data • data centers • con-trover-sies

Data (Centers) Controversies

Ippolito Pestellini Laparelli

Abstract
Datacenters are a new building typology, whose characteristics and relationships with politics, culture and economics are still undefined, unquestioned and in flux. Reflecting on the architecture of datacenters, this visual essay examines their role in infrastructural espionage, science fiction, climate change, and processes of automation. As data production, consumption and aggregation grow exponentially, what impact do datacenters have on their environment? What do they actually look like on the inside? What role do humans play in their operations? And what role could or should architects play in shaping the future of data centers and more in general of architectures for machines?

Affiliation
Office for Metropolitan Architecture

Contacts
ipestellini@oma.com

DOI
10.17454/ARDETH05.11

ARDETH#05

On June 25th, 2018 Investigative Agency *The intercept* published on their website a revealing article: *The Wire Taps Rooms. The NSA's Hidden Spy Hubs in Eight U.S. Cities* (Gallagher, Moltke, 2018). The investigation looked at eight AT&T facilities in eight U.S. cities, which acted as a peering hub for the NSA through the course of their surveillance program famously known as FAIRVIEW. The program was designed since 1985 to collect phone, internet and e-mail data mainly of foreign countries' citizens at major cable landing and switching stations inside the United States.
Much has been said, written and reported on the NSA and on FAIRVIEW, but very little has been shown of the physical infrastructure that allowed the spying. The eight facilities presented in the report share a common look of total inaccessibility and anonymity: contemporary fortresses, with no windows or signs. They sit silently in their urban landscapes, allowing the powerful infrastructure of surveillance to be hidden in plain site, invisible to the thousands of people passing by everyday.

