Re-used Infrastructures

Dennis de Bel

Dennis de Bel (1984, Rotterdam, NL) is a hands-on artistic researcher, educator and radio amateur. His practice oscillates between various configurations of collaborations focusing on collectively exploring hardware, software and various forms of waves. This is actualized through a broad spectrum of talks, devices, DJ sets, workshops and exchanges at for example ISEA, Transmediale, Radical Networks and Relearn, including various educational institutions such as Design Academy Eindhoven and the Piet Zwart Institute Rotterdam. In 2017 he co-founded Varia, a physical space to actively develop collective approaches towards everyday technology informed by experiments with building physical, digital and social infrastructures of affinity.

https://dennisdebel.nl
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In 2018, you were granted a six month residency at the Institute for Provocation,[1] a contemporary art center located in Beijing, China. It has allowed you to investigate Chinese digital culture from the inside, as to live for a few months in the city of Shenzhen, where most of the computer/phone building industry is located or to visit the Guizhou Province in 2019 where all main tech companies have established their data centers.

In the West, the insides of computers are carefully hidden from the public. Most devices are wrapped in opaques shells, dangerous to open, turning computers, as other electronic devices before them, into mysterious monolithic metal units, and beholders into consumers. Corporate policies cancel customers' warranties if they open the machines, as if opening a device was an act of vandalism.

But in Shenzhen, where you lived, the insides of computers, are everywhere. Outside, on the streets. Computers and phone parts are traded in open-air markets at night, sold in all kinds of shops everywhere in the city, taken out of dismantled machines to be re-used, and even laying on the streets, abandoned like wrapping paper (parts which you started picking up)[2]. Nothing so surprising actually: Shenzhen is a place where digital devices are actually being made.

T.C. It's like makers stand in one part of the world, and consumers in another, and westerners should travel thousands of miles to see the insides of the machine in their hand. In your opinion, what consequences does this international division of labor have on the way people use these devices, both in Shenzhen and the West?

D.d.B This is a very complex situation that touches upon many areas outside of my expertise. To provide a bit of context, Guangdong province where the city of Shenzhen is located is considered by some news outlets as "factory of the world", not just electronics. Shenzhen, as a "Special Economic Zone", is specifically known for its electronics wholesale markets as well as production capacity, opening a foreign trade port in 1978 even before the economic reforms in China during the 1980s.
Trough various policies, Shenzhen is redeveloping itself as "creative city". This division of labor you mention is not an international division per se but also takes place hyper locally. For example Shenzhen attracts large amounts of migrant workers who leave the countryside for work in the facto-

ry, living in on-site campuses. Those already marginalized workers are literally living in a parallel world, rarely leaving the factory grounds. From observations and private conversations with people who were born in and around Shenzhen it became clear they rarely if ever heard of or visited the electronics markets at all. They rather ship their phone to get repaired than to endure the intense atmosphere of the markets. In that sense there is clearly a division of labor, not limited to international relations but also local conditions.

T.C. Could you please tell us more about the *ghost markets* taking place in Shenzhen and about the handmade device buyers in those markets use to test electronic components?

D.d.B *Ghost market* (*gui shi*, literally "ghost city") is the common name for (informal) night markets taking place all over China. The exact origins of the name nor the phenomenon remains unclear and covers a plethora of activities, from late-night entertainment in regular market-places during the Qin and Han dynasties to the more fluid nightly economies of the Tang dynasty. Technology has always played a major role in these markets, you depend on artificial light to navigate the goods otherwise shrouded in darkness.
Besides a torch, the tool of choice frequented by the patrons of the Shenzhen ghost market is colloquially called a *portable charging test power supply* (, *suishen chongdian ceshi dianyuan*). This tool is a bricolage of commodity electronics held together by hot-melt glue and electrical tape, consisting of a USB power bank, an adapter for the plethora of USB plug variants and an analog ampere meter to measure electrical currents drawn from the power bank. Sometimes it's outfitted with an extra USB LED torch for specific use at night, or alligator clips for more general testing purposes. The tool itself is based on mobile accessories, making both the tool and the user mobile. It fittingly resembles something best described as the EM-field detectors used by ghost hunters, but then to search for the ghost in the machine.

