The world in your pocket

Mapmakers are competing for your smartphone

What Is A map? “There are two things you want,” says Peter Birch, product manager for Google Earth. “One is to find your way…how do you remove all the information except [what] you really need to answer your question?” The other is the “opposite of the cartographic aim: to create a sense of reality, a completely comprehensive representation of the world.”

To do the first, you have to do the second. So that anyone can find precisely what he is looking for, he must be able to look for anything. Google’s plan for the physical realm, in other words, is the same as for the digital one: “to organise the world’s information to make it universally accessible and useful”. It wants to map every last hiking trail and park bench, and then make it easy to find.

The detail being brought to digital mapmaking by Google and others is breathtaking. A fast-growing portion of the world is being mapped in three dimensions. Nokia is collecting minute details about roads to feed into advanced driving systems: anticipating a hill, a car can speed up in order to cruise rather than labour up the slope; or it can slow down if the driver is going too fast for a bend ahead.

Above the tarmac you can already fly, digitally, through several cities. So far Google has generated 3D versions of about 20 metropolitan areas, plus bits of others. “By the end of the year”, says Jeff Huber, head of local and commerce, “we aim to have 3D coverage for metropolitan areas with a combined population of 300m people.”

Mapmakers are going indoors as well as out. Late last year both Google and Nokia said they would be helping people find their way around places like shopping malls and airports. Nokia has indoor maps of 5,100 venues in 40 countries. One of Google’s first projects was to cover Tokyo’s metro, which to strangers can be a bewildering warren, and the city’s two airports. Google says that more than 10,000 floor plans are available to users of its Android mobile

operating system. IMS Research, a consultancy, forecasts that by 2016 almost 120,000 maps of indoor venues will be available to consumers.

Not for garage start-ups

Collecting all these data demands a huge investment. Nokia sends out cars with lasers to build up its pictures of the planet; Google, having had cars going round photographing the world at street level, now also maintains a fleet of aeroplanes. Licensing such information from others is cheaper, and Google still does some of that, but gathering it yourself gives you a much freer hand. People who use the maps or who want to be on them often help by filling in gaps or pointing out errors. A number of Android's indoor maps have come from shops or museums.

A commuter's past habits and the jiggling of a phone in his pocket may indicate that he is about to arrive at a railway station—and can be sent Groupon offers from businesses on the concourse as he walks in

Describing the contours of the Earth is only the start. The great thing about a digital map is that there is no limit to the information that can be attached to it. Drivers can be told, turn by turn, how to get from A to B, and what the traffic will be like on the way. People using public transport can find out which bus or train to get and how long it will take to change from one to another. A business's location can be tagged with its contact details, advertisements and reviews by people who have used its services. Landmarks can have photos and videos attached.

Places in the material domain are being festooned with layer upon layer of online information known as the "geoweb". Some of this has been created by Google and other commercial mappers: here is a branch of Starbucks; here is Interstate 101. A lot more is being added by people uploading place-tagged photos and social-media posts, writing reviews and Wikipedia entries and suggesting amendments to published maps. The spread of smartphones has made it much easier for people to add their own little annotations to the geoweb.

In a recent paper Mark Graham, of the Oxford Internet Institute (part of the university), and Matthew Zook, of the University of Kentucky, measured the thickness of the geoweb, taking as their gauge the number of places (businesses, schools, parks and so on) with information attached to them in Google Maps. The data are messy, Mr Graham says, but by and large the geoweb is a lot thicker in rich places than in poor ones, and thickest of all in the Nordic countries (see map, next page). In May 2011 Norway boasted 434 hits per 1,000 people; Finland, Sweden and Denmark were also in the top five. Afghanistan had a mere 0.03. There was more content about Tokyo than about the whole of Africa.

Moreover, different groups of people see the same place through different lenses. Mr Graham and Mr Zook trawled the geoweb for references to 18 words in several languages. Even in the Palestinian territories, searches in Arabic generally return only 5-15% of the number in Hebrew and only a third to a quarter of the number in English. In Tel Aviv a search for the word "restaurant" brings up quite different results in Arabic from those in English or Hebrew. Flemish content in Belgium is much more likely to refer to "tax" than French content, whereas in French there are more references to "government". Amor is much more common than "love" in most of Spain, but in tourist spots the English word holds sway.

