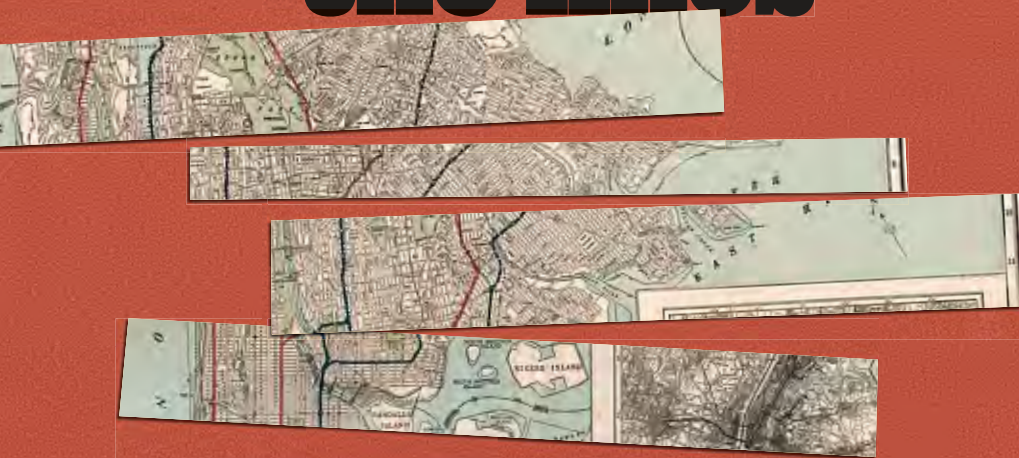


Drawing the lines



Has the map changed or have we?

By Oliver Roeder

Last November, the voters of New York City elected Zohran Mamdani as their mayor to international headlines. Running against a well-funded former Democratic governor and a local-celebrity Republican, the 34-year-old democratic socialist and former assemblyman won 51 per cent of the vote. The election was seen as a municipal repudiation of recent local corruption and an increasingly authoritarian administration a few hours down the rail corridor in Washington DC.

Much further down the ballot that day, past the races for comptroller and public advocate and district attorney, was Proposal Number 5. The proposal would amend the city charter to christen a new city map. As things stood in chaotic and sclerotic New York, the official city map existed on thousands of pieces of paper spread across five different borough topographical bureaus. The amendment would establish a single digital map under the sole auspices of the Department of City Planning. Without much prelude and with no fanfare, it passed with 74 per cent of the vote.

The landslide has no established explanation. Perhaps it was a predilection to vote yes rather than no, regardless of the question, or perhaps it was a taste for modernisation. Or maybe beyond that it was a taste for modern maps in particular – a need to know, accurately and precisely, where we stand. “We will better know who we are by knowing where we are,” as Adam Gopnik put it in *The New Yorker* after the election.

I tracked down one of the pieces of paper, the city map for the block where I live, dated March 1959. It is a beautiful document, fine, black print adorned with colourful pencil annotations. Outside my front door, someone had scribbled what looks like “Old Road on Special Proceeding”. I do not know who wrote this or what it means, and nowadays my road is unremarkable.

The planning department tells me it is now in the early “fact-gathering” stage of this cartographic reshuffle, and is preparing for a “smooth transition without interruptions in service”. Ho-hum. But there lies within this bureaucratic statement a set of deeper questions: what is the service provided by maps? And what does a map’s transition signify? Has only the map changed or has the world?

FROM CHILDHOOD, MAPS PRESENT THE WOODEN feel of permanence. A globe sits on the sideboard. A teacher yanks down a spooled world from above the chalkboard, year after year. Road atlases are forever wedged in seat-back pockets. But maps, of course, could always be changing. In the short term, buildings and roads are built. In the medium term, territory is conquered and nations fall and are founded. In the long term, rivers change course and glaciers melt and mountains rise. In this era of conflicts in Ukraine and the Middle East, the undoing of national and international orders, and technological upheaval, a change in maps appears to be accelerating.

