DATA GRAB

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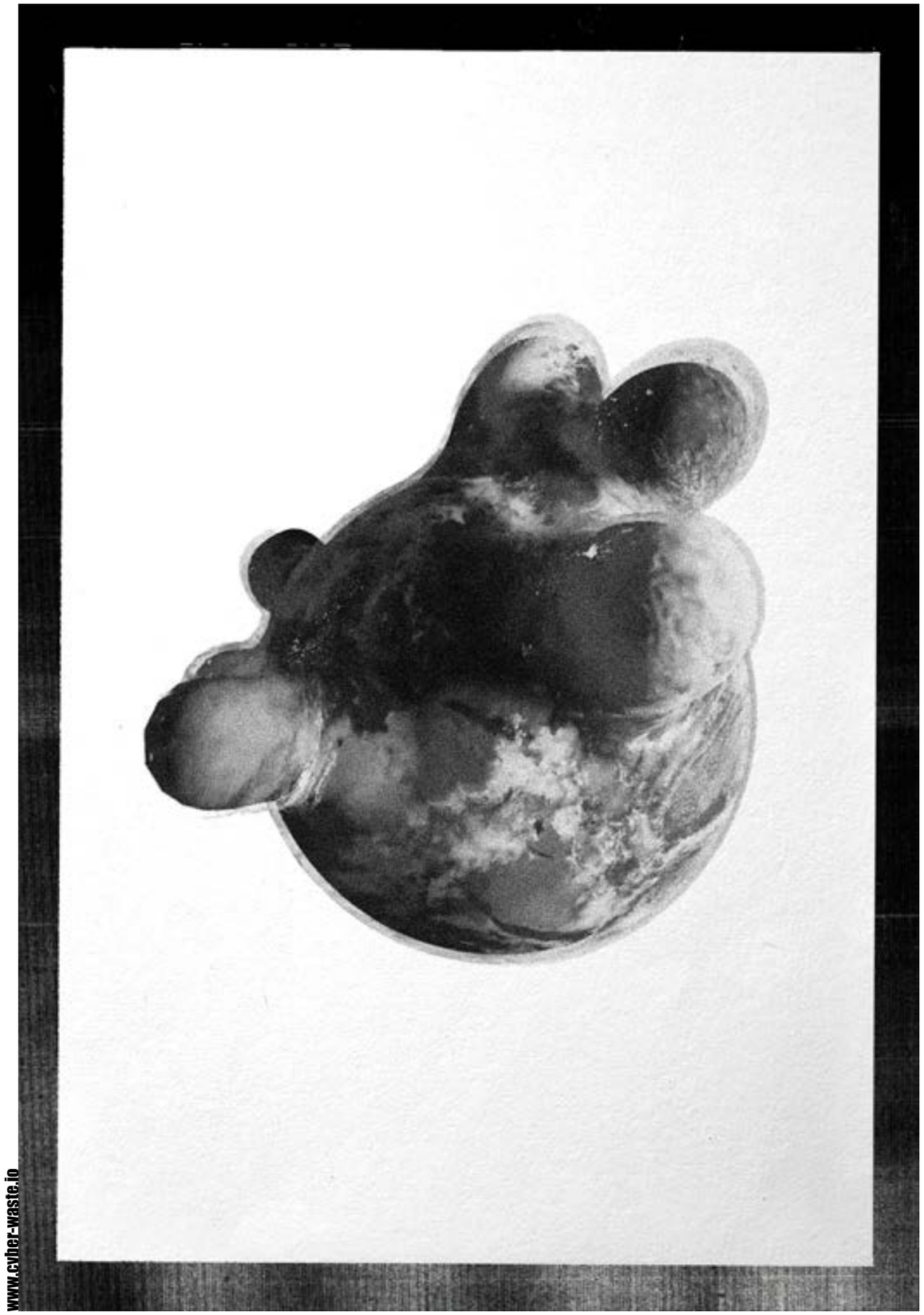

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In May 2017, The Economist published a special report called ‘Fuel of the Future’. Arguing that ‘data are to this century what oil was to the last one: a driver of growth and change’, it laid out similarities between oil refineries and data centres as sites where the essential materials for the global economy are processed and produced. It also argued that digital information differed from any previous resource in the way that it is ‘extracted, refined, valued, bought and sold’,[1] pointing to the development of free to use services as one example.

The idea of digital information flows powering the engine of a Post-Fordist, post-carbon service and knowledge-based economy is not new. However, the rapid growth of a handful of big technology companies this century – accelerated by the aftermath of the Global Financial Crisis (GFC) and consolidated in the immediate response to Covid-19 – has given everyday, observable shape to this idea. How then does the role of data mimic or differ from that of oil as a key economic driver?

Fossil fuels are found as naturally occurring resources deep in the earth. However, their centrality to modern economies was not inevitable, but rather the result of conscious planning and engineering. Once located and extracted, they are refined and processed to create stores of energy with far greater intensity and power than the widely distributed but relatively weak energy created by burning wood[2]. Their intensity and density are mirrored by the infrastructures created around them, in transport, sites of production and the social movements that arise in response to them. In other words, ‘great quantities of energy flowed along very narrow channels’.[3] Whoever controls the channels of energy wields great power and captures the potential for great profit, as evidenced by the huge wealth of petrostates and fossil fuel companies around the world, especially in the second half of the twentieth century.