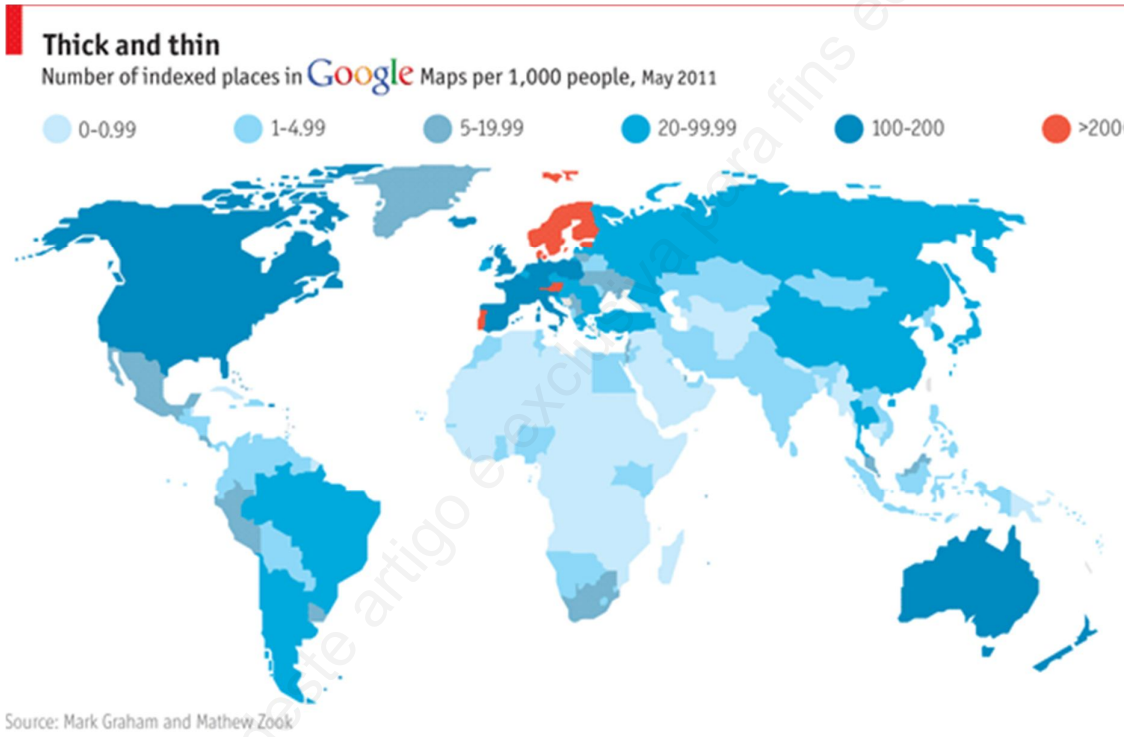
Much of the content embedded in digital maps is still patchy. Driving directions are sometimes eccentric; suggestions for public transport can be unreliable; trying to learn about the Massachusetts State House in Boston when your phone insists you are across the river in Cambridge is plain annoying. But the systems are improving fast. And a digital map, especially one in three dimensions, is great fun to explore.

A good one can also be extremely useful. People want the best maps to guide them when they drive or when they are looking for things to do or buy. And the more people that use the maps, the more valuable they get as millions of bits of data are gathered and fed back in. Data collected from drivers' smartphones and connected navigation systems make it possible to

predict how, for example, speeds and journey times vary with the seasons, the weather and the time of day. A commuter's past habits and the jiggling of a phone in his pocket, says Michael Halbherr, head of Nokia's location and mapping business, may indicate that he is about to arrive at a railway station—and can be sent Groupon offers from businesses on the concourse as he walks in.

Broadly, says Martin Garner of CCS Insight, another consulting firm, the map business covers four areas. One is wholesale supply, where Nokia is the leader. Its customers include Bing (Microsoft's search engine), Yahoo! and Foursquare. Recently the company concluded a deal with Amazon for the Kindle Fire tablet. Its platform is integrated into Windows 8, the latest version of Microsoft's operating system. And four out of five cars with in-vehicle navigation systems use its maps.

In the other three areas Google is top dog. Its maps are the most popular among developers of applications and, at least in the West, for use on people's desktops. (In China and Russia, Yandex and Baidu, the biggest search companies in those countries, rule the roost.) Google has also dominated the maps used on mobile devices.



The huge costs of creating a good map are a big barrier to entry. Google, which entered the fray only eight years ago, was bold enough to surmount it. Apple hopes to do the same. Until recently Google's maps were built into Apple's iPad and iPhone as well as into smartphones that use Google's own Android operating system. This year Apple, which has bought three mapping companies since 2009, decided to go its own way.

Maps had become too important for it to depend on Google's. Through the maps, Google was gaining valuable "probe" data because it knew where iPhones were (according to comScore, a research firm, iPhone owners are likelier than users of Android phones to consult mobile maps). And Google provided better maps for Android devices than for Apple's: in particular, they had spoken, turn-by-turn driving directions.

The new version of Apple's operating system for mobile devices, iOS 6, released in September and built into the iPhone 5 that went on sale in the same month, contains Apple's own maps,

not Google's. The company has licensed data from TomTom, a Dutch navigation-systems firm. There are spoken turn-by-turn directions, and the maps are seeded with listings and reviews from Yelp; touching a symbol on the map opens Yelp's content. Yelp has, by and large, many more (and more up-to-date) reviews than Google, although outside the United States its coverage is much thinner than at home.

Crimson Apple

But when Apple's maps appeared, they were not a patch on Google's. Not only were they much less detailed, but they contained a number of errors—such as marking an Irish farm called Airfield as an airport and depositing Leknes, a Norwegian town, about a mile out to sea. Some cities could be viewed in 3D, but certain structures were distorted (though some, such as the Brooklyn Bridge, were soon fixed). Apple's maps, unlike Google's, also lacked integrated public-transport information: a tap on a metro station or a bus stop, if it was marked at all, brought up a menu of apps to be downloaded separately, some of them paid for.

Apple was so embarrassed by these flaws that about a week later its chief executive, Tim Cook, posted an open letter on the company's website in which he apologised to customers and suggested that those who had bought the iPhone 5 (or upgraded an older iPhone or iPad with iOS 6) use other suppliers' maps, either via apps or via the web browser on Apple's devices. Google is widely thought to be preparing a map app for Apple's online store, but it has not submitted one for Apple's approval so far.

In effect, in breaking with Google and giving iPhone users worse maps than before, Apple has gambled on three things. First, that users will like its maps' embedded content. Second, that it will be able to improve fast. And third, that the allure of the iPhone and the loyalty of Apple's fans will buy it time. After all, people do not buy smartphones for the maps alone, and queues for the iPhone 5 were every bit as long as for previous incarnations of the revered device. But Apple has more catching-up to do than it expected. In a market where brands can rise and fall fast, it may also have less time than it thought.

Fonte: The Economist, London, v. 405, n. 8808, p. 9-12, 27 Oct. a 2 Nov. 2012.

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