Is the Earth Curved or Flat?

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Norbert Weiner, the pioneer of cybernetics, had wished as a child to be a naturalist and explorer. However, even before the outbreak of WWI, he was aware that the Age of Discovery was rapidly drawing to a close. Rather than the adventure of exploration and discovery, future generations would have a different task. That of curating and reordering a world now fully revealed to itself in the growing libraries and documentation centres of already recorded information (Halpern 2005: 283). For Weiner, the end of what Peter Sloterdijk would call expansionary terrestrial globalisation (Sloterdijk 2013), created a new set of ontological, epistemological and technological challenges for understanding and managing a world that, by the mid Twentieth Century, was already widely regarded as saturated with data. It required an epistemological shift away from the old archival order based on personal experience, documentation and indexing, toward a new concern for problems relating to the structure, organisation and growth of information. The birth of cybernetics began the search for technology invested in communication, self-referentiality and prediction.

In 1943, the paleo-cybernetician and ‘comprehensive anticipatory design scientist,’ R. Buckminster-Fuller, first published his Dymaxion World map (Life 1943). Described as the only minimal distortion flat Earth projection that, by not splitting the continents, reveals the planet as one borderless island in single ocean. As a future guru of the American counterculture, Fuller described his projection in the mid 1950s as a "...satisfactory deck plan for the six and one half sextillion tons Spaceship Earth."¹

¹ See Buckminster-Fuller Institute:
https://www.bfi.org/about-fuller/big-ideas/dymaxion-world/dymaxion-map
It is now customary to draw critical attention to the association between cartography and the imperial project. During the period of terrestrial globalisation, the mapping of *terra incognitae* facilitated their physical conquest and ideological domination by the West (Wood 2010). By politically separating and territorialising humanity, traditional maps also reinforced the now maligned idea of linear progress. Emerging before such anxieties had gained the political foreground, the Dymaxion Map both anticipates and steps beyond them. The Fuller projection, for example, has no fixed North or South. Its inclusiveness lies in its lack of perspective. There is no right way of orienting the map; whether on its side, on the slant, or upside down, the map is correct. Rather than separating humanity, its cosmopolitan instinct is to reveal the patterns, relationships and associations emerging from the accelerating process of global information flows. That is, to see the world “...from the dynamic, cosmic and comprehensive viewpoint” in order to help humans forge a borderless future aboard Spaceship Earth."^{2}\footnote{Buckminster-Fuller Institute}

Fuller’s flat Earth projection provides a cartographic platform for addressing the mid Twentieth Century cybernetic challenge of curating a world already saturated with data. Presented as one contiguous island in a single ocean, it facilitates seeing the post-terrestrial phase of globalisation, or that of ‘electronic globalisation’ (Sloterdijk 2013: 13), from an ecological viewpoint. That is, as an interconnected or borderless terrain of communication, feedback and adaptation between and across human and non-human milieus. A flat land mass in one ocean helps underpin a sense of interconnection and feedback between, for example, different climatic zones; historic human migrations; variations in tree cover, degrees of solitude; or the oceanic scale of humpback whale meandering (Cambell-Dollaghan 2013). While useful in helping conceive the world in terms of information flows, the Dymaxion map also reveals the
scale of the challenge facing the cybernetic project.

A major issue for cybernetics during its early years is reflected in what Paul Edwards (2010) has called `data friction.' For climate science, data friction is a technical matter. That is, having to rework historic numerical data sets to take account of equipment bias or environmental changes that would otherwise weaken their comparability.\(^3\) Data friction, however, is also political. Historically, the Fuller projection is more than a design challenge to flatten the surface of a sphere such that measurable distortions are minimised. Usually subsumed under the now pejorative heading of modernism, much, if not most, of the information and knowledge saturating the world in the mid to latter half of the Twentieth Century was produced when the Earth was, ontologically speaking, still a curved surface. This `curved' knowledge was associated with the contested narratives of world history - of capitalism, colonialism and imperialism and, less we forget, of robust struggles for liberation and emancipation as well. To flatten such political negativity and competing perspectives, that is, to reduce them to interchangeable data for the convenience of machines, was not as straightforward or easy as it may seem.

