Monoliths and Dimensions: Benjamin H. Bratton's *The Stack* as Theory-Fiction

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In the shadows of the behemothic, overbearing, and totalizing regimes of highly-tuned, postindustrial technocapitalism, Benjamin H. Bratton's appropriately lofty opus *The Stack: On Software and Sovereignty*[1] proposes a new means of assessing the architecture of contemporary geopolitics, identity, autonomy, and subjectivity. The democratising potential of new technologies promised to us around the turn of the new millennium, we learn early on, has proven itself post-2008 to be no more sustainable than the global economy,[2] and yet such fallacious utopian sentiments continue to reign down heavy fire upon us, like the antiquated drones of Philip K. Dick's short story 'Autofac', built for a harmonious world which no longer seems achievable or even desirable.[3] The new geopolitics is inextricably also a technopolitics; its sovereignty is not singular but universal, coming from above, below, without and within.

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[1] Benjamin H. Bratton, *The Stack: On Software and Sovereignty* (Cambridge, MA: The MIT Press, 2015), hereafter *TS*.

[2] *TS*, p. xviii.

[3] See Philip K. Dick, 'Autofac' [1955], in *Minority Report: Volume Four of the Collected Stories* (London, Gollancz: 2017), pp. 1-20.

The central actors of Bratton's book are the platforms[4] of technocapitalist power: the states and corporate entities – as well as their clouds, cities, and interfaces – wedded in a deadly assault upon the Earth. The previous design of nation-state federalism, that inherited from the signing of the Treaty of Westphalia in 1648, struggles to account for and respond to accelerated technological expansion, and the full repercussions of software for sovereignty will continue, it seems, to spiral outwards.[5] Planetary-scale computation is the name given to these new logics, which enclose the Earth in many layers, both independent and interdependent. We are invited to consider Planetary Skin – the NASA-Cisco joint project launched in 2009, intended as a seamlessly-integrated global carbon-monitoring panopticon – as both a case study and a metaphor for this computation's omnidirectional sprawling out, its 'redefining [of] the surface of the Earth as a living and governable epidermis'.[6] As a metaphor, Bratton intends The Stack (sic) to be comprehended as a massive, multitiered platforming architecture, encompassing the totality of online and offline information flows, jurisdictions, and social orders, operating on six discrete levels: Earth, Cloud, City, Address, Interface, and User. How each of these levels interpret and absorb data is varied and scalar; striated communication between them occurs both vertically (passing up and down The Stack,

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[4] For the uninitiated, the term *platform* may need qualification, being that its usage has expanded somewhat beyond describing plateaus for software execution to incorporate the economic models which result from the exchanges software platforms have engendered. A platform as defined in *The Stack* (p. 374) is 'a standards-based technical-economic system that may simultaneously distribute interfaces into that system through their remote coordination and centralizes their integrated control through that same coordination'. See also *TS*: pp. 41-51, for a more thorough synopsis of this particular definition. Although not cited further, one may choose to read Bratton's book alongside another recent publication, Nick Srnicek's *Platform Capitalism* (Cambridge, UK/Malden, MA: The Polity Press, 2017). 'At the most general level', Srnicek writes, 'platforms are digital infrastructures that enable two or more groups to interact' (p. 43), and it's perhaps in this more general guise that I employ the term throughout this essay.

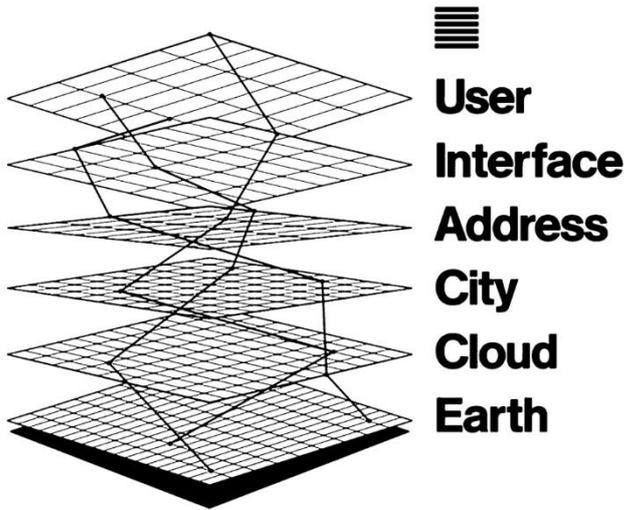[5] *TS*, pp. 5-7.

[6] *Ibid.*, pp. 87-90 (p. 87).

Figure 1: 'Diagram by Metahaven of the six layers of The Stack' (2015).[9]

translating along the way) and transversally, leaping across vast distances, often leading to unanticipated results. It is more usual, in any given location in The Stack, for multiple , in this sense, 'is operations to be occurring simultaneously: what happens in cities has great consequences for the Earth, how users are quantified through addressing systems affects said users' relation to interfacial structures, and so on.[7] 'Computation' not only what The Stack is made from; it is also how the megastructure composes, measures, and governs itself'.[8] This would perhaps make it the most complete and autonomous model of governmentality so far established.

The cause and effect of Stack computational logics is unfathomably complicated and unpredictable, and it is to this problem that Bratton's book offers some clarity. In this regard, *The Stack* also fulfils an all-too-apparent need; it is a response of sorts to a remark made by Hillary Clinton to the Council on Foreign Relations in early 2013, highlighted by Bratton in the book's opening: a call for 'a new architecture for this new world, more Frank Gehry than formal Greek. […] Where once a few strong columns could hold up the weight of the world, today we need a dynamic mix of materials and structures'.[10] The Stack is not only the deliberate and accidental consequence of the manifold entanglements of old forms of

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[7] *Ibid.*, pp. 66-9.

[8] *Ibid.*, p. 75.

[9] *Ibid.*, p. 66.