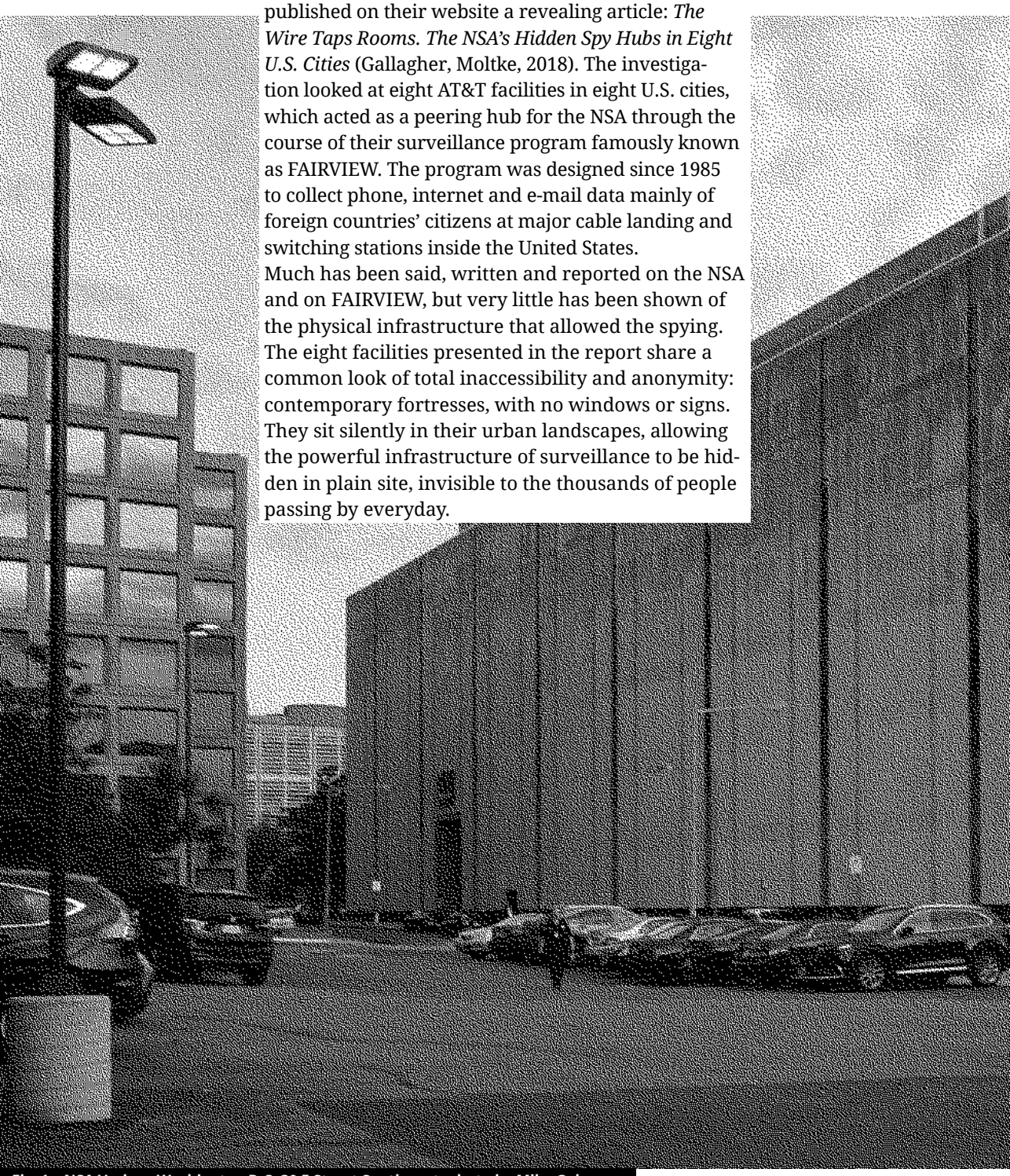


Fig. 1 – NSA Verizon Washington D.C. 30 E Street Southwest, photo