The emergence of an electronically borderless Earth was an intrinsic outcome of the historic transition from Fordism to post-Fordism and the consolidation of capitalism's new network economy during the 1990s. Following the work of Boltanski & Chiapello (2005), what can be called the May '68 critique played a seminal if unexpected role in this epochal transition. For better or worse, the resurgence of Marxism, for example, represented the last major resistance to the technoscience-friendly colonisation of the academy by anti-theory empiricism and behaviourism (Marcuse 1968 ). Not only would the universities abandon critique, those spaces previously left open in the public interest for artistic or philosophical temperaments to position themselves outside and against have closed (Chandler 2015).\(^4\) More unexpected, however, was not so much capital's disarming of the May '68 rejection of Fordist alienation, hierarchy and paternalism, it was more the rejuvenating effect of this critique and its recoupment-implementation by capitalism as its very own encouraged creativity, flat hierarchies, project ownership and equal opportunity ethos of the new meritocratic network economy. Energised by this reprisal, the new spirit of capitalism privileges the flexibility and resilience of the complex emergent subject and its realisation through the freedom-expanding optic of personalised consumption. By way of sealing neoliberalism's discovery of emergence as the previously collectively buried essence of life, from the end of the 1970s,

\(^3\) For example, in the past, a weather station may have been purposely built in open countryside. Decades later, however, it was surrounded by urban sprawl. At the same time, midway through its life, the instrumentation at the station was changed. In order to make the data rigorous, adjustment is needed to compensate for any secondary warming due to building proximity and any known instrumentation bias.

\(^4\) Published in 1968, Herbert Marcuse's resolutely anti-establishment One Dimensional Man, is described on its cover as the "...most subversive book published in the United States this Century". Ironically, at least in today's more restricted and self-censoring intellectual climate, his Acknowledgments cite grants from such establishment bodies as The American Council of Learned Societies, The Louis M Rabinowitz Foundation, the Rockefeller Foundation, and the Social Science Research Council.
preferring to now pose as a force of nature, capitalism itself disappeared from the
purview of academic concern (Stiegler 2010).

In discussing Fuller's flat Earth projection in terms of the political problem of data
friction (the conversion of 'curved' knowledge to 'flat' data), the position of the
post-colony is crucial. While this conversion is part of the transition to the new
network economy, it would be wrong to consider this in a one-sided manner. For
example, as resulting from disruptive forces striking out from a dynamic metropolis
and reformattting a lagging post-colony. Hannah Arendt's (1994) conception to the
Boomerang Effect has complicated such a view. Historical research documents how
the relative freedom of the colonies provided experimental sites for new and
anticipatory forms of governmentality (see, Rose 2000: 107 fn25). For Arendt, the
moral licence and lack of restraint that characterised Nineteenth Century imperialism
served as a trial run for the totalitarianism of the Twentieth. The post-colony,
continues this historic role. During the 1970s and 1980s, it acted as a laboratory for
the one-dimensional ontologies and methodologies of the new spirit of capitalism.
With NGOs wielding the moral sledgehammer of a sans frontieres humanitarianism,
lacking an industrial heritage the post-colony provided a test-bed for the self-reliant
and adaptive post-industrial subjectivities that would come to maturity as the zero
hour contracts and precarious of the gig economy.

The transition from Fordism to post-Fordism was, from the start, a dynamic feedback
process interconnecting metropolis and post-colony, with capitalism's future being
trialled and simulated in the latter. With the emergence of an electronic
one-dimensional Earth where the whole is always smaller than its parts (Latour et al.
2012), the post-colony continued to play this role.