This tool allows the user to measure logic boards or phones for current draw. The amount of current the device draws under testing informs the buyer of the state of the device and determines the object's complex life trajectory highlighted by the movement of the needle in the ampere meter. The analog meter not only reveals if a devices is broken or not, it actually allows for a more granular

diagnosis based on the variations in movements of the needle. These fluctuations enables you to observe the boot process of a phone, since different parts draw different amount of currents (screen, power management, motherboard, modem). Furthermore the needle does not move instantaneous to a certain reading but moves slow compared to a digital numeric meter. This allows you to clearly observes fluctuations in the readings that would be difficult if not impossible to see with the instant changes of numbers on a digital numeric meter.[3]

T.C. While the insides of devices are visible in some part of China, data centers are not. They are hidden in the mountains north to the coast, in the Guizhou Province, some of them built in natural caves—which is good for cooling but also for making all infrastructure invisible. These unmapped centers remain—while holding trillions of personal data—very obscure to the public. All around the world, the same policy of secrecy and high tensioned security surrounds data centers. What did you see or not see when getting closer? Could you please tell us a bit about your work *Mountain Stronghold* (2022)?

D.d.B The insides of data centers are possibly the least interesting parts for me. Highly standardized, not unlike shipping containers, they are all very similar across the globe. Some even use shipping containers as modular data center modules (Sun's *Project Blackbox*, IBM, Lefdal data center and Tencent 7 Star data center). Most data centers are run by commercial companies and are therefore not obscure at all, providing maps and features of their locations on their respective websites.
What is interesting is the context and conditions for them to appear, both locally and globally. This can be broken down to for example economical, political, geographical, geological and historical incentives. *Mountain Stronghold* is a collection of data centers that were repurposing already existing spaces either man-made (mines, bunkers) or natural (caves). The project is part of a larger ongoing research about the *shanzhai* phenomenon. This term is often associated with, but not limited to, a derogatory term for cheap knock off phones coming from Shenzhen and describes a practice where co-opting, remixing and repurposing takes center stage in the research and development of new products, be it phones, fashion or television shows.

Popularly, shanzhai has been described as a form of extreme open-source development, and in

the way of relying on fluid meat-ware networks, this might be rather apt. But operating on the margins also dictates confidentiality, networks and plenty of *guanxi*[4]. Furthermore, academic research refers to the hillside cottage industries of Hong Kong as one of the origins of shanzhai.

This is not coincidentally where my research starts to differentiate. Etymologically tremendously rich, China is extremely hard to navigate. Walking, reading, (trying to) talk and getting lost, I got fascinated by street names as points of departure and ways to navigate, obviously. Street names often from a historical spatial catalogue of sorts. Names like *Huaqiang* (China strong), *Aihua* (love China) and *Zhenhua* (revitalize China) in Shenzhen's electronics district all refer to the first (state owned) companies that settled there. Brought to my attention by the excellent work of Mary Ann O'donnell[5] the latter, *zhenhua*, eventually let my up the cloudy mountains of Guizhou to find out more about the history of Shenzhen and shanzhai.

Zhenhua is, among others, a state owned conglomerate formed from several high tech electronics manufactures headquartered in Guizhou after the second world war. In a massive effort to protect/obscure China's assets in case of bombing or invasion of its vulnerable major cities on the coast, there was a massive push to move critical infrastructure into the hinterlands, decentralizing not only research, production but also families. Among this "Third Front" directive, Guizhou province would become the heart of China's electronics, radio and radar development during the cold war.

From here, several companies moved to the coast of Shenzhen's Special Economic Zone as state owned enterprises and today we can witness a whole new movement of companies like Tencent, but also Microsoft, Apple and Huawei now moving back into the mountains that, in my opinion, once lied the ground work for Shenzhen's economic miracle regarding electronics markets and factories.

These temporal oscillations between the coastal areas and the hinterland enforce a reconsideration of the origins of the term shanzhai within the context of electronics.