by Mike Osborne

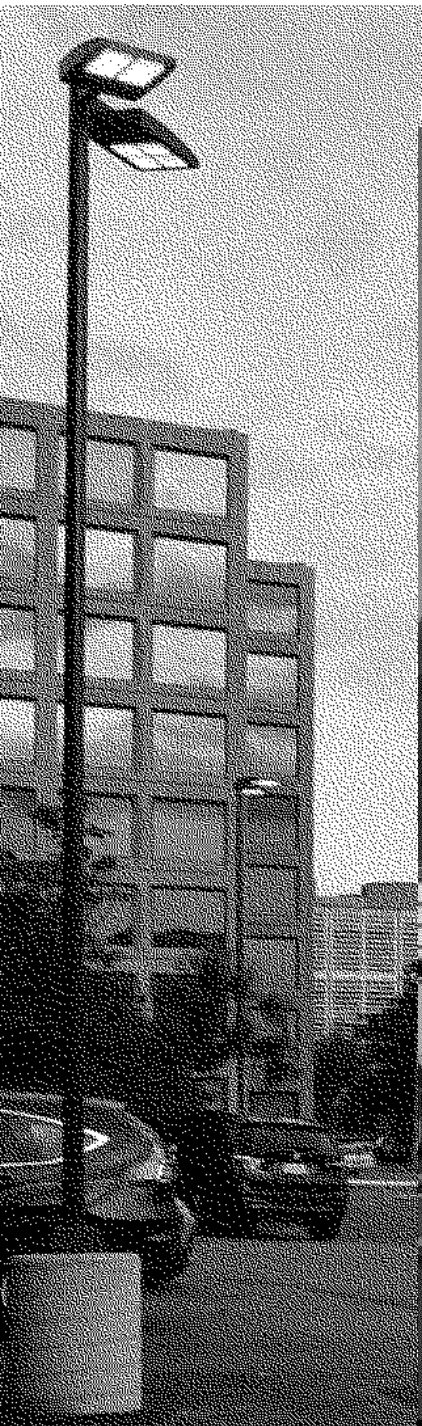
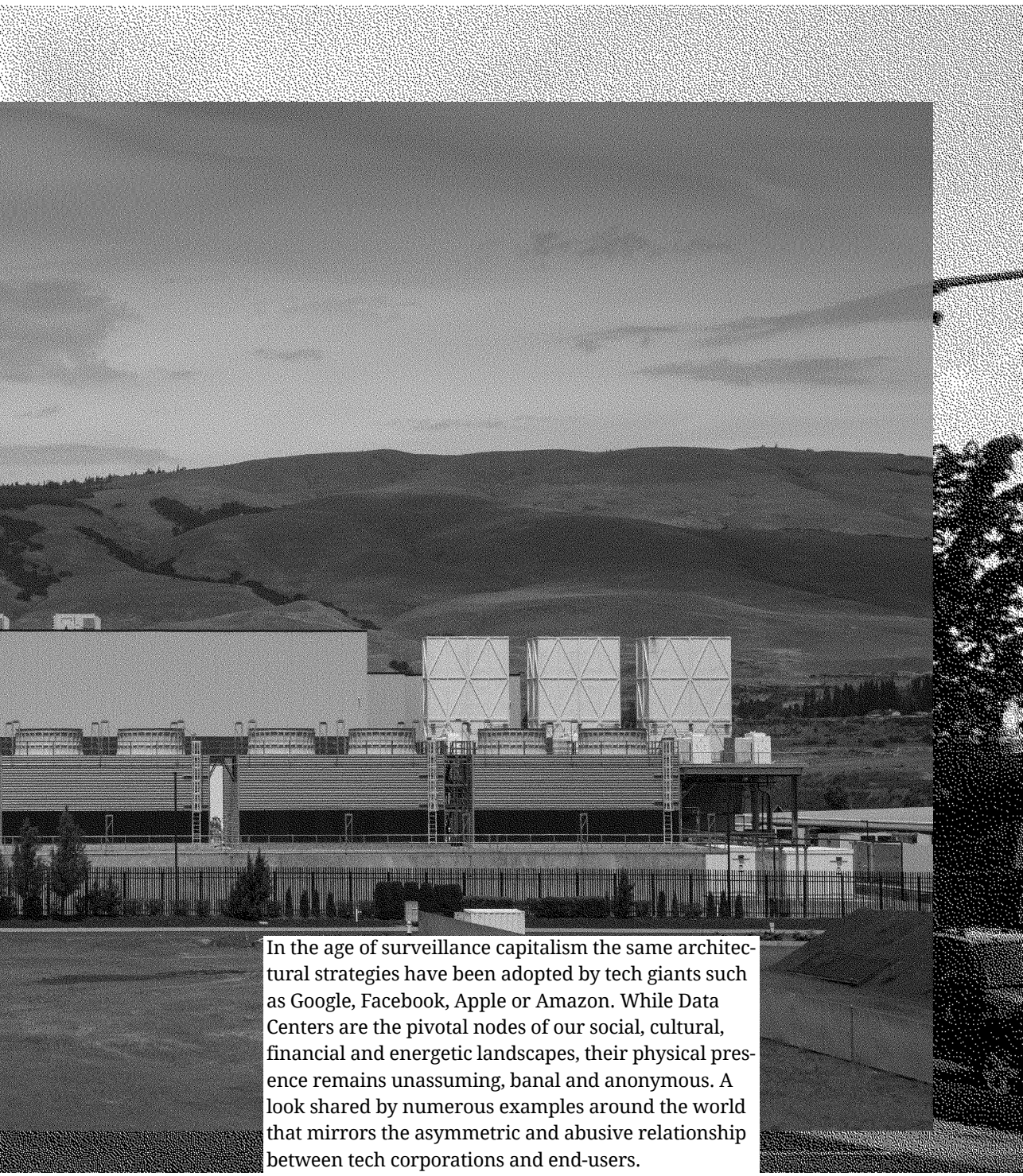