[10] Hillary Clinton, in *TS*, p. 3.

sovereignty and new forms of technology, it also functions as a blueprint for the world-to-come, a mapping out of the trajectories of computation's planetary-scale future outreach. As new sovereignties – new forms of inscription – encounter one another, they often clash, but can also mesh to create neat arrangements and even distributions, overwriting old codes and orders. From this perspective, Bratton can make the initially doubtful leap from architecture to fiction. The Stack, as simultaneous design consequence and all-encompassing 'accidental megastructure', emerges as the schematic for that which 'we struggle to describe and design for'.[11]

Bratton presents *The Stack* as being all at once a geopolitical tract, a design brief, and a work of science fiction – and it is the last of these I am most interested in pursuing. In order to do so, it is important to take Bratton and Clinton's claim seriously: that the geopolitical world system of today is so colossal and unscalable that any attempt to codify or recognize its totality in both the present and the future unavoidably means distorting, misrepresenting and reformulating it as its creators/*Users* perceive or desire it to be. It is not so much the case that the more fantastic claims made in *The Stack* are illegitimate, rather the opposite: the narratological toolkit, when implemented in conjunction with the language of software studies, geopolitics, and architecture, has a role to play in forming the patchwork composition of Bratton's project. Fiction is used here to elucidate the countless operations on micro- and macro- scales, often working with logics that are impossible for humans to comprehend: whether involving algorithms (such as those which feed the data on Google's users back to them), or large numbers (such as keeping track of the endless addressable 'things' in a complex, multi-modular logistical operation). The Stack stands in for the totality of these communications, and the book serves as a prism for re-scaling several of the most prolific and pertinent of these. 'To be clear', says Bratton, 'this figure of The Stack both does and does not exist as such; it is both an idea and a thing; it is a machine that serves as a schema as much as it is a schema of machines'.[12]

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[11] *TS*, pp. 3-4 (p. 3).
[12] *Ibid.*, p. 5.

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Perhaps the only mature response to the staggering number and complexity of the processes that sustain today's Shoggothic techno-modernity is that of *theory-fiction*. This term – used as early as 1979, where it appeared on the back cover of Lyotard's *Le Mur du pacifique*,[13] and also in relation to Baudrillard's concept of third-order simulacra[14] – is most commonly associated with recent books which try to evoke literary styles and conventions within broadly theoretical contexts: examples include Reza Negarestani's *Cyclonopedia: complicity with anonymous materials* (2008), Simon Sellars's *Applied Ballardianism: Memoir From a Parallel Universe* (2018), and Bratton's own *Dispute Plan to Prevent Future Luxury Constitution* (2015, more on this text below). Reviewing the Sellars book

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[13] Jean-François Lyotard, *Le Mur du pacifique* (Paris: Galilée, 1979). Terence Blake has kindly allowed me to cite his translation of the back cover to the original 1979 French edition of the book, which was written by Lyotard himself: 'This is a French manuscript found several years ago in a Californian university's library. The author sketches out a sort of political « theory-fiction » […]'. This quotation does not appear on the cover of the English edition of the book, published by Lapis Press in 1989 as *Pacific Wall* (trans. by Bruce Boone). See Terence Blake, 'LYOTARD'S THEORY-FICTION: le mur du pacifique', *AGENT SWARM*, emphasis Blake's. (1st January 2019, available online at https://terenceblake.wordpress.com/2019/01/01/lyotards-theory-fiction-le-mur-du-pacifique/ [Accessed 2nd January 2019]).

[14] See Mark Fisher, *Flatline Constructs: Gothic Materialism and Cybernetic Theory-Fiction* (New York: Exmilitary Press, 2018 [1999]). 'It is Baudrillard', writes Fisher (p.5), 'who is most associated with the emergence of theory-fiction as a mode. And it is the role of "third-order simulacra" – associated, by Baudrillard, very closely with cybernetics, that, Baudrillard says, "puts an end" to theory and fiction as separate genres'. In Baudrillard's words, third-order simulacra correspond to cybernetic models which are 'themselves an anticipation of the real, and thus leave no room for any kind of fictional anticipation' (in Fisher, p. 25). Fisher expands on this last quotation of Baudrillard: 'If Baudrillard's *theory-fictions* of the three orders of simulacra must be taken seriously, which means: as realism about the hyperreal, or *cybernetic realism"* [sic], it is because they have *realised* that, in capitalism, fiction is no longer merely representational but has invaded the Real to the point of constituting it' (pp.25-6, emphasis in original).

on his blog, Negarestani provides the following insight into the functions and purposes of this hybrid genre:

> Facts and Fictions are conjoined, and not just today but since the game began. They are all fabricated elements, but not just any random fabrication. Rather, they are systematic fabrications in which the canonical concepts of truth, consistency, and coherency are never sufficient for telling apart fact from fiction, that which is found from that which is made. Such a distinction requires many more elements which make up *the critique of world-building*, in which fictions are not *prima facie* opposed to facts. Both are building blocks of reality. The only way we can differentiate them is by accepting the thesis that we exist simultaneously in many actual—not merely possible—worlds, and that what may be fiction in one world is fact in another, and vice versa.[15]

Negarestani's definition of fiction is not one that is distinguished from or opposed to fact; rather, the two inhabit a fluid relationship contextually dependent on the conception of world. Fiction, particularly science fiction's world-building methodologies, have much to offer in the service of understanding and fabricating a multitude of competing realities, which are always-already '*theorized*' at the point of conception/discovery.[16] This is much the same as how the thing-idea Stack's processes of communication enable capture and regurgitation of data across multiple layers, scales, and overlapping jurisdictions. Stack-as-world-making-machine is its own gargantuan brand of theory-fiction.[17]

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[15] Reza Negarestani, 'Mene, Mene, Tekel, Upharsin (Reading Applied Ballardianism)', *Toy Philosophy* (9th August 2018, available online at https://toyphiloso-phy.com/2018/08/09/mene-mene-tekel-upharsin-reading-applied-ballardianism/ [Accessed 2nd January 2019]).