T.C. In your conference, you talked about a toilet paper distributor you encountered while in Beijing, that used artificial intelligence, which you have made a replica of in your work *WWW* (2019). It had a camera that would look at a person's face, determine whether this person had been there in the last ten minutes,

then give away a string of paper if not. The thing was, it wasn't working very well, so a human worker had to stand beside it, to explain people how to adjust their behavior to the "seamless" machine in order to get the paper. Here, the human worker has not been replaced, but instead of giving away the paper, his task was now to, in your own words, "keep the fable of the high-tech alive". It makes me wonder about micro-tasking, and all the human work behind the scenes of AI: workers labeling millions of pictures, workers transcribing countless voice conversations. What consequences do you think these new tasks—"fueling the AI machines", "assisting the AI machines"—have in terms of skills for human-workers? What does it involve to be a keeper of the digital narrative?

D.d.B Consequences in terms of skills of human workers: the facial recognition toilet paper dispensers were a two month pilot to reduce the looting of toilet paper from the semipublic toilets at the temple of Heaven park. Eventually it lasted more than a year, but was eventually removed. The machine presents a rather complex relation with AI and technology in general. As mentioned, it worked rather poorly and even a screenshot of Pikachu would grant you some paper. On the other hand, it seems quite invasive to have a camera in a public toilet. Moreover the machine seems to highlight how the promise of AI and technology possibly enlarges the gap between rich and poor by addressing symptoms of poverty through policing instead of solving actual problems. On the other hand, the park entrance fee of about five euros was not cheap compared to local toilet paper prices. At least the toilet lady did not lose her job over this innovative machine.
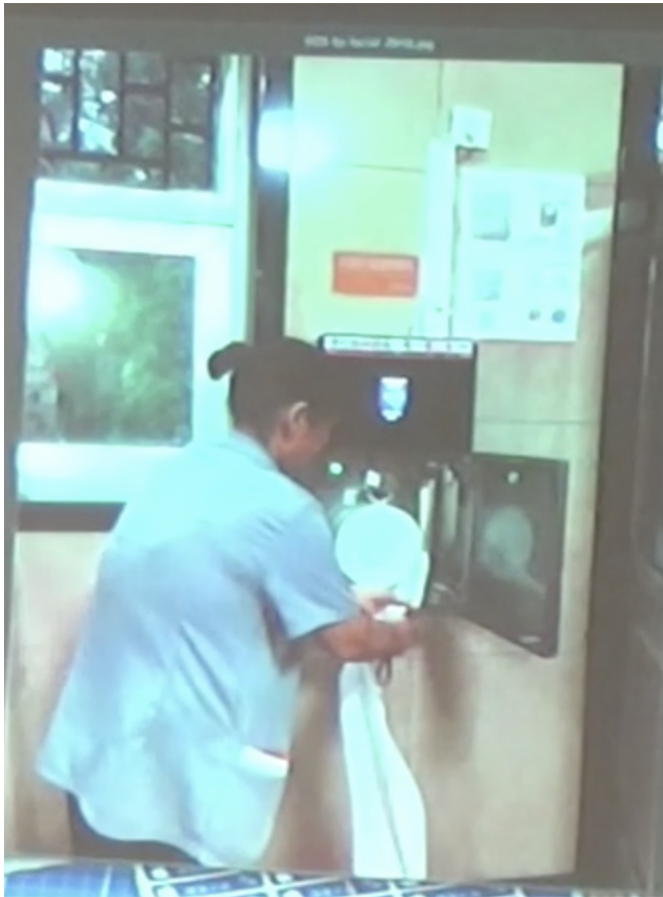
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[1] See: https://iprovoke.org.

[2] Image of phone parts

[3] A more in-depth article about the ghosts of Shenzhen can be found here: http://realtimechina.net/.

[4] https://en.wikipedia.org/wiki/Guanxi

[5] https://shenzhennoted.com/

Huaquianbeipedestrian Street, 2019. The renovated Huaqiangbei Pedestrian Street, sporting several elevated points of interest.