Fig. 1 – NSA Verizon Washington D.C. 30 E Street Southwest, photo by Mike Osborne

Fig. 2 – Google Data Center The Dalles, Oregon, 2015, photo by Tony Webster



In the age of surveillance capitalism the same architectural strategies have been adopted by tech giants such as Google, Facebook, Apple or Amazon. While Data Centers are the pivotal nodes of our social, cultural, financial and energetic landscapes, their physical presence remains unassuming, banal and anonymous. A look shared by numerous examples around the world that mirrors the asymmetric and abusive relationship between tech corporations and end-users.

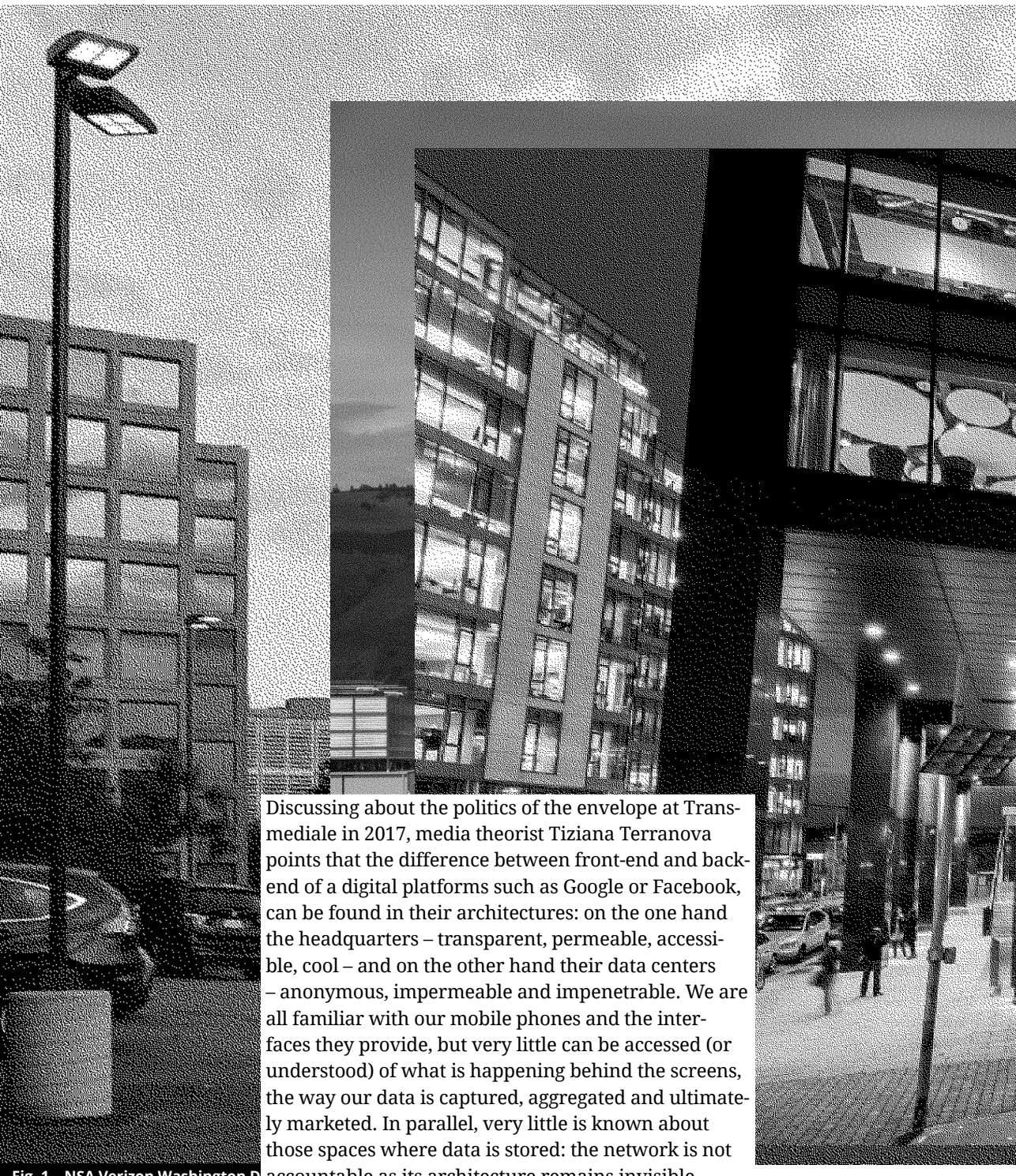


Fig. 1 – NSA Verizon Washington D

Discussing about the politics of the envelope at Transmediale in 2017, media theorist Tiziana Terranova points that the difference between front-end and back-end of a digital platforms such as Google or Facebook, can be found in their architectures: on the one hand the headquarters – transparent, permeable, accessible, cool – and on the other hand their data centers – anonymous, impermeable and impenetrable. We are all familiar with our mobile phones and the interfaces they provide, but very little can be accessed (or understood) of what is happening behind the screens, the way our data is captured, aggregated and ultimately marketed. In parallel, very little is known about those spaces where data is stored: the network is not accountable as its architecture remains invisible.

Fig. 3 – Google Campus Dublin by Camenzind Evolution

Fig. 4 – Astronaut in data space, collage by OMA

Fig. 2 – G

Fig. 1 – NSA Verizon Washington D.C. 30 E Street Southwest, photo by Mike Osborne

While our datafied existences are evaporating into bytes, we are loosing ground with reality. Identities and personhood are artificially assembled, morphed and multiplied as data from our digital interactions are processed and aggregated into alternative realities through the white-halls of server farms across the globe. All we are left with is fiction, and data centers are often broadcasted as fictions. Mainstream images of server farms suggest on the one hand new extreme environments and on the other a new form of techno-aesthetics, clearly inspired by sci-fiction, that has pervaded the collective visual imaginary from cinema to fashion. As James Bridle – a writer, artist and technologist – observed: "Inside, the buildings are deliberately designed to look like you would hope the Internet would look like, [they] are meant to appeal – very explicitly meant to appeal – to the kind of sci-fi sensibility of network engineers" (Bridle, 2011).

Fig. 3 – Google Campus Dublin by Camenzind Evolution

Fig. 1 – NSA Verizon Washington D

Fig. 4

This is where marketing meets data real-estate. Keeping this in mind one should not surrender too easily to the fetish of the post-human/machine environment, as reality is far less exciting, and far more generic.

The Data Center industry is an ideal lens to investigate the relationship between humans and non-humans agents (or machines). Automation is redefining so much of our built environment – from harbors, to green houses, warehouses, etc. On server farms the presence of humans is in a similar way progressively occasional and residual. Data Centers are extreme buildings built for machines, but is it really possible to talk about a new form of post-human architecture? Things are not as simple as they seem.