Today's Boomerang Effect does not involve totalitarianism as understood by Arendt.
In getting to the new economy, however, with its single deck plan for Spaceship Earth
covering the living and the dead, as well as the human and non-human, a totalising
form of knowledge was certainly required. The Boomerang Effect has two
interconnected modalities, an ontological/epistemological element, and a
methodological or practically grounded component. Regarding the former, as a
metascience cybernetics is a sui generis mode of knowledge that uses methods of
analogical transfer to discover equivalent modes of functioning in otherwise different
orders of reality. It is a totalising constitutive "technological mentality" that
functions equally across all matter and substances whether alive or dead, human and
non-human (Simondon 2009). While such different domains are not usually
machines ontologically, they become so analogically for the convenience of
mathematics and their cybernetic reconstitution as objects of technoscience.
Reduced to information processing systems, cybernetics has authored totalising
constitutive leaps from the emergent and self-ordering tendencies observed in the
physical and natural worlds to the human domains of economy, society and the mind.5

5 The relation between neoliberalism and cybernetics is a good example of the constitutive power of
analogical equivalence. Except for limited pattern recognition, it is important for neoliberalism that
humans are incapable of understanding society due to its alleged complexity F A Hayek, ‘The Use of
An ontological and epistemological one-dimensional Earth has become reality, and even now it reaches out to enfold the Universe.

Until around the mid 2,000's, the development-security nexus (Duffield 2001) provided the Boomerang Effect's practical or grounded component. Working through terrestrial forces, analogue relations and face-to-face encounters, the nexus prepared the ground for the conversion of curved knowledge into flat data. The rapid incursion of Western NGOs into the post-colonial world during the 1980s produced new forms of borderless knowledge. Whereas colonial regimes had focused on political security, NGOs were more concerned with human security. Rejecting the Marxist legacy of anti-colonial liberation struggles, aid agencies reduced history to the empirical behaviour and livelihood choices of their beneficiaries. The importance of area studies and language acquisition declined and, as if to undermine even the possibility of theory, the multifaceted complex emergency was discovered. As reflected in the history of famine early warning, labour intensive face-to-face forms of quantification also emerged to transform behaviour into borderless alerts, signals and patterns. Stretching over several decades, this extensive preparatory work for datafication took place in advance of the computational capacity to fully realise it. Because of this ontological ground work, the rise to dominance of what Antoinette Rouvroy has called 'algorithmic governmentality' (Rouvroy 2012) has proven to be remarkably effortless. Not only has it failed to arouse any serious political debate, the digital turn even appears providential given the scale of data saturation revealed once a synchronous flat Earth became an electronic reality.

[Electronic globalisation] de-spatialises the real globe, replacing the curved earth with an almost extensionless point, or a network of intersection points and lines that amount to nothing other than connections between two computers any given distance apart" (Sloterdijk 2013: 13).

Once the model becomes reality, however, its early ecological expansiveness begins to reveal itself as entropy and closure. If one takes a step back from Fuller's flat Earth projection, it's difficult to miss that it provides a distortion free God's Eye view of the planet. With no hidden side of the globe where recalcitrants can hide, everything is visible and relationally accurate. While the Mercator projection may have provided the horizontal grid lines for exploration and conquest, the Dymaxion map anticipates the present era of vertical surveillance and intervention from the electronic atmosphere (Steyerl 2012). When first published in 1943, the accompanying Life

