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BA Graphic Design

Research in context

ADAD5003

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AI Acknowledgement

I confirm that I have not used any AI tools in the research and creation of this assignment. I confirm that I have not presented any AI generated materials as my own work. I confirm I have copies of my drafts, notes, and other resources I used, which I may be asked to provide in evidence.

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Question 4: Why is Information Design Important? Explore how information design helps to shape the world around us as well as our understanding of it.

Cartographic Distortion

Part 1: Information Design

Information design is an effective tool in disseminating or telling a story through data. It can be used to make sense of the world around us, as well as inform and persuade. We as a species have used them since the time of cave paintings. Throughout history, simple lines, shapes and colours have been utilised to help people navigate roads, give indication to how a country is voting, or warn the observer of potential danger, furthermore, at times, transcending the need for text at all.

In *Visualize This*, Nathan Yau states information design is 'about making your graphics readable, understandable, and useable' (2011, p237), and goes on to explain the benefits of presenting data through graphics in comparison to a simple graph - 'you can clear clutter, highlight important points in your data, or even evoke an emotional response' (2011).

Part 2: Projecting



Fig 1 (Wiki no date, *Mercator Projection*)

There have been many maps throughout history that have been skewed, for better or worse, to show a particular set of data or tell a narrative. Perceptions are drawn just a consequence of it being impossible to accurately chart a 3-dimensional sphere onto a 2-dimensional rectangle. 'The very scale of the world forces us to confront the difficulties inherent in a two-dimensional representation – no projection is completely

satisfactory' (Boucheron, 2023, p20). When charting a map, decisions need to be made – whether artistic or political. Put more bluntly,

The art of cartography can be as contrived and subjective as any other artistic endeavour. Mistakenly construed as scientifically accurate, maps reflect geography's arbitrary contours and function as visual devices normalising singular worldviews' (De Armendi, 2009).

The most commonly used and recognisable version of the world map, known as the Mercator Projection (Fig 1), has had a long-lasting effect on the perception of the importance of lands around the globe. The map heavily distorts the size of the land the closer you get to the poles, thus making places including Eurasia, North America, Antarctica and especially Greenland (Fig 2) look far bigger than they actually are, and consequently underselling the size of the land around the Equator. For reference, Greenland has a land area of 2.1m km², whereas the US has 9.1m km² (McMaster, M, Kessler, H, p161), but in this projection the United States is dwarfed by Greenland. The Equator's position, slightly below the midpoint of the map, further skews the size of the northern hemisphere.