Today, the information that constitutes what we understand as data are neither naturally occurring gifts nor inevitable as drivers of economic growth. They need to be imagined as data to exist and function as such; they are not mined but manufactured.[4] In terms of its capture, part of the underlying logic of so-called data capitalism is to develop the need and mechanisms to generate data, which can then be extracted and processed, before creating value. The widespread austerity that followed the GFC created perfect conditions for investing in these digital services, with investors seeking higher rates of return in a sluggish economy, precarious labour conditions, and the underfunding of public services creating opportunities for data-rich digital services to step in.[5]

Firms have invested in a range of sophisticated techniques to generate data. These range from seductive behaviourist click-baiting, social media feeds for online advertising and the marketing of free digital services, through to the creation of marketplaces to facilitate exchange between a range of users and companies. As well as the design of services, techniques can also include different instruments of data extraction, such as the introduction of sensors in physical spaces or terms and conditions embedded in digital services that give permission for the collection of personal data in exchange for user right of way. Through vast data accumulation enabled by the promise of monopoly power and coordination rights, these services, slick and preferable as they often are for consumers, don't only disrupt their obvious analog counterparts, but other markets as well. In data capitalism, therefore, 'flows of data correspond to flows of power and profit,'[6] as can be seen by the enormous economic power of US companies like Google, Facebook, Microsoft and Amazon and Chinese firms like Alibaba, Tencent and Baidu in China.

A lot of work goes into the generation of all this data, in order that it be acquired and rendered valuable. Much of the economic value placed on the huge valuations of firms is less about what they functionally do and more about the potential of 'their' data to be turned into some useful new service, constantly repackaged and recombined with new data in new contexts. Data becomes a business asset that must be considered conceptually infinite, very different from the scarce reserves of oil. The need for long-term profitability in the face of competition, combined with a model that generates and extracts data and perpetually seeks new ways to package and repurpose it, creates processes of accumulation that – theoretically at least – could go on forever.[7] This explains what has been called the 'data imperative', whereby organisations collect data even if they don't know what to do with it.[8] And millions of businesses pay firms like Amazon, Microsoft, Google and other cloud and computing services to store their data and run services on top of it.

All this data needs to be stored somewhere. This is where data centres come in, 'data processing farms that are outsourced to server farms.'[9] To say the cloud is not a cloud has become cliché, but the sheer size of these vast warehouses that exist invisibly behind the screen is worth noting. Switch SuperNAP in Nevada, once the world's largest data centre, is 2.2m square feet, the size of approximately 38 football fields. Today, China Telecom's Information Park in Inner Mongolia is roughly 5x bigger, at 10.7m square feet. These centres have to be big: they hold a lot of storage. The International Data Corporation, a market intelligence firm, reported in May 2020 that 'the amount of data created over the next three years will be more than the data created over the past thirty years'. The new data, unique data (created and captured) and replicated data (copied and consumed) is expected to keep growing at a compound annual growth rate of 26%.[10]

These centres have significant energy demands. As far back as 2006, they constituted 1.5% of all electricity in the US; by 2018, that figure applied globally and is expected to reach 8% of all electricity demands by 2030.[11] Though recent investments in renewable energy and clean electricity means that scare stories about data centres being more harmful in terms of carbon emissions than the aviation industry are probably overblown, the rapid growth of data usage still comes at high cost. Idle servers use considerable amounts of energy, with approximately 30% of global data center servers estimated to be either underutilized or completely idle.[12] Energy demands are built not only on computational needs, but secondary support, such as cooling systems and backup generators. Even beyond electricity provision, these secondary functions place huge strain on local resources, with cooling systems using diesel and consuming huge amounts of water.

The waste effects of data are partly environmental. There have been significant efforts to reduce the carbon footprint of data centres, with most of the large US firms making bold public commitments and also increasing transparency on their emissions, largely due to pressure from outside.[13] Though China lags behind in the cleanliness of energy powering its data rich firms, there is increasing pressure and action to reduce the carbon intensity of digital infrastructure.[14] A more pressing environmental concern is the question not of data itself as the new oil, but rather 'oil as the new data', where cloud computing services with unprecedented data processing power are put to use helping fossil fuel companies automate the processes of locating and extracting previously harder-and-dearer-to-find carbon reserves.[15] These revelations have led to some employee-led protests at firms like Google.[16]

The most pressing issue, however, in this paradigm of data-rich economic coordination, is about the concentration of wealth and power into a small number of firms in the US and in China. In 2014, four of the five largest data centres in the world were in the US. Today, the US is home to only four of the largest fifteen, and none of the top eight. The seven largest are all in China.[17] Whether backed by state agencies or private corporations, the data arms race reflects a mutually invested commitment to ever-expanding data manufacture and capture. The consolidation of ownership in hyperscale data centres - the 15 largest have about 50% market share of the data colocation market[18], renting out digital space to retail customers - reflects these patterns of concentration within data and digital services.

Unlike oil, concentrated and buried underground, then brought to the surface and shipped throughout the world to make energy, data 'reserves' are manufactured all over the earth's surface then captured and flown inwards. Instead of being shipped outwards, all over the world, data flows inwards, to one of a few, enormous data centres, controlled by one of a few, enormous states or private companies. This concentration in the face of competition, combined with the promise of unending, conceptually infinite data generation, conjures an image of ever more information squeezed into fewer and fewer hands. There is huge social potential in the world's data, generated universally, being deployed to common benefit; whether to answer questions of energy, health, employment, transportation, and so on. The decisions to do so, currently, sit in the hands of an alarmingly small group of people.

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Endnotes

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