[16] *Ibid.*

[17] What follows therefore is a mere surface-scratching, quasi-mythologising account of a dense and intricate work. Although some of the implications of Bratton's research are alluded to, as well as some of the more helpful or interesting examples he

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User

So then, who or what populates The Stack-fiction; who are its central characters, and in what new configurations are they arranged? That would be its *Users*: its quantified human and non-human agents which pride themselves on their unique status but are really only cogs in the machine, of which some have learned to exceptionalise themselves and bask in this illusion of privilege. Like The Stack in its totality, the *User* is both more real and more fictional than it appears on the surface. It exists primarily not as egoistic, psychological conception but as 'a privileged and practical subject position'[18] atop a Stack that grants it this identity. This is a post-Enlightenment conception of Self as bearing no 'essential dignity';[19] not a 'person', but a one-dimensional figure identified by a strict minimum of characteristics that can be organized, modified, or influenced according to the requirements of the programs it interacts with. The Stack is indifferent to personhood: its *Users* can be human, animal, vegetable, mineral, AI, machine, part, whole, whatever. What it sees is 'a category of agents, […] a position within a system without which [the *User*] has no role or essential identity. […] We, the actual consumers, are the shadows of the personified simulations of ourselves'.[20]

What ensues is a profoundly anti-humanist plane populated by holographic us-not-us *Users* of both the now and the to-come, whose hive of activity is constantly being absorbed, quantified, re-attuned, and sold back to us at a higher price. Whereas industrial capitalism required the creation of identikit consumers (developed through the use of market research, advertising, and so on) in order to continue the process of commodifying and marketing desire smoothly and predictably, today's users of Facebook and Amazon are encouraged to be as endlessly individual as suits them:

provides, the real aim of the next few sections is to outline the book's principal contents, as opposed to its shading or suggested ethical imperatives.

[18] *TS*, p. 254.
[19] *Ibid.*, p. 252.
[20] *Ibid.*, pp. 251, 255.

their constant relay of 'preferences' (browser history, search terms) and other aspects of profiling (geographic location, age, gender) removes the need for guesswork. The barrage of (mostly) freely offered data provided by *Users* ensure The Stack's long-term successes in predicting the content and services that generate its continued growth. The *User* is a Quantified Self,[21] an auto-mythologising dream factory through which to achieve an always-predetermined self-actualization. As a result, what initially appears as The Stack's employment of data profiling processes of clearly (if superficially) individuated subjects itself becomes a technology of identity prescription and reassignment: *User*-generation as new normativity. This leads to all kinds of new problematics vis-à-vis the political autonomy of the user, profile-hacking, over- and undervaluing of discrete *User* positioning, and, most traumatic of all, the liquefaction of Self.[22]

Earth

If even the *User* which enjoys the privileges of being at the top of The Stack is overcoded and misappropriated by the structural whole's atomising computational logics, there are much more troubling occurrences further below. Just as the *User* stands in for the sum of quantifiable activity of an addressed person or thing, the *Earth* layer of The Stack functions as a representation of the terrestrial body as understood by planetary-scale computation. There are two primary functions the *Earth* layer provides for The Stack. Firstly, it defines and frames the Earth's limits physically, topographically, and aesthetically.[23] Secondly, it currently

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[21] Bratton borrows this term from 'an extremely Californian subculture that seeks "self knowledge through numbers." It champions the use of data capture technologies to track an individual *User*'s "inputs" (i.e., food and air), "states" (mood, energy level), and "performance" (mental and physical metrics)'. *TS*, pp. 260-4 (p. 261).

[22] See *TS*, pp. 271-4 for Bratton's account of the 'Death of the User', incorporating and building on Giorgio Agamben's reading of *dispositif*.

[23] This whole section in *The Stack* is informed by Elizabeth Grosz's book *Chaos, Territory, Art: Deleuze and the Framing of the Earth* (New York: Columbia University Press, 2008). In particular, Bratton discusses the concept of *framing*, and quotes from

delivers almost all The Stack's energy needs, both to its advantage and its detriment. The relation between the planet and its technological "skin" is mutually reinforcing, as The Stack is curtailed by both the space available for expansion and the resources for extraction; similarly, the planet itself is reconfigured by the implementation of energy-depleting infrastructures and their putrefying consequences. Bratton identifies the famous 'Earthrise' photograph, taken from the orbit of the moon during the Apollo 8 mission of 1968, as a turning point in comprehending the total Earth as a finite, conquerable territory and resource that would from then onwards 'invite projects of total design'.[24] The expansion-contraction through the digitalization of geographical space results in the creation of new geophysical territories and the erasure of others.[25] Satellite photography and grids of smart sensors become the normative optical devices for cartographising the Earth, and over time teach computation to "see as a state", meaning that the surface of the planet resembles Google Earth more and more, with its geopolitical quirks and blind spots.[26] As with the *User*, what once was representation eventually *becomes* for The Stack a methodology for real-world transformation.[27]

p. 17: 'The earth can be *infinitely* divided, territorialized, framed. … Framing is how chaos becomes territory. Framing is the means by which objects are delimited, qualities unleashed and art is made possible'. Grosz, in *TS*, pp. 83-7 (p. 84), emphasis in original.

[24] *TS*, p. 86. See Figure 2 above.

[25] *Ibid.* pp. 89-92. See also Raymond Depardon & Paul Virilio, *Native Land: Stop Eject* [*Terre natale: Ailleurs commence ici*] (Paris: Foundation Cartier pour l'art contemporain, 2008).

[26] *Ibid.*, pp. 90-6.

[27] *Ibid.* p. 90: 'Computation is training governance to see the world as it does and to be blind like it is. If, over time, something sees for the state, on behalf of the state and in place of the state, it does so by seeing as a state, or by seeing as something the state has not yet become but would become once it's trained by these same new tools of perception and blindness. As the state involves new techniques into itself, those techniques also absorb, displace, and diminish the state by controlling access to unique jurisdictions that the state cannot otherwise possibly comprehend without their help'.