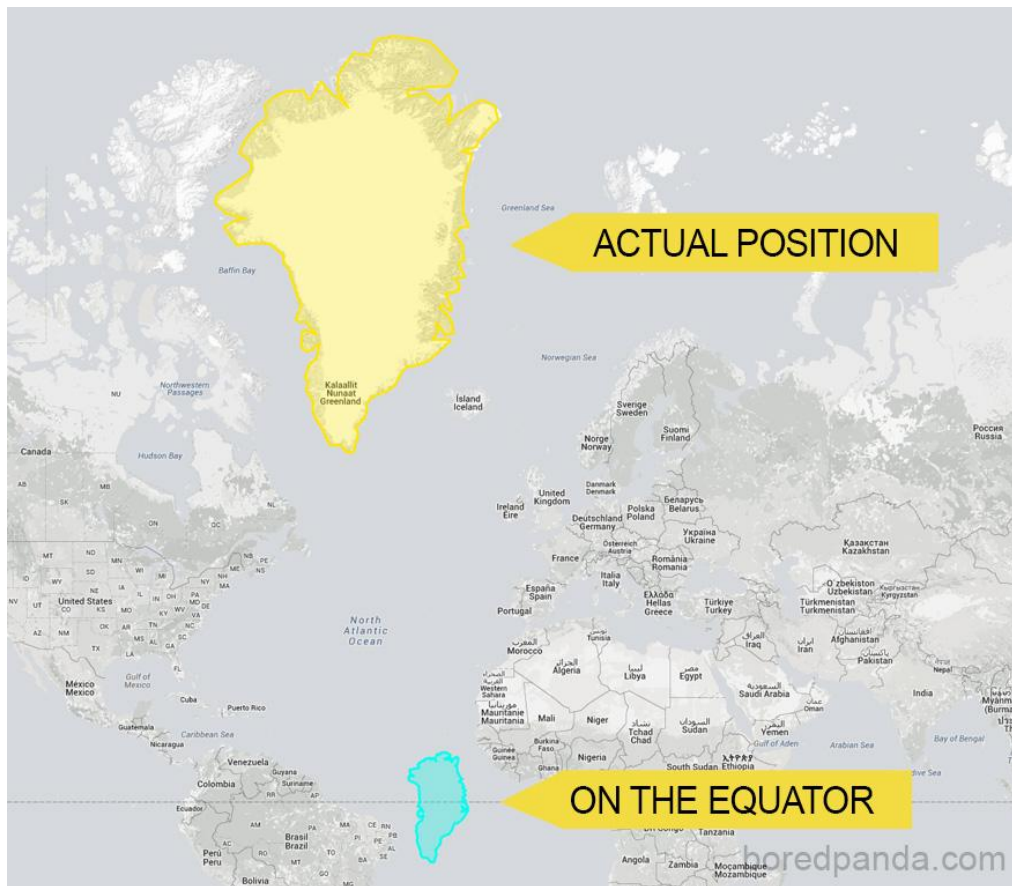


Fig 2 (Iveta 2017, *the size of Greenland on Mercator Projection*)

This projection was developed in 1569 by Gerardus Mercator for navigational purposes but afterwards was adopted as a geographical teaching tool. It was the first map to show latitudinal lines at 90° , which was hugely beneficial for 15th and 16th century European explorers when charting courses and coastlines. However, the continued use of this map reinforces the Northwestern bias in the days of European imperialism, putting more emphasis on the countries deemed superior by exaggerating their size. Arno Peters, German historian and developer of the Gall-Peters Projection of the world map, was one of Mercator's biggest critics, saying

This geographical view of the world is designed to eternalize the personal overestimation of the white man and in particular the European while keeping colored peoples conscious of their impotence ...[The Mercator] map is an

expression of the epoch of the Europeanisation of the world, the age in which the white man ruled the world, the epoch of the colonial exploitation of the world by a minority of well-armed, technologically superior, ruthless white master races (1974, cited Crampton, 2010, p94)

Whether Mercator foresaw his map's longevity and connotations or not, it has inadvertently caused a lot of damage. This projection, as well as most maps are incredibly influential and often taken for granted as accurate, especially when read without context or fully understanding the message behind the distortions. Peters suggests

the way we see and understand the world, including its geography, influences our actions. Foreign policy and aid decisions for example, flow out of our global perspective. Military build-ups occur where threats are perceived (no date, cited Crampton, 2010, p92)