The world is impossible to map perfectly – too detailed, too spherical, too much fractal coastline. A map is necessarily a model. In one direction, the model asymptotes to the one-to-one scale



TOP: John Tauranac's subway map of New York City. **BOTTOM:** Massimo Vignelli's 1972 version

FACING PAGE: CS Hammond & Co's subway system map of New York City, 1921



HOW DOES ONE EVEN BEGIN TO MAP THE WORLD? 'YOU HAVE TO BE NAIVE,' SAYS MARON

map from the Jorge Luis Borges story that literally covers the land, a map of the empire the size of the empire, which proves useless and is left in tatters across the desert. There is a limit in the other direction too, not map expanded to world, but world collapsed into map – pure abstraction on a phone screen, obscuring the real world outside, geodata for delivery companies and rideshare apps.

But if maps abstract the world, their makers demand and encourage a close association with it. There must eventually be a search for the literal ground truth. As the filmmaker Carl Theodor Dreyer once said, “You can’t simplify reality without understanding it first.” Cartography, in turn, informs interactions with the world.

“It’s important for us to try to understand the world around us and not just rely on robotic cars and AI,” Mikel Maron, a long-time board member of the OpenStreetMap Foundation, told me. “Like, look around! That’s what excites me about map-making: it’s an opportunity to try to understand what’s happening. Anyone who’s involved in mapping or geography, they’re trying to understand something deeper about how the world works.”

Maron compared OpenStreetMap, a collective of mostly volunteer cartographers, to the tiny, crucial piece in the comic *xkcd* on the fragile tower of internet infrastructure, quietly supporting swaths of digital cartography. And so it does, stamped in small letters in the credit line of maps of horrific destruction in Gaza or a shifting front line in Ukraine. Maron is particularly proud of the group’s humanitarian cartography. In one week in late January, the OpenStreetMap community mapped some 50,000 buildings in flood-stricken Gaza Province, in southern Mozambique.

For Maron, maps and OpenStreetMap retain some of the promise and wonder of the early internet, the thrill of connecting to someone or something on the other side of the world. Wikipedia was an inspiration. Like that encyclopedia, much of its appeal and benefit lies in its audacity. How does one even begin to map the world, to boil the ocean down to an image?

“You have to be naive,” Maron said.

AS WITH ANY DATA VISUALISATION, MAP-MAKING strives for truth but provides innumerable degrees of freedom, endless choices of inclusion and omission and emphasis. Maps, in other words, are arguments made by humans.

“We don’t do enough to think of maps as cultural artefacts, you know, things that people have contributed to,” James Cheshire, a professor of cartography at University College London, told me. “There are people behind them.”

Sometimes very different people. The official city map will not be the only new map in New York. The city’s transit authority recently replaced the subway map that rides in every train car with a version of a famously modern 1972 design by Massimo Vignelli. Now gone is the long-used design of a man called John Tauranac. In Tauranac’s map, some loyalty was paid to the physiographical world above the subway: surface streets, the basic shapes of the boroughs. In the Vignelli, all attention is paid to the graph-theory mathematics of the train lines, with serious side-effects above. Gone are the streets, and the elegant tilted rectangle

of Central Park is deformed into a squat square. The New York Review of Books uncovered one rider's complaint from the 1970s that Vignelli's map "stylised and distorted in a misguided attempt at simplification to the point where one can get only a very general idea of what goes where". The two approaches were the subject of a literal debate at The Cooper Union for the Advancement of Science and Art in 1978. A psychologist in the audience described a study she'd undertaken on both maps: neither fared well. Another attendee said that the best guide to the subway was simply "somebody on a platform". Some of us make maps but we all carry them around in our heads.

Above ground, as technology improves the resolution of maps, these assumed truths in our pockets, it can also fragment them. Digital maps are subject to whims and interests of their corporate providers. Sitting in New York, I may be served one version of the world; sitting in London, or wherever, you could be served quite another. They are also subject to the fragmented whims and interests of those with political clout.

"Maps are powerful things in times of crisis," Cheshire said.

In the US, Donald Trump has shown no particular reverence for maps as they are. In his first term, he presented in the Oval Office a map of Hurricane Dorian, with a bulbous growth drawn, apparently with a Sharpie, on to the National Weather Service's forecast track. Early in his second term, he signed Executive Order 14172, ostensibly renaming Denali to Mount McKinley (reversing an earlier Barack Obama decision that restored the Alaska Native name) and the Gulf of Mexico to the Gulf of America - "in recognition of this flourishing economic resource". This international newspaper does not reflect the change, nor does the Associated Press, which led to its being barred from White House events and a lawsuit. But my Google Maps does: "Gulf of America" in neat sans-serif surrounded by an oval of blue.