In addition to its topographical and geoaesthetic qualities, the *Earth* layer highlights the real material basis for Stack computation, whether this material be oil, metal, or flesh. Not only does the *Cloud* layer directly above it require a massive quantity of energy to run its usually unseen data centres (not to mention physical space), the very components farmed in order to synthesise the public infrastructure, cars, phones, and computers that act as the *User*'s gateway into The Stack have to come from very real places also.[28] To take one of the many 'generative accidents' of design inadequacy as an example, rare earth metals such as coltan – used in electronic components for devices such as phones – are mined largely in central African countries such as the Democratic Republic of the Congo. It is clear from this how the material needs for planetary-scale computational governance, the economic supply chain, and neocolonialism produce a combined effect upon human labour, local politics (the millions dead from civil war, the role of competing militias), and the Earth itself. Bratton makes stark juxtapositions between the fluidity and ambience of Stack interfaces and their unavoidably visceral cost: 'the smooth skin of the device demands gore to feed its gloss'. '*The Stack terraforms the host planet by drinking and vomiting its elemental juices and spitting up mobile phones*'.[29] His interpretation of The Stack is that of an autophagic, a cannibalistic Earth-based structure, an Ouroboros (the ancient Greek image of a serpent eating its own tail): truly terrifying in scale, and almost beyond any practical means of stopping at this late hour. His prediction is that the uneven distribution of ecopolitical supply and effect may in the future produce new sovereignties – 'ecojurisdictions' – to augment or perhaps compete with existing nationalistic federalisms, including the use of depleting energy resources as forms of currency or leverage.[30] Whether humanity would survive such drastic ecopolitical reform is a consideration even more speculative.

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[28] *Ibid*, pp. 92-3.

[29] *Ibid.*, pp. 81-3 (emphasis in original).

[30] *Ibid.*, pp. 97-101.

Cloud

Through the sprawling out of platform infrastructure – the integrated networks of cables, satellites, data centres, *User* devices – and the resultant generation of jurisdictional 'accidents', we can see *Earth* morph into *Cloud*. At the heart of *Cloud Polis* are the questions concerning the hermeneutics of technological sovereignty and technological ideology: the old order of Westphalian-derived nation-states and the new platform 'superpowers' are (perhaps understandably) prone to seeing things very differently. Most characteristic of these new struggles is the dispute between China and Google, viewed by Bratton as a conflict of two similarly large 'empires' or 'megastate actors'. More so than this, however, do we see in this case a struggle over 'the predominance of two different modes of sovereignty' and qualitative judgments of the Internet's role in relation to state citizenship.[31] The Chinese government's desire to subsume the *Cloud*, to filter its content, services, and processes, is irreconcilable with Google's endlessly malleable socioeconomic outreach and democratizing mission statement: 'to organize the world's information and make it universally accessible and useful'.[32] In fact, platform sovereignty,

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[31] *Ibid.*, pp. 112-5. From pp. 112-3: 'The First Sino-Google War of 2009 may well be the opening crack in a very different kind of war over who or what governs global society, one less between two superpowers than between two logics of terminal control. One of these sees the Internet as an extension of the body of the state, or at least beneath the state in the priorities of sovereignty, and the other sees the Internet as a living, quasi-autonomous, if privately controlled and capitalized, transterritorial civil society that produces, defends, and demands rights on its own and which can even assume traditional functions of the state for itself'. For a lengthier exploration of China's current relation with Westphalian principles and values, see Ankit Panda, 'China's Westphalian Attachment', *The Diplomat* (22nd May 2014, available online at https://thediplomat.com/2014/05/chinas-westphalian-attachment/ [Accessed 2nd January 2019]).

[32] *Ibid.*, pp. 87, 114, and esp. 134-41. See also 'About Us | Google' (no date, available online at https://www.google.com/about/). A further exegesis of Google's current ideology can be found in the form of Eric Schmidt and Jared Cohen's *The New Digital*

with its quantitative assessments of *Earth* and *User* metrics and algorithmically-driven pursuit of maximum economic efficiency, looks to be a significant agent of transformation for states themselves, though perhaps this too will be achieved through innovations of business procedure in circumventing red tape rather than as a deliberate attempt to seize the reins of power.[33] Not only can the major *Cloud*-based platforms *see* as a state, they also have influence over what states can *do*, often turning said states' jurisdictional techniques and concepts to their advantage. We can think of Facebook's production of self-identifying subjectivity (through the symbolic logic of 'profiling'),[34] or Apple's curation of an entire brand 'culture' (one which evolved out of 70s Californian counterculture and came complete with a cinematic 'origin story', becoming an aesthetics of superlative consumerist utopianism),[35] as fairly mundane expressions of the new challenges facing state sovereignty. Yet these new challenges are themselves predicated on established and consistent ideas and practices of 'open-plan' democracy, the implicit desire to uphold humanist values, and, perhaps most significantly of all, the production of 'proto-citizenships'.[36]

City

Users must reconcile their presence in The Stack and their experiences with Cloud-based computing with their adjacent position on the socio-technological plane designated by Bratton as the *City* layer. With their

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Age: Reshaping the Future (New York/Toronto, Borzoi/Alfred A. Knopf/Random House: 2013), which Bratton dissects confidently (see *TS*, pp. 134-6).

[33] *Ibid.*, pp. 114-6. Bratton uses Google's subsidiary Google Energy, which is capable of purchasing wholesale electricity to sell to grids without intervention, as an example of how the platform may precisely wield political leverage in the future, as well as the manifold risks acquisitions such as this engender as regards to regulation, cybersecurity, and energy's own political autonomy. See *TS*, pp. 140-1.

[34] *Ibid.*, pp. 125-8.

[35] *Ibid.*, pp. 128-31.

[36] *Ibid.*, pp. 122, 134, 136.

being profiled, recorded, defined, and influenced by their national place of residence and their statuses as registered users of multiple platforms (as well as using their services themselves), *Users* currently take on multiple overlapping citizenships at once. This shared multi-citizenship between all creates a 'commonality', a register by which all *Users* can be quantified in relation to a universal *City* layer composed of clashing and meshing sovereignties, and of which individual cities, states, energy grids, networks, and platforms are but localised expressions.[37] Geodesign has softened urban spaces through the use of algorithms into a series of hyperlinked *User* functions – the paradigm for today's interlinked global cities is the airport, with its cohabiting antiterror security features (cameras, sensors, checkpoints, etc.) and entertainment multiplexes.[38] Of course, over time, and as cities become modular zones of integrated technologies, resource farms, and nodes for investment, their function as habitable spaces becomes compromised (they become 'media for rot', or 'dumping grounds' for successive failed urban compositional schemas and their infrastrutures).[39] This is also true for platform 'cities', online worlds driven by the design logics of data procurement, at the cost of *User* subjectivity.[40] But the *City* layer's position at the crossroads of architectural design and computation instils its surfaces with plastic qualities: its lines and borders are continually being redrawn by the hive of *User* interactions; their clicks

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[37] *Ibid.*, pp. 151-3. From p. 152: 'The road makes us all drivers, the fiber cable line makes us all callers, and the *City* layer makes us all inhabitants of a composite urban territory'.