Fig. 5 – Google NC Datacenter, Image (C) Google

Fig. 3 – Google Campus Dublin by Camenzind Evolution

Fig. 6 – Modulor & server rack, image by OMA

Fig. 4 – Astronaut in data space, collage by OMA

Fig. 2 – G

Fig. 1 – NSA Verizon Washington D.C. 30 E Street Southwest, photo by Mike Osborne

From brief to construction, human space (offices, meeting rooms, receptions)in these gigantic structures is pushed to occupy very small portions. Here design becomes whimsical, folkloristic, even symbolic, acting as a form of compensation. Instead, when we look in detail at the spaces entirely dedicated to machines – also known as white halls – it becomes evident that humans are not entirely out of the picture. The dimensions of the spaces were servers are stacked are in fact still based on our own bodily dimensions, in order to allow residual handful of engineers to access the servers and keep the system running. Temperatures are kept at levels that are bearable for humans and servers alike – at huge energetic costs – and light is present only for people to find their way. From this perspective data centers are paradoxically an entire architecture for machines while still modelled on human dimensions and needs.

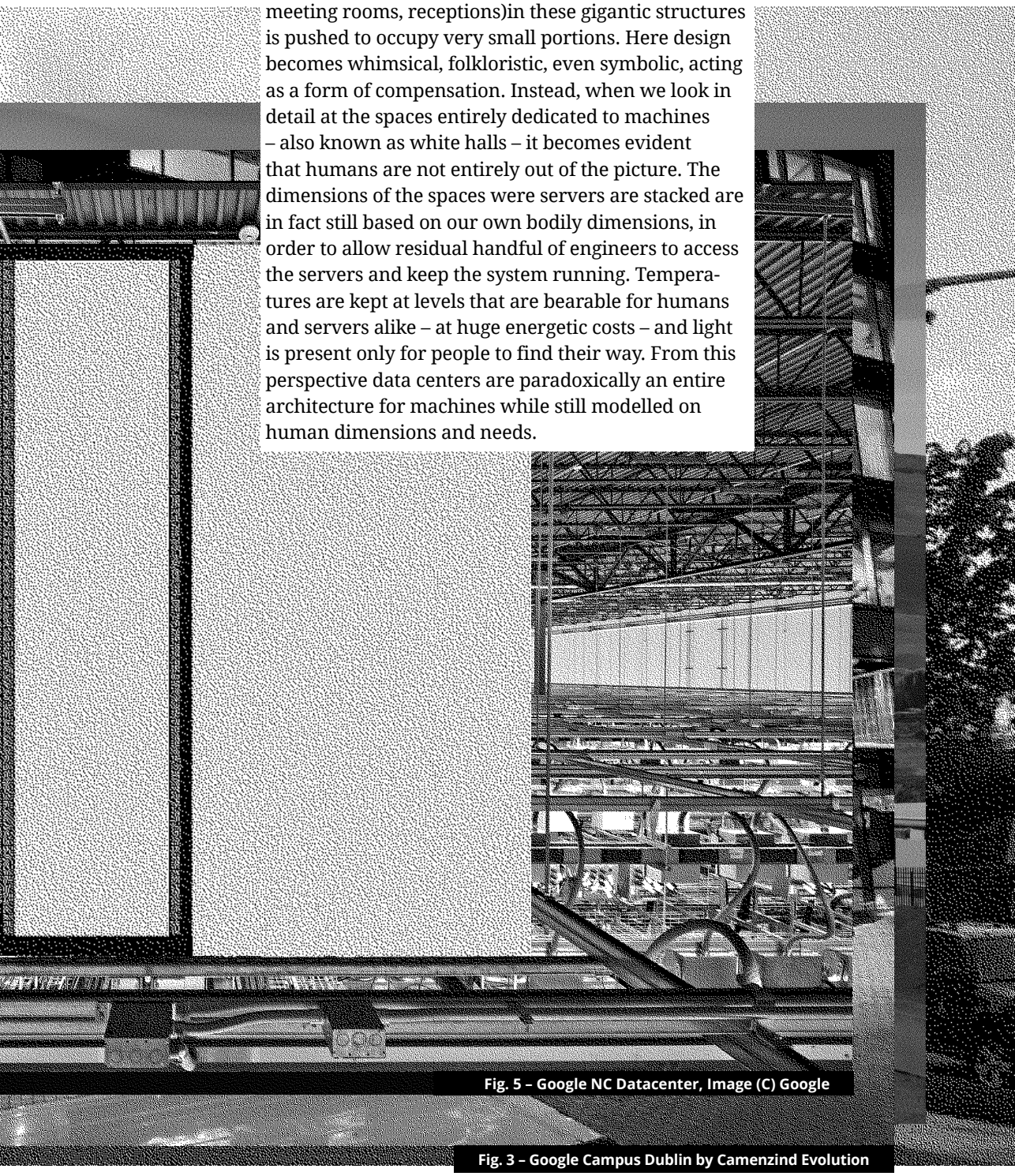


Fig. 5 – Google NC Datacenter, Image (C) Google

Fig. 3 – Google Campus Dublin by Camenzind Evolution

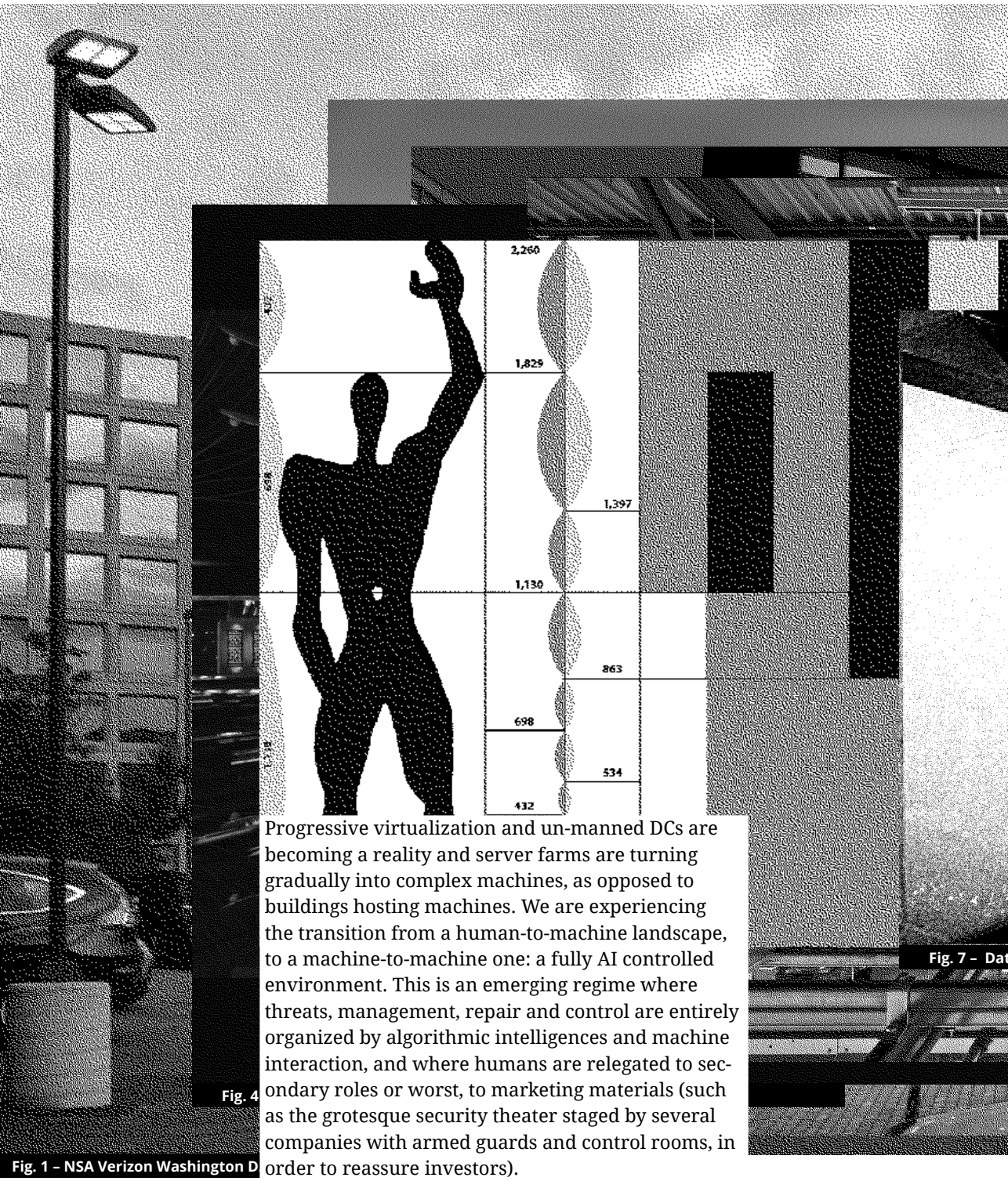


Fig. 1 – NSA Verizon Washington D

Fig. 4

Fig. 7 – Dat

Progressive virtualization and un-manned DCs are becoming a reality and server farms are turning gradually into complex machines, as opposed to buildings hosting machines. We are experiencing the transition from a human-to-machine landscape, to a machine-to-machine one: a fully AI controlled environment. This is an emerging regime where threats, management, repair and control are entirely organized by algorithmic intelligences and machine interaction, and where humans are relegated to secondary roles or worst, to marketing materials (such as the grotesque security theater staged by several companies with armed guards and control rooms, in order to reassure investors).