Cheshire recalled a long history of strategic and rhetorical cartography, and the renaming of territories that were the objects of desire. This history included Karl Haushofer, an ideological influence on Nazism, who had argued that maps can be aspirations as well as facts in a 1922 article titled "Die suggestive Karte". "That's kind of the game we're in, cartographically," Cheshire said. "I think [Trump] gets that. This guy is sort of viewing it as real-estate planning."

Nor does Trump seem to care much for borders as they are drawn. He has said he wants Canada as the 51st US state and has referred to the prime minister as "governor". And Trump maintains his odd fixation on Greenland, ostensibly for national-security purposes and fuelled perhaps by the distortions of map projection. On social media, Trump has posted maps showing Canada, Greenland, Venezuela and Cuba superimposed with the US flag.

The disregard may be contagious. American political parties have recently exhibited no commitment to maps' permanence. Ahead of this year's midterm elections in November, congressional district maps have been edited in California,



Donald Trump meets with world leaders in the Oval Office in front of a map of Ukraine

'THIS GUY IS SORT OF VIEWING MAPS AS REAL-ESTATE PLANNING'

Missouri, North Carolina, Ohio, Texas and Utah, according to the National Conference of State Legislatures, and another large handful of states may yet change theirs, all part of a tit-for-tat electoral arms race to "redraw" district maps to favour the party of the redrawers. This is a rate of mid-decade gerrymandering not seen since the 1800s. (More typical is to redraw maps after the decadal census.) A generation ago, the Supreme Court was sceptical of this practice; now it blesses it. Justice Elena Kagan, in one dissenting opinion, recalls "those innocent days - prior to Texas's redistricting - when partisan gerrymanders seemed undemocratic or at least unsavory, rather than a mark of political conviction or loyalty".

Texas fired the first shot last summer, encouraged by a letter from the Department of Justice and then vocal support from Trump. Texas congresspeople currently tilt 25-13 Republican; the state's new map could net them another five seats. At one point, Democrats of the Texas legislature left the state in an effort to block its passage; a Republican senator announced that the FBI would help locate them. Two weeks later they returned and it passed. Last November, Californians retaliated by approving the Election Rigging Response Act and a new map along with it that may net Democrats a handful of seats there next year. Republicans themselves then complained to the Supreme Court. Last week, the court said this new map was also fine.

In other American states, often in isolated country, very old maps that never changed have recently been relitigated. Across a vast swath of

the American west there runs a thick ribbon of chequerboard land, with squares a mile wide. Half the squares are public and half are private, the result of a railroad-building act signed by Abraham Lincoln. The problem is the corners. At the corners public land connects to public land diagonally, across single points - infinitesimal on both the map and the world. More than eight million acres of public American land are locked up this way. A few years ago, a group of hunters, armed with a map, traversed these corners in Wyoming. They were sued by the wealthy owner of the adjacent land. The owner lost in lower courts. In October, the Supreme Court declined to hear the case, essentially handing victory to the public-land hunters. That land, marked free on the map, remains free.

IN THIS ISSUE OF THE MAGAZINE, FT GRAPHICAL AND data journalists take a moment to appreciate and examine the ways maps are remade. Jana Tauschinski presents a gallery of maps that illustrate a changing planet and the changing technology we've built to measure it (page 22). She shows how alpine borders - those of Italy and Switzerland - shift slowly but daily with the glaciers and watersheds that define them. And she illustrates how advances in remote sensing are revealing even the remotest and most war-torn lands in ever denser pixels to anyone with a screen, and how the maps that will determine the future of a country are remade with the stroke of a pen. Meanwhile, Alan Smith unearths a cartographic competition administered in 1914 by the Financial Times (page 28), in which readers were tasked with filling a blank map with the borders as they foresaw them after the first world war. It was a practice that had already become a grim hobby elsewhere in Europe, as it would be today. As Alan's deeply human story illustrates, no mapmaker is separate from the real world they depict. **FT**

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