[38] *Ibid.*, pp. 155-7. Bratton's analysis here and throughout the *City* chapter of *The Stack* owes much to his reading of Paul Virilio's 'The Overexposed City' ['La ville surexposée': 1984], trans. by Astrid Hustvedt, in *Zone 1/2*, eds. Michel Feher & Sanford Kwinter (New York: Urzone Inc., 1986), pp. 14-31.

[39] *Ibid.*, pp. 160-3 (pp. 160-1).

[40] *Ibid.*, pp. 172-6. On this last point, Agamben's description of the 'process of de-subjectification' enacted by state/platform apparatuses on discrete subject positions is cited. See Giorgio Agamben, *What Is an Apparatus? and Other Essays*, trans. by David Kishik & Stefan Pedatella (Stanford, CA: Stanford University Press, 2009), pp. 19-21.

and swipes furrow new pathways and new possibilities for *Stack* communications.[41] The *City* layer therefore demonstrates an engagement with utopia: on the one hand, its attempts to delimit spaces through frames or 'envelopes' (the maximum facilitating as represented by the app or the shopping complex) produces a centralising, 'walled garden' effect; and on the other, the expansion of industrialised urbanity (and urbanisms) signals a decentralising aestheticism of capitalism's endgame.[42]

Address

If the *City* layer defines urban jurisdictional zones through limitation and enclosure, the *Address* layer employs similar techniques for quantifying users and their activity. By assigning hyperlinks, IPs, and post/zip codes to people and things, using the same *Cloud* infrastructure that enables the most financially successful platforms to rival superpowers' proficiency in communication and control,[43] The Stack can map out every state of an addressed thing's being: its material composition and decomposition, its progression through cyber- and geographical space, and even its residue after its departure.[44] In the 'Address Layer' chapter, Bratton alludes to the concept of the 'spime', theorised in notable science fiction author Bruce Sterling's 'influential' non-fiction work *Shaping Things* (2005), as a precursor to the emerging concept of the Internet of Things: the mélange of sensors in every household object and public infrastructure, that continued production of which remains underway. The spime (a contraction of 'space' and 'time') is the addressed object as virtual blueprint, waiting to be actualised and downloaded in the form of Amazon's delivery service, but otherwise incorporating a life cycle of material extraction, assembly, consumption, disposal, and disassembly. Spimes show us that the identity of an addressed thing is to the Stack

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[41] *Ibid.*, pp. 165-72.
[42] *Ibid.*, pp. 177-80.
[43] *Ibid.*, pp. 115-9.
[44] *Ibid.*, pp. 191-2.

indistinguishable from the processes of its existence and non-existence.[45] But the *Address* layer can go further than the tracking of physical components across a socio-economic plane, to incorporate the multidirectional symbolic exchanges between points and fields even in virtual states. Thus, Bratton proposes that the Address layer's full scope might incorporate an 'Internet of Haecceities'[46] capable of knitting together not only material things 'but also concepts, events, procedures, and memes' into a dynamic network of universal exchange.[47]

This commonality of identifiers assigned to objects and things is central to the functioning of the *Address* layer, which can then enable The Stack to interpret *User* metrics in terms of a generalised set of operations. Hence for planetary-scale computation, not only are all things equally measurable (whether they be fuel cells or page views), but communicable to one another in a virtually endless number of permutations, each of which leaves traces and breeds more data ('metadata'), compounding the process.[48] Bratton refers to this systemic logic of equivocated interactions as *deep address*, a term that describes the 'telescoping from a global grid of locations to the specific local instance of the addressed and back again'.[49] The Stack's method of designating and arranging individuated units needs only to make sense to itself, hence the possible new recipients of addresses (and the new tribalisms and pathways of communication engendered between these depersonalised sender-receivers) can be very counter-

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[45] *Ibid.*, pp. 200-4, 231. See also Bruce Sterling, *Shaping Things* (Cambridge, MA/London: The MIT Press, 2005), esp. pp. 76-111. From p. 77: 'A SPIME [sic] is, by definition, the protagonist of a documented process. It is an historical entity with an accessible, precise trajectory through space and time'.

[46] Bratton's usage of 'haecceity' here is derived from that of Charles Sanders Peirce, who uses it to describe a particular thing's individuating quality or 'thisness' (*TS*, p. 417n39), or its 'hereness and nowness'. See *The Collected Papers of Charles Sanders Peirce*, eds. Charles Hartshorne, Paul Weiss & Arthur W. Burks (in eight volumes, Cambridge, MA: Harvard University Press, 1931-58), section 1.405.

[47] *TS*, pp. 209-12 (p. 209).

[48] *Ibid.*, pp. 201

[49] *Ibid.*, pp. 197-200 (p. 197).

intuitive to human societies, in the worst cases capable of producing crisis and breakdown. One such example might be the financial crisis of 2008, wherein highly abstracted currencies (referents of exchange value, of commodities, of human activity) became destabilised to the point of global economic collapse.[50] The crises of addressability are also crises of textuality: how texts are cited and related, or how the written word functions through grammar and syntax, or how symbols or metaphors codify and infer deeper messages, are instrumental examples of the logics and pitfalls of deep address, and therein may point towards further understanding of potential future computational accidents.[51]

Interface

At any given time, a *User* interacts with The Stack (and vice versa) through several channels, apps, and regimes: these are the *Interfaces*, which mediate individuals and their *Addressed* selves, their citizenships, and their data. For *Users* to be able to actually perform what are in actuality immeasurably complex transactions with and modifications to The Stack (and, in essence, for The Stack to exist at all), a translation of incomprehensible functions is needed, and so interfacial design must prioritise simplicity, legibility, and tangibility. But more than this, *Interfacial* technologies must embody a certain ideological neatness: an ability to coerce *Users* into perceiving the limited options given by, for example, a GUI (Graphical User Interface), as not only sensible but rational.[52] Their *User*-friendliness extends to the biological, in that their designs are based around the dexterities of the human hand, treated here as a 'despecialized' appendage, ready to adapt to any technological prosthesis

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[50] *Ibid.*, p. 199: 'Among other things, the financial crisis is a crisis of addressability, a de-addressing of things […]'.
[51] *Ibid.*, pp. 199-200, 210-1.
[52] *Ibid.*, pp. 219-21.