tacenter site visit Amsterdam, photo by OMA

Fig. 5 – Google NC Datacenter, Image (C) Google

Fig. 3 – Google Campus Dublin by Camenzind Evolution

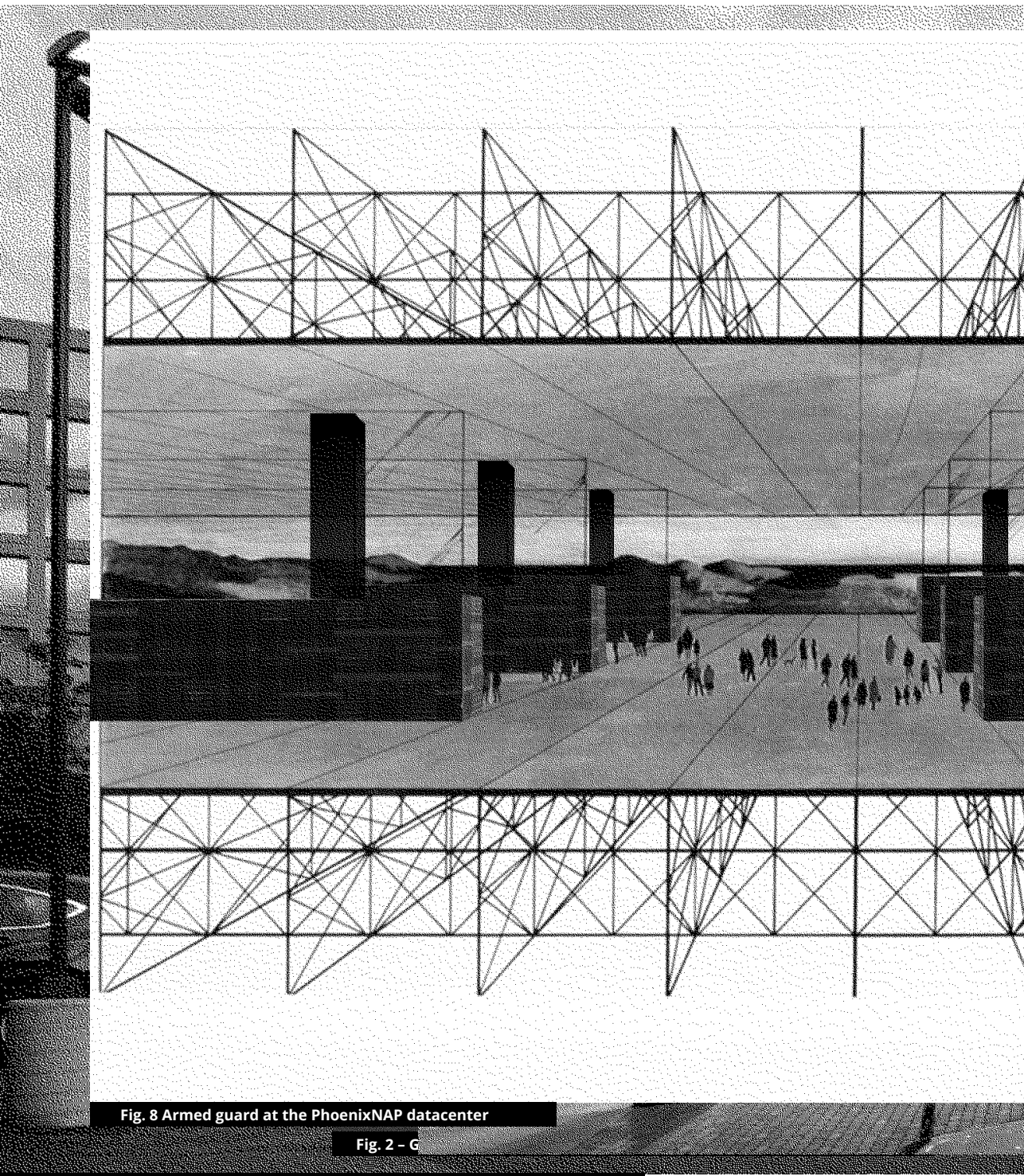
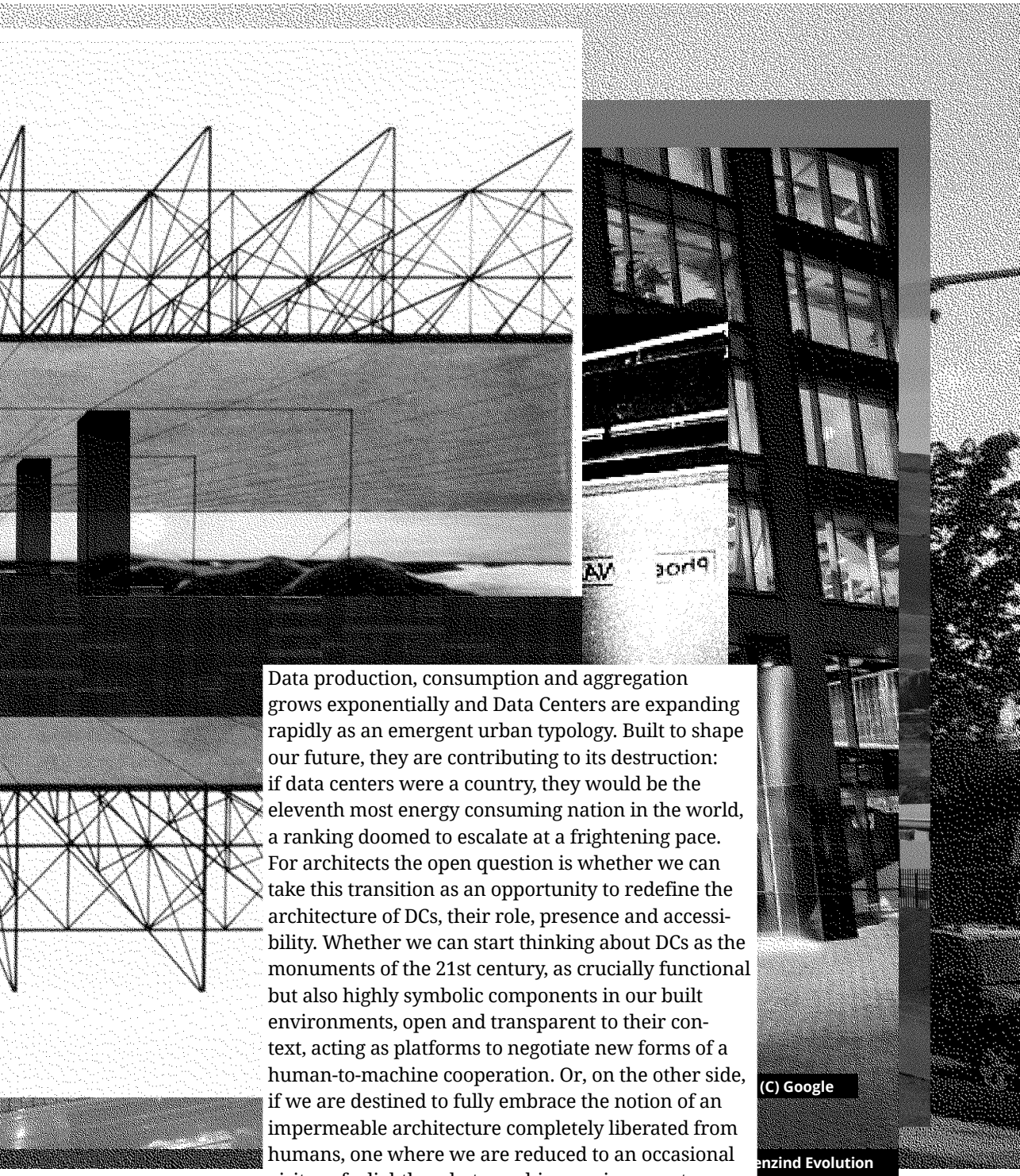