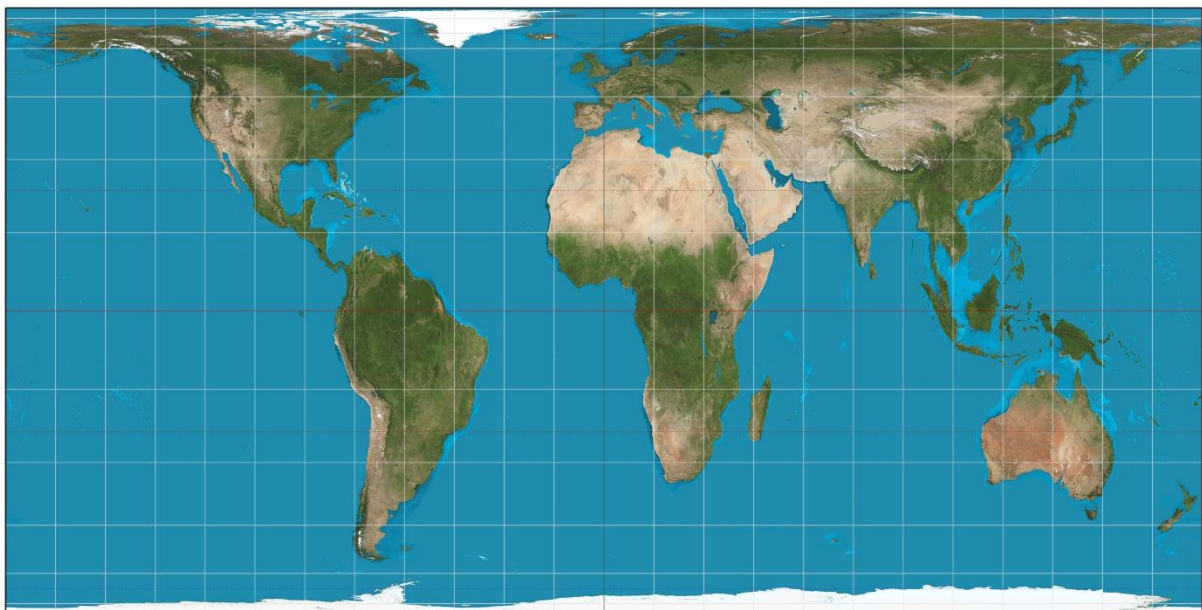


Fig 3 (Wiki no date, *Hobo-Dyer Projection*)

Newer depictions of the world map such those by James Gall (1885), The Peters World Map - later referred to as the Gall-Peters Projection (1986), and the Hobo-Dyer Projection (2002) (Fig 3), present a more balanced view of the world. By augmenting the size of the area around the Equator as opposed to the poles you get a far more accurate representation of the scale of countries in that region. Although very critical of the Mercator Projection and the concept of square maps, when developing his projection Peters conceded 'we live in a four-cornered world, [and] the television tube we sit in front of is perhaps the best symbol of it' (1973, cited Crampton, 2010, p92).



Fig 4 (Joaquín Torres-García 1936, *América Invertida*)

In Latin America, various artists have developed different ways of seeing their countries through mapping strategies that aim to distance themselves from European colonial bias. One such artist is Joaquín Torres-García, from Uruguay. In

1936 he designed *América Invertida* – or *South America's Inverted Map* (Fig 4). He flipped the typical North-up, South-down orientation, and stretched the borders of the continent out to the edges of the map to fill the whole space. The map includes The Equator and Tropics of Capricorn and Cancer, as well as a compass with South in the prominent up position, the southern cross – a constellation previously used for navigating the southern hemisphere – and an arrow pointing left showing the direction of earth's rotation.

Legitimising Southern experience by ironically undermining the North's preeminent position, Torres-García implored Uruguayans to define themselves as a culture separate from Europe and vibrant in its own traditions (De Armendi, 2009)

The last significant feature of this map is the highlighting of Torres-García's home - Montivideo, Uruguay, which is the only boarder drawn on the map. It is cross hatched and pointed to by another arrow which sits beside its coordinates. This was done, as well as to challenge Eurocentric perceptions, to help promote *La Escuela del Sur - The School of the South*, a manifesto he published the year before, which emphasises the views distilled into his map, announcing and celebrating the end of the colonial rule in the region. It was also the name of a workshop he ran to encourage Latin American artists to 'seek inspiration locally rather than globally, while at the same time establishing an autonomous artistic tradition' (Jiménez, 2015)