– interfaces which expand the possibilities of human achievement.[53] Thus, the interactions *through* the medium of icons and symbols are also interactions *with* those icons and symbols themselves: *Interfacial* exchange transcends semiotics to become a teleology and a praxis with *User*-oriented design technologies themselves. *Interfaces* do more than relay complex interactions as simplified clicks and presses; they are themselves sites of modification of human behaviour, orienting *Users* towards predetermined goals and actions.[54]

In this sense, the *Interface* layer may be the section of The Stack that produces the most in-real-time changes to the sovereignty of planetary-scale computation as a whole, as well as the most ideological heft. One can observe an acceleration in the quantity and ubiquity of interfacial nodes over time: menus opening to sub-menus, hardware linking to cloud storage, etc.[55] In turn, the stage is set for beliefs and values to be 'outsourced to cognitive prostheses'; a 'subcontracting' of the self, by which knowledge and reason can be accessed through databases and memes, and therefore manipulated for monetary, political, and even theological leverage.[56] The imaginarium of competing and colliding *Interfacial* regimes has a name: *geoscape*, a multiplicity of conceptual spaces through which the *User* navigates and the images in which these spaces are embodied and accessed.[57] As ideas and visions are condensed into the navigation of urban, domestic, and portable *Interfacial* technologies and their prescribed

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[53] *Ibid.*, pp. 222-7, 240. Note that Bratton deliberately borrows (and keeps in quotation marks) the idea of the 'despecialization' of the human hand from Michel Serres, admitting its shortcomings in terms of mainstream evolutionary biological theory: 'Evolutionary biologists may differ […]' (p. 222). See also Michel Serres, 'The Science of Relations: An Interview' (interview with Peter Hallward), trans. by Alberto Toscano. *Angelaki: Journal of the Theoretical Humanities* 8: 2 (Abingdon: Routledge, 2003), pp. 227-38, available online at https://doi.org/10.1080/0969725032000162675 [Accessed 2nd January 2019].

[54] *Ibid.*, pp. 222-35.

[55] *Ibid.*, p. 232.

[56] *Ibid.*, pp. 239-43 (p. 240).

[57] *Ibid.*, pp. 243-50.

outcomes, that allow the *User* to modify The Stack and their position relative to it and other *Users*, geoscapes melt into an everyday lived reality coloured by the hallucinogenic, gnostic qualities of software.

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Hyperstition, The Stack, and theory-fiction

As we have seen, the reality of The Stack is somewhat immaterial. It is a conception or viewpoint of utterly real events, taken as a totality: in essence, *The Stack* is itself an *Interface* that links readers to several aspects of the transformation of global politics and power in the face of emergent computational regimes, a condensation of software studies, sociology, computational design, political theory, and more. The ways in which The Stack renders the world as textual for *Users* is mirrored in Bratton's proposal to approach the book as science fiction: the techniques of mythologisation of both *The Stack* and The Stack can be regarded in this sense as attempts to render geopolitical and technological systems humanly legible, rather than as an affront to their authenticity. Interpreting the text in this way is possible because of an underlying *crossover* from one form of writing to another: theoretical writing has undergone a transmutation into imaginative storytelling, and in parallel to this, a tectonic shift has enabled a multitude of subplots (agonistic sovereignties, legalities, citizenships) to emerge as the real.[58] This process has been named

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[58] Negarestani's term *Hidden Writing* comes to mind here: 'Hidden Writing can be described as utilizing every plot hole, all problematics, every suspicious obscurity or repulsive wrongness as a new plot with a tentacled and autonomous mobility. The aftermath of this utilization manifests itself as an act of writing whose effect is to deteriorate the primary unified plot or remobilize the so-called central theme and its authority as a mere armature or primary substance for holding things together'. Reza Negarestani, *Cyclonopedia: complicity with anonymous materials* (Melbourne: re.press, 2008), pp. 60-7 (p. 61). See also my essay 'A Note on Hyperstition and Hidden Writing', *orbistertius* (16th September 2016, available online at https://orbistertiusnet.wordpress.com/2016/09/16/a-note-on-hyperstition-and-hidden-writing/).

hyperstition by prominent authors and researchers of theory-fiction. Put simply, hyperstition is a process by which 'elements of effective culture' traverse from fictional milieus and enter some semblance of the real world.[59] Hyperstition as a process of linking embedded zones or separate realities (or fictions, as by this logic, neither term has clear definitions) is echoed in Bratton's conception of The Stack as that which 'does and does not exist' or, put another way, is tinted by the fictional in its existence as theoretical model.

It is towards the end of the book that Bratton turns most clearly to the idea of Stack-as-fictional quantity. By defining fiction as 'an alternative [imagination] that is not exactly true or false but is, like all other models, a simulation of logical intentions',[60] there is an understanding of the term as a plastic art of fabulation, modelled on but not limited to current conceptions of the world as it is. We can look across the book as a whole and find three compelling reasons for interpreting *The Stack* as theory-fiction: its use of *narratological* and *linguistic* structures and techniques; its relation to the *mythical*; and its engagements with *utopia* and *the speculative*. It has so far been difficult to disentangle my reading of the book from each of these terms, and I have not tried to exclude them up to this point; regardless I now will explain what is meant by each of these, by relating them specifically to 'projects' the book gestures towards at both the end of each of the major sections and the conclusion of the entirety.