Fortuitously, however, the market compensates for human ignorance. Through the price mechanism it functions like a computer and is able to achieve optimal resource allocation through its powers of spontaneous self-organisation. Cybernetic's totalising mentality is not fazed by neoliberalism's ignorant subject. Indeed, cybernetics is the primary tool for subjugating and thus knowing this subject and, as a result, fabricating and shaping its complex emergence Douglas Spencer, *The Architecture of Neoliberalism: How Contemporary Architecture Became an Instrument of Control and Compliance* (London & Oxford: Bloomsbury 2016). Initially created to surmount the limited-knowledge situations thrown up by warfare, it is unnecessary for cybernetics to know a subject’s attitudes, beliefs or even conscious aims. More important for inferring and affecting immanent futures is the algorithmic parsing of the data-memory of past behaviour Norbert Wiener, *The Human Use of Human Beings: Cybernetics and Society* (Boston: Houghton Mifflin Co., 1954).
A magazine article described how the US President kept a 50 inch globe at hand since no standard map could provide all the relational information required. At a time of war, the President must be able to visualise the world "... not only from his own vantage point, but in the divergent perspectives of other nations and their political geographers" (Life 1943: 42). Life points out that the Dymaxion Map was designed "...to fit exactly these requirements [and that it] satisfies the need, short of a perfect sphere, for a virtually correct picture of the earth" (Ibid). Moreover, its triangular and square faces can be reassembled to accentuate different strategic viewpoints. In other words, besides natural ecology, it also doubles for the ecology of war.

As a ground preparation tool, the development-security nexus is now exhausted. Its ability to transform curved knowledge into flat or borderless signals and alerts was integral to the moral universe of post-Cold War liberal interventionism. As a constitutive technological mentality, however, cybernetics has a fateful weakness. Because the orders of reality it totalises are different, the technological mentality is limited to understanding them in terms of their modes of intercommunication and emergence. Relying on computational analogy adds little to either grasping the differences between orders or conceiving them in terms of their inactivity or stasis (Simondon 2009). That is, as having histories and meaning in their own right. Beginning in the 1980s, the era of liberal interventionism ended with the unilateral declaration of a War on Terror and the invasions of Afghanistan and Iraq. With its ultimate flat Earth reasoning that you are either for liberal values or against them, the War on Terror has interpreted any form of emergence that strives for genuine autonomy and difference as a security threat.

Rather than usher in an era of cosmopolitan values, the reality of an electronically
borderless Earth is associated with its opposite. Data friction has given way to the ground friction of political push-back and the spread of international no-go areas (MSC 2017). There is a sense of growing disconnection and remoteness as multicultural milieus pull apart and fragment into their basic ethnic, identity and religious constituencies. Demoralised and anxious aid workers, journalists and academics, for example, have absented themselves from 'challenging environments' for the relative security of gated complexes and fortified green zones (Duffield 2010). Rather than a place of political possibility, the outside world is now experienced as risky and uncertain. All manner of remote methodologies have consequently emerged to recoup distance.

Since the financial crisis of 2008, the post-colony has continued to be laboratory for capitalism’s future. We can discern a new and even more attenuated spirit of capitalism within the digital humanitarianism currently being trialled (Meier 2015). Despite the hype, this is a much harsher future than the projectised forms of post-industrial survival that were tested during 1980s and 1990s. Capital is already preparing to survive as the sub-prime economic conditions associated with the global South expand to become the planetary norm. Gone, for example, is the community orientation of earlier forms of aid intervention. Collective self-reliance has been replaced by a growing emphasis on personal resilience in landscapes characterised not only by the absence of state provision, but any form of shared infrastructure or fixed amenities (Duffield 2016). Current trends in humanitarian innovation and design are privileging personalised technologies (water filtration; therapeutic foods; sanitation; shelter; solar energy, etc) that support a nomadic existence in this new social wild. This is an ecological wild in the sense that, through mobile phones and the interactive technologies being deployed, it is a pervasively surveyed and closely monitored wild. Developing out of the famine early warning systems of the 1970s and 1980s, humanitarian response is fast automating. Earlier forms of face-to-face humanitarianism are disappearing as they give way to safer and cheaper forms of remote management. Needs are automatically sensed and, through things like shock-triggered cash transfers and multiple-question e-medicine, interventions are sequenced to encourage individual self-recovery.

Rather than a joke, deciding whether the earth is curved or flat is a set to become an increasingly pressing question.  

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6 Mark Duffield is currently completing a book for Polity Press entitled The Disconnect: Capitalism, Disaster and Decay.


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