Part 3: Geographic vs Diagrammatic

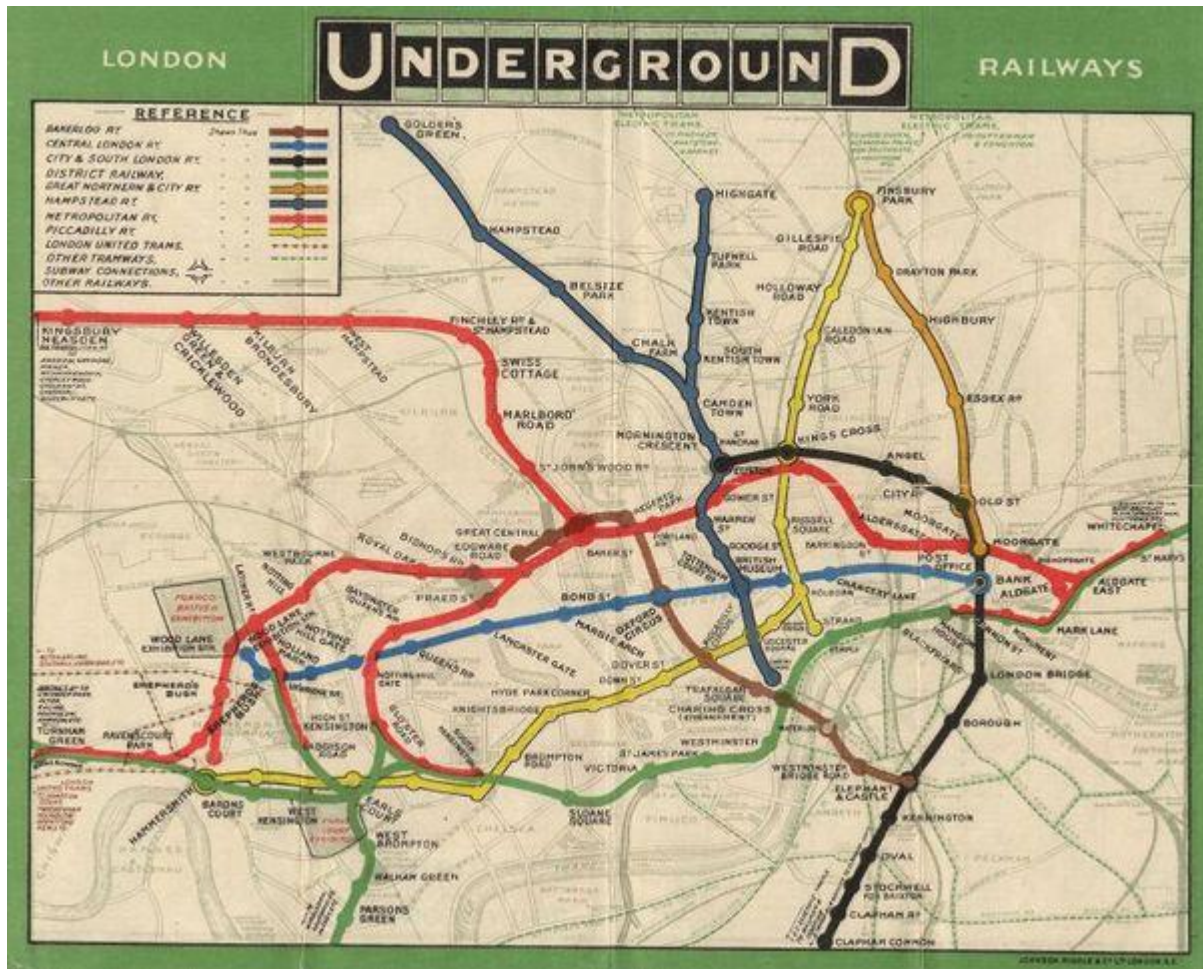


Fig 5 (London Transport Museum no date, 1908 pocket underground map)

Although it has some drawbacks, the London Underground map is a great example of a map distorted for the better, in doing so helping millions every day. It's an icon of British design and one of the quintessential pieces of London's identity. The maps used today are based on the designs of Harry Beck, who sought to create a more efficient tool for London's public transport navigators, replacing the old map that was not fit for purpose.

The maps produced between the 1860s and 1870s by the Metropolitan Railways and Metropolitan District Railways for London's public transport system included much more information than those of today –

times of services, connections with horse buses and even places of interest.

They were geographic maps that showed where passengers were in relation to the streets above (London Transport Museum, no date).

Further adding to the chaos of information, it included shops, rivers and parks.

In 1908, the various disassociated Underground lines were connected to form one integrated system. To promote this, they produced the first pocket sized map (Fig 5).

It was still a geographic map and had far too much information to be read quickly.

With the ever-expanding rail networks, the trade-off for the busier central portion of the map being less cluttered was having the stations on the fringes being left outside the frame.



Fig 6 (London Transport Museum no date, 1933 *pocket underground map*)

Harry Beck was formerly employed by the London Underground as a draughtsman in the Signals Office. In his spare time, he began developing a map striving to be more efficient and digestible. Maps used for public transit don't function in the same way as those designed for pedestrians or drivers, and Beck realised that,

users of rail transit maps really only need enough information to get them from one station to another, [...] Thus, Beck built on the work of previous map designers to give each line, station, and transfer station a clear identity in accordance with a standard, consistent logic of organization and form.