An employee filling a facial recognition toilet paper dispenser, circa 2018-19, Beijing, China.
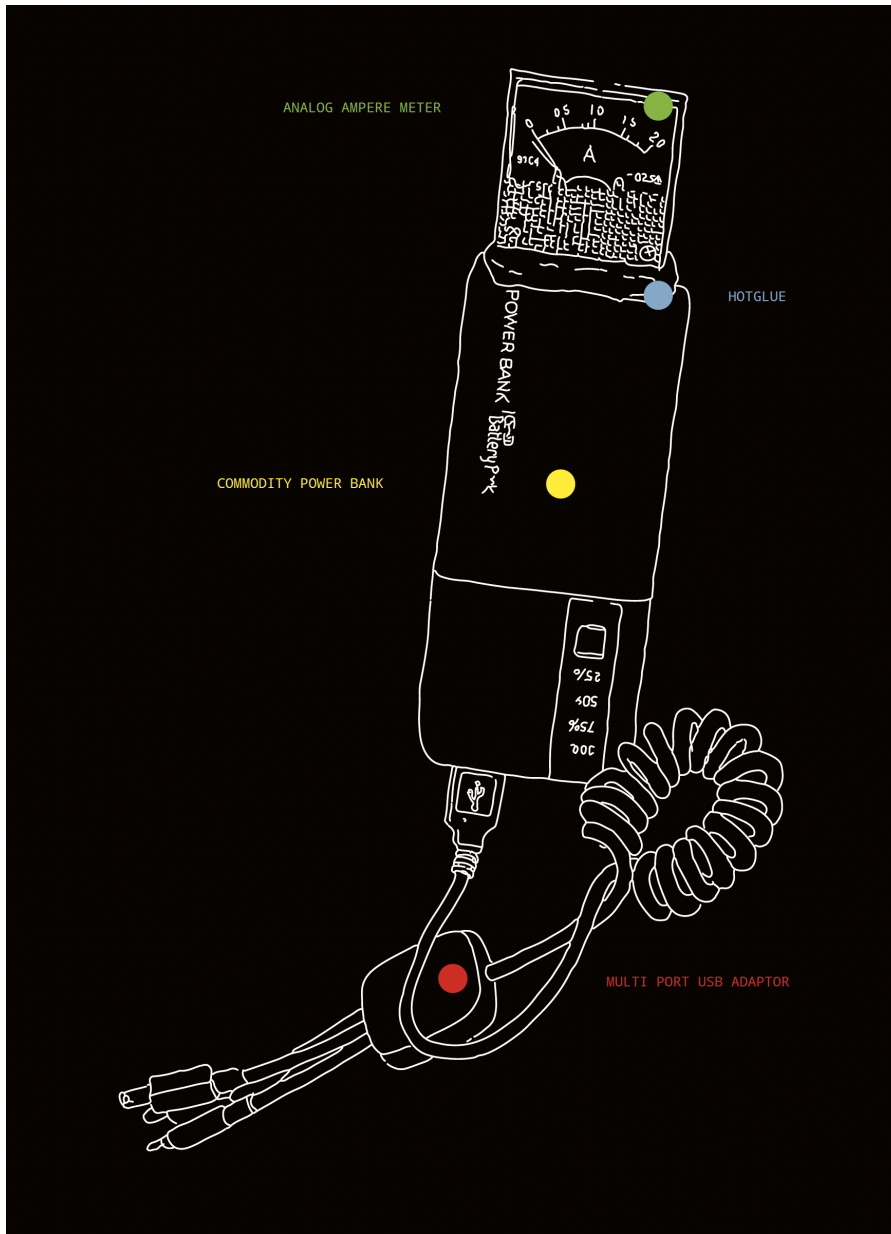

WWW, Dennis de Bel, 2019

Diagram of a portable charging test power supply, a common device in the Shenzhen ghost market.

 Crowds take over Aihua Road, 2019. Devices in various conditions re-entering circulation through the ghost market.

Mountain Stronghold, Dennis de Bel, 2022

Further readings   Renaud, Clément, Graezer Bideau, Florence, and Laperrouza,
                            Marc 2020. *Realtime: making digital China*. (First edition
                            ed.). Lausanne: EPFL Press. (OCLC: 1178978148)