Firstly, although the structure of *The Stack* would never be mistaken for that of a novel, Bratton does provide the reader with a narrative: one that flows from the bottom to the top, revealing itself across fabricated layers that also function as steps towards a predetermined outcome. The book's characters range from powerful and powerless individuals (Jeff Bezos,

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[59] The Ccru (Cybernetic Culture Research Unit), originators of the term, define hyperstition as an '[e]lement of effective culture that makes itself real, through fictional quantities functioning as time-travelling potentials. Hyperstition operates as a coincidence intensifier, effecting a call to the Old Ones'. 'Ccru Glossary', in *Abstract Culture: Digital Hyperstition* (London: self-published, 1999), pp. 69-79 (p. 74).
[60] *TS*, p. 320.

Peter Thiel, the overexhausted Foxconn employee); its settings are both local (Silicon Valley, the Pakistan-India border, an individual Walmart outlet or Apple ID) and global (Europe, China, the Earth, Google Earth); and the themes of its expectant futures encompass both a sense of dread or imminent catastrophe (our ecological and economic autophagy), and utter banality and cultural myopia ('8K LOLcat videos from 10 angles at once'[61]). All of this results in a Pynchonesque telling of our geopolitical present and its technological agents of change. Similarly, we find the bolstering of science fiction plots and outcomes, and the speculations of some of its more prominent writers, throughout *The Stack*: Sterling, Ballard, Cory Doctorow, Kim Stanley Robinson, etc. What the book does as science fiction is situate these reflections of our technology-driven presents into specific contexts and instances, and rendering the result as a fictional device, or a portal through which emergent futures can be glimpsed. We have already seen the example of Sterling's spimes as a conception of a blueprinted thing possessing a multiplicity of material states and use-values; today it is not difficult for us to imagine a future of endlessly downloadable, trackable, and recyclable things, and the resultant changes to our perception of objecthood this might signify.

This leads into the idea of *The Stack* as an auto-mythologising text, that seeks to blur the distinctions between real events and their fictional counterparts through the uses of linguistic inflation and invention, such as we can see in some of the chapter headings ('The First Sino-Google War of 2009', 'Zombie Jurisdictions', 'Theo-Interfaciailty'). This is a preoccupation shared with his previous work, *Dispute Plan to Prevent Future Luxury Constitution*,[62] which deliberately crafts specific essay

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[61] *Ibid.*, pp. 117-8.

[62] Benjamin H. Bratton, *Dispute Plan to Prevent Future Luxury Constitution* (Berlin: Sternberg Press, 2015). This is a work that carries the 'theory-fiction' tag much more openly, as can be gleamed from the (somewhat overzealous) back cover: 'Equal parts Borges, Burroughs, Baudrillard, and Black Ops, *Dispute Plan to Prevent Future Luxury Constitution* charts a treacherous landscape filled with paranoid master plans, failed schemes, and dubious histories. […] Benjamin H. Bratton's kaleidoscopic

titles, discontinuous and linked only in themes that reveal themselves through reading ('The Orchid Mantis of Sanzhi', 'After the Chromopolitical Revolutions of 2005'). It is impossible to validate every one of these instances in advance; to do so requires the reader to conduct their own external research during or after reading. Granted, with *The Stack* one isn't expected to be sceptical of every claim being made, or the authenticity of every citation as with *Dispute Plan* (who are OMA? Who was John Frum? Does any of this add up?). Regardless, it is a technique that carries over into the former text, which uses the fictional mode of the mythic to its advantage, particularly when it comes to extrapolating from current tendencies into the future.

More revolutionary, however, is the suggestion of alternate mythic conceptions of time, which differ from the Copernican, Anthropocentric, or Earthly scales;[63] a gesture prefigured somewhat by Quentin Meillassoux's evocations of non-Heraclitean absolute timeframes[64] and Nick Land's concept of 'templexity'.[65] For example, we see in

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theory-fiction links the utopian fantasies of political violence with the equally utopian programs of security and control. […] The cast of characters in this ensemble drama of righteous desperation and tactical trickery shuttle between fact and speculation, action and script, flesh and symbol, [etc.]' (emphasis added).

[63] *Ibid.*, p. 359: '[Future Stack] design needs […] a better, more primordial sense of time […]. Functional requirements research may or may not find for acceleration beyond Earth and Earthiness (including to Mars, beyond the moon, that dumb homunculus, that planetoid teratoma, broken off dead twin hanging in space)'.

[64] See Quentin Meillassoux, *After Finitude: An Essay on the Necessity of Contingency* [*Après la finitude*], trans. by Ray Brassier (London/New York: Bloomsbury Academic, 2012 [2006]), p. 64: 'If we look through the aperture which we have opened up onto the absolute, […] [w]e see something akin to Time […]. This is not a Heraclitean time, since it is not the eternal law of becoming, but rather the eternal and lawless possible becoming of every law'.

[65] See Nick Land, *Templexity: Disordered Loops Through Shanghai Time* (e-book: Urbanatomy Electronic, 2014). Land's work is dense and difficult to quote, and so, being resignedly reductive, we might call templexity the time scale produced by the entropic forces of capital, but also any self-organising biological or social entity or system (see §8.5).

contemporary urban design the reactionary aesthetics of anti-terror, -ecopalypse, and -financial crisis implementations: strangulations of the *City* layer as a means to defend against these pre-doomed futures.[66] These ideas can be related back to hyperstition, which conceives of fictional becomings as occurring across and through time, usually recursively.[67] Alongside these processes of mystification, we can also intuit simultaneous processes of *demystification*: a dismantling of the opposing counterarguments surrounding human essentialism, the extent of climate change's inevitable impact, and the outdatedness of Westphalian state sovereignty, and all other 'political-theological projections' that inhibit the new necessary transformative politics.[68] The objective of Stack-oriented design therefore is not merely to obfuscate or distract from the invention of practical solutions, but to posit the most effective, the most vital design narratives (or 'durable alter-totalities'[69]) as the means of overcoming the fundamental crises of geopolitics and governmentality today and to-come.