(Schwetman, 2014)

We take for granted how useful his design is today, but when presented to the Underground's publicity office in 1931, Beck's ideas were deemed too radical and multiple alterations of his map were consequently rejected. It wasn't until 1933 that

Beck's persistence paid off; a small trial run of free pocket-sized maps was dispersed to the public, with whom it was an instant success (Fig 6). Typically, maps were printed in batch sizes between 10,000 and 20,000, then. After its initial success, the first full batch of Beck's map was of 750,000 copies (London Transport Museum, no date)

Beck's iconic layout was inspired by circuit boards; with how neatly many wires and components were arranged in a small space. One of the main features of his design was the straight, even lines, that were drawn either at a right angle or 45°. He began with the Central Line, the portion running through the city centre he straightened to create what he called his baseline, around which he ordered the other elements of the map.

The text was now all uniform in size and orientation – unlike earlier maps which featured station names at different angles and sizes to fit them into uneven spaces. By doing away with the extra elements, like the street names and landmarks, Beck's map only needed to organise its own internal elements around themselves. Those and the River Thames – the only topographical element in his design, and even this he altered to flow at right angles or 45°. Keeping the Thames allowed an easy point of reference, distinguishing north and south London, and identifying the city at a glance, without cluttering the design.

These alterations helped massively with legibility. Each of the stations is evenly spaced, and those with interchanges were marked with a diamond. Colour coding was nothing new, but having a standard set of colours for each line and station node on it also made it far easier to understand.

The modern city is a complex space, and the transit map is part of a larger constellation of efforts somehow – at least temporarily – to mitigate that complexity, to assure urbanites that the city is conceptually manageable (Schwetman, 2014)

What Beck ended up creating wasn't actually a map at all, but a diagram – or diagrammatic map – and although modern tube maps are far more chaotic in comparison, due to expansion and the addition of fare zones, the core principles of Beck's diagram remain. Its introduction set a precedent for urban rail network navigation and went on to inspire a plethora of other transit maps worldwide, including Sydney, Paris and Washington DC. The aforementioned cities' diagrams all diverge from Beck's map in the same way, the text orientation. Each stop name is displayed level *or* at 45°, which in some cases improves legibility. Aside from this, there is little to distinguish their designs from London's.

In 1957 graphic designer George Saloman handed a proposal entitled *Out of the Labyrinth* to the NYC Transit Authority, highlighting the shortcomings of the Subway's design. This led to the Authority releasing a map by Saloman in 1958 that had all the hallmarks of Beck's diagram (Fig 8).

