacted entirely. It could imply that, from the ruined fragments of this history, another coherent totality can be carved against the grain, even from the deep recombinancy at and below the Earth layer of the Stack. Its blackness is the surface of a world that can no longer be composed by addition because it is so absolutely full, overwritten, and overdetermined, that to add more is just so much ink in the

ocean. Instead of *tabula rasa,* this *tabula plenus* allows for creativity and figuration only by subtraction, like scratching paint from a canvas—only by carving away, by death, by replacement.

The structural logic of any Stack system allows for the replacement of whatever occupies one layer with something else, and for the rest of the architecture to continue to function without pause. For example, the content of any one layer—*Earth, Cloud, City, Address, Interface, User*—could be replaced (including the masochistic hysterical fiction of the individual User, both neoliberal and neo-other-things), while the rest of the layers remain a viable armature for global infrastructure. The Stack is designed to be remade. That is its technical form, but unlike replacing copper wire with fiber optics in the transmission layer of TCP/IP, replacing one kind of User with another is more difficult. Today, we are doing it by adding more and different kinds of things into the User position, as described above. We should, however, also allow for more comprehensive displacements, not just by elevating things to the status of political subjects or technical agents, but by making way for genuinely posthuman and ahuman positions.

In time, perhaps at the eclipse of the Anthropocene, the historical phase of Google Gosplan will give way to stateless platforms for multiple strata of synthetic intelligence and biocommunication to settle into new continents of cyborg symbiosis. Or perhaps instead, if nothing else, the carbon and energy appetite of this ambitious embryonic ecology will starve its host.

For some dramas, but hopefully not for the fabrication of the Stack-to-come (Black or otherwise), a certain humanism and companion figure of humanity still presumes its traditional place in the center of the frame. We must let go of the demand that any Artificial Intelligence arriving at sentience or sapience must care deeply about humanity—us specifically—as the subject and object of its knowing and its desire. The real nightmare, worse than the one in which the big machine wants to kill you, is the one in which it sees you as irrelevant, or as not even a discrete thing to know. Worse than being seen as an enemy is not being seen at all. As Eliezer Yudkowsky puts it, "The AI does not hate you, nor does it love you, but you are made out of atoms which it can use for something else."[6]

One of the integral accidents of the Stack may be an anthrocidal trauma that shifts us from a design career as the authors of the Anthropocene, to the role of supporting actors in the arrival of the Post-Anthropocene. The Black Stack may also be black because we cannot see our own reflection in it. In the last instance, its accelerationist geopolitics is less eschatological than chemical, because its grounding of time is based less on the promise of historical dialectics than on the rot of isotope decay. It is drawn, I believe, by an inhuman and inhumanist molecular form-finding: pre-Cambrian flora changed into peat oil changed into children's toys, dinosaurs changed into birds changed into ceremonial headdresses, computation itself converted into whatever meta-machine comes next, and Stack into Black Stack.

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An earlier version of this text was presented as a keynote lecture at Transmediale: Afterglow, January 31, 2014, in Berlin. Its presentation shared the stage with another keynote by Metahaven (Daniel van der Velden and Vinca Kruk) and was given at the curatorial invitation of Ryan Bishop and Jussi Parikka, along with Kristoffer Gansing and Transmediale. My thanks to each of them. The title, "The Black Stack," was coined by Metahaven and I to conjoin two current projects: my

forthcoming book The Stack: On Software and Sovereignty *(MIT Press) and Metahaven's book* Black Transparency *(Sternberg Press). I chose to take up the figure of the "Black Stack" as an alternative to the current system of global calculation.*

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