Finally, and as already suggested, we may wish to consider the relationship between *The Stack*, science fiction, and the utopian. The latter term of course bears a unique relation with the dystopian, including and especially in Bratton's determination of both in relation to Stack geodesign. It is clear in the book that utopias are everywhere in The Stack's conception, and we have already charted many of these: in technology's potential, in the origins of platform capitalism, in urban planning, in interfacial imagery, etc.[70] In fact, these are all utopian projections that Stack geodesign must dismantle. Bound up with every utopia is its dystopian inversion: each of these schematics are formally *reversible* when approached from alternative perspectives. That is, to some individuals a nation state or social media group is a bunker protecting the inside from the outside; to others that same assemblage is a camp preventing the inside from getting out – and always,

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[66] *TS*, pp. 321-6.
[67] See note 59 above.
[68] *TS*, pp. 288-9, 305, 320-1, 343, 355.
[69] *Ibid.*, p. 328.
[70] *Ibid.*, pp. viii, 46, 177, 245-9.

it is both of these things at once.[71] Geoscapes and cities belie alternative relations to the multiplicity of jurisdictions that map onto the utopia/dystopia binary: modernist design (for example, of open spaces) can easily prefigure totalitarian futures (surveillance states), something which design itself may not be able to legislate.[72] This remains the challenge for future Stack design: to be responsive to the spontaneous fluctuations of border lines even as *Users* themselves remain static; to have the necessary countermeasures in place in preparation for volatile futures.

Bratton's intriguing gestures towards designing these essential fictional futurities are developed in the closing sections of the book into something he calls 'The Stack-to-come' or 'The Black Stack'.[73] As a way of scaling the unmanageable functions and metafunctions of Stack activity, data, and metadata, which occur in post-Anthropocentric, nonlinear lurches, The Black Stack is a host vessel containing many alter-Stacks: virtual and actual narrative flows which, like The Stack-we-have's six operational layers, intersect, converge, and communicate in exponential and invisible configurations.[74] The rationale for The Black Stack is surprisingly straightforward. If it is possible (and it does appear to be) to map out the entirety of network interactions as a field of combined *User* activity of the last decade or so – a 'digital simulation of the world' – then the design plane is already full.[75] On this plane, utopian ideals of *tabula rasa* social construction inevitably buckle as dystopian failures: open becomes closed, exceptions become norms, etc. The opacity of The Black Stack allows for neither interpretation or design as addition: rather, it is a *tabula plenus* that takes the problematics of futures design as *negative* process, as subtraction, and as planning from its arrival *backwards*.[76] 'The Black Stack may be black because we [humans] cannot see our own reflection in it', says

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[71] *Ibid.*, p. 23.

[72] *Ibid.*, pp. 319, 446-8n45.

[73] *Ibid.*, pp. 351-65, esp. 359-65.

[74] *Ibid.*, p. 362.

[75] *Ibid.*, pp. 363-4 (p. 363).

[76] *Ibid.*, pp. 364-5.

Bratton; but this in turn may be beneficial in 'making way for genuinely posthuman and nonhuman positions'.[77] Perhaps our future narratives will be less architectural than archaeological: a rendering of the opaqueness of geopolitical relations and content into transparent regimes and processes. We might look at, for example, what is happening with blockchain and cryptocurrency as the transformation of money into 'a general design problem', one that uncovers the methodologies of capital's alchemical inception as 'abstractions of time, debt, work, and prestige'.[78]

The specific design problems for The Black Stack are, then, the following. *Users* must be able to adjust The Stack in several ways and for several purposes.[79] For this, The Black Stack must be designed not for *Users* themselves (which occupy multiple contradictory positions impossible to cohere), but for their configurations and their contexts.[80] Our current environmental crisis must be conceived as a 'crisis of ongoingness', and so new worldly diagrams must be drawn that are able to (best) represent this.[81] Our new *Cloud polities* must incorporate reversibility into their design briefs, as accidents generated from one virtual future will derail what actually comes to pass; and, in addition, may provide solutions in themselves.[82] Our cities must overcome the 'glass fort' (securitised) paradigm which currently characterises urban architecture, and become hospitable again, encouraging openness and transparency as the ultimate horizons.[83] Similarly, addressing must be pushed towards maximalisation, into an 'absolute accounting of everything', that would allow for greater culpability and democratisation.[84] The new interfacial regimes must be fully reciprocal, with *Users* as capable of influencing The Stack as The

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[77] *Ibid.*
[78] *Ibid.*, pp. 333-7 (p. 337).
[79] *Ibid.*, p. 298.
[80] *Ibid.*
[81] *Ibid.*, pp. 304-6.
[82] *Ibid.*, p. 319.
[83] *Ibid.*, pp. 320-6 (p. 323).
[84] *Ibid.*, p. 337.

Stack is of them.[85] *Interfaces* must become 'ambient': i.e. more seamless, more algorithmic, less human.[86] And of course, the *User* herself must become more comfortable with becoming less human, with the idea that The Stack exists not merely for herself but for global ecosystems, the forgotten and dispossessed, the artificial, and the all-too-real.[87] For this the human *User* must allow herself to become abstract, and for the individuation of *Users* to give way to pluralised conglomerations of accountable data.[88]

These are *The Stack*'s speculative endings: its new myths, new utopias, and emergent subplots. It is also where *The Stack*/The Stack as theory-fiction becomes most apparent, where facts and fictions are conjoined into a series of geopolitical projects designed to both map and steer the future. This theory-fiction traces and overlays the political text to propose speculative, alternative solutions to problems, that otherwise could not be conceived. This resultant metatext's hyperstitional entity, The Black Stack, is a mythical monolith designed by Bratton to be carved away at, and we as readers are encouraged to encode our own spaces, our own problematics, and to engage in the necessary processes of writing alternate futures. As theory-fiction, *The Stack*/The Stack frames the creation of fictional paradigms political in itself. Perhaps this is not profound, perhaps this changes nothing, but theory-fiction does in this example cast light onto the potentials of fiction on the futures we want, and for this alone, I believe it warrants the response it has begun to invite.

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[85] *Ibid.*, p. 343.
[86] *Ibid.*, pp. 338-41.
[87] *Ibid.*, pp. 343-5.
[88] *Ibid.*, pp. 345-8.