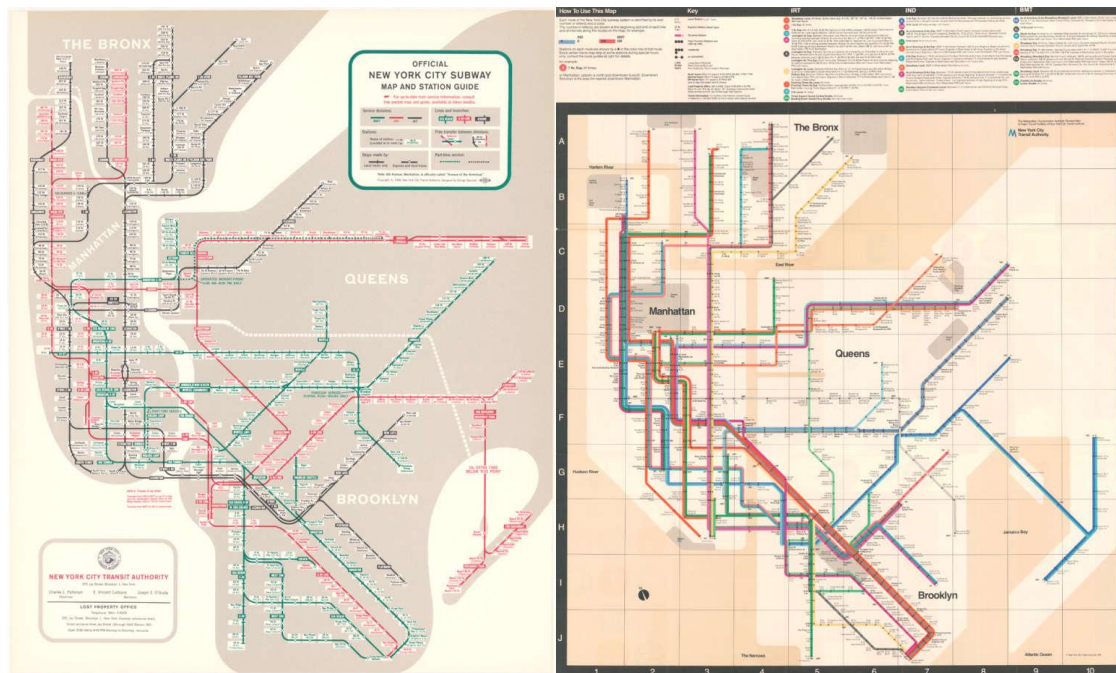


Fig 8 (Saloman, 1958 NYC Subway map) Fig 9 (Unimark, 1972 NYC Subway map)

Diagrams in this style circulated NYC until 1979. The Beck style map although critically praised did not have the same impact on the public. The diagrammatic map's detractors preferred to know where they were in relation to the surface - something that versions in the 1970s by design company Unimark (known as the Vignelli map, after designer Massimo Vignelli) made more confusing with their inclusion of more landmarks, which due to the nature of the diagram, weren't always properly aligned to the stations nearby. Another criticism was the colour scheme, which in 1972 included brown waterways and grey parks.

A major difference between London and New York is the grid system.

Subway stations frequently take the names of major cross-streets, which results in several stations on different lines sharing the same name (such as the three different “34th Street” stations in Manhattan) (Schwetman, 2014)

A diagram better makes sense of a tangle of ununiform streets, but a grid system is already very ordered. So, when the length of the lines is distorted for legibility, neighbouring locations can become separate.

London's tube map has similar drawbacks; when you look closely at the above ground distance between some stations the distortions become abundantly clear, and it can be difficult to plan a route that takes place above and below ground. A map was introduced in 2017 with numbers between each stop to denote the walking time in minutes, however as this was a diagrammatic map, the length of lines between stops were not visually reflective of the walking time and was unpopular.

The Vignelli map was replaced by a compromise in design by Michel Hertz that adopted many of Beck's principles but was more (but not fully) geographical (Fig 9). The most obvious change is the removal of straight lines at 90° or 45°. Much like central London, Manhattan's size is distorted to accommodate the larger number of stops. Beck described this effect of his design as a ‘convex lens’ (Schwetman, 2014).

The compromise of designs was in use until April 2025, when the Metropolitan Transit Authority unveiled a reversion to a Beck inspired diagram (Fig 10). Mapmaker and diagrammatic sceptic Jake Berman jokes ‘New Yorkers will complain about anything. It's the municipal sport,’ (Berman, no date, cited Cantor, 2025), alluding to the city's reluctance for change, but concedes that it will take some getting used to, and ‘If it does that job, then it's a success, no matter what you think of the aesthetics’ (2025)

Underground diagrams are thus solidified ‘as an argument or proposition rather than as a representation of an external reality’ (Schwetman, 2014), and the necessity for both diagrammatic and geographical maps for different functions. With the advent of Google maps, this isn’t much of an issue, because you can expand and move the maps to gain more information. Something impossible for a static map.



Fig 10 (Hertz, 1979 NYC Subway map) Fig 11 (MTA, 2025 NYC Subway map)

Part 4: Conclusion

When reading a 2-dimensional static map context is key. Without it the graphic is meaningless. Accuracy in geography isn't always important if it makes the map easier to use, only accuracy in data. It is also important to use the correct map for the job; as I have explained, it's difficult to use the underground map to find your way around London at street level, and nigh on impossible to assert your perceived dominance over the countries your empire subjugates if *your* country looks tiny in comparison.

If you want to see the world with the highest possible geographical accuracy in a static map, use a globe.

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