Fig. 8 Armed guard at the PhoenixNAP datacenter

Fig. 2 – G

Fig. 1 – NSA Verizon Washington D.C. 30 E Street Southwest, photo by Mike Osborne



Data production, consumption and aggregation grows exponentially and Data Centers are expanding rapidly as an emergent urban typology. Built to shape our future, they are contributing to its destruction: if data centers were a country, they would be the eleventh most energy consuming nation in the world, a ranking doomed to escalate at a frightening pace. For architects the open question is whether we can take this transition as an opportunity to redefine the architecture of DCs, their role, presence and accessibility. Whether we can start thinking about DCs as the monuments of the 21st century, as crucially functional but also highly symbolic components in our built environments, open and transparent to their context, acting as platforms to negotiate new forms of a human-to-machine cooperation. Or, on the other side, if we are destined to fully embrace the notion of an impermeable architecture completely liberated from humans, one where we are reduced to an occasional visitor of a lightless, hot, machine environment.

(C) Google

enzind Evolution

References

Gallagher, R., Moltke, H. (2018), *The Wiretap Rooms*, "The Intercept" [Online]. Available at: https://theintercept.com/2018/06/25/att-internet-nsa-spy-hubs/ [Accessed: 3 November 2019].

Bridle, J. (2011), *Data centres and Secret Servers*, "Icon magazine" [Online]. Available at: https://www.iconeye.com/design/features/item/9503-data-centres-and-secret-servers [Accessed: 3 November 2019].