Going around in circles? A qualitative evaluation of a proposed metro map for Melbourne's underground system.

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Abstract:

When cities develop a rail network – above or under ground – this is usually accompanied by the publication of a metro map. The map is an essential adjunct, produced and provided to commuters to facilitate informed use of the system.

It is generally agreed that the exemplar metro map is that of the London Underground, designed by Harry Beck, in 1931. Beck's design principles have been copied, modified and adopted by numerous public transport bodies, when producing maps of their own system. His map is regarded as a design classic, and used as the lodestone when judging the effectiveness of other metromaps.

Recently, Public Transport Victoria (PTV) developed a new design for a metromap for the rail system for Melbourne, Australia. This design is greatly based on Beck's design ideas. As part of the press release, PTV sought passenger feedback on its proposed new design. It is refreshing to see that an organisation like Public Transport Victoria has taken the initiative to implement a new design, and to seek public feedback on this design. However, is this new design effective, or just 'more of the same'? Is the map no different, and perhaps no better, than previous maps of the Melbourne metropolitan rail system, or a great improvement on what was previously published? Are we just going around in circles?

This paper provides the results of an evaluation of this proposal for a new map for the Melbourne metropolitan rail system. It begins by providing a brief history of metropolitan rail maps in Melbourne, to provide a background to what now exists. Then it looks at this recent proposal and outlines the basis for evaluation, which is built around the design principles of Beck's London map. Finally, it provides the results from the evaluation, reports on conclusions from this evaluation and makes recommendations about how the proposed map might be improved.

Keywords: underground map, design, Melbourne

Introduction

Commuters take for granted the mental map they have of how public transportation systems work. Through constant travel on the system, and upgrading their knowledge of the system from time-to-time when system changes are implemented, they maintain a current, usable mental image of what can be considered to be a complex system.

Cartographers and graphic designers design and implement representations of metropolitan transport systems for both regular and new users of the system. These representations – usually referred to as maps (but this description of what is used may vary – see Cartwright, 2014) – must provide a clear 'picture' of the network, its lines and nodes (railway stations, bus and tram stops) and interchanges, so that users of the system can effectively plan journeys and navigate the network once their travel is underway.

Many maps and diagrams have been produced of metropolitan transportation systems to facilitate this. Many are produced as an adjunct to other promotional material produced by transportation authorities or private operators. Here, they generally form part of documentation that serves to promote a certain image. Their main aim in this instance is to reinforce and promote the corporate 'look' desired.

In Melbourne a new map design has been proposed to illustrate the rail transportation network. But, will the proposed new Melbourne map work? This is the topic of this paper. It reports, briefly, on an initial analysis of this new design, done with due consideration of the design principles employed by Beck, in his design of a new London Underground map in the early 1930s. Here, the work sought to ascertain whether the design for a new map of Melbourne's rail system considered Beck's design principles and whether it complements other information graphics associated with public transport in Melbourne.

Melbourne's rail system

Melbourne's rail network is based on a commuter rail model centered on the City's Central Business District (CBD) and its main commuter station, Flinders Street Station. It consists of 16 electrified lines, the central City Loop subway, and 207 stations, with a total length of 372 km of electrified lines (Wikipedia, 2014).

From its early days Melbourne has been well served with rail transportation, complemented with tramcar and omnibus services. The city established its first railway line 20 years after it was founded (Wikipedia, 2014). In fact Melbourne can claim Australia's first railway line, built between Flinders Street Station and Sandridge (now Port Melbourne).   It opened on 12 September 1854 (Department of Infrastructure and Regional Development, Government of Australia, 2014), and it linked Melbourne's main port of the time with the growing central business area.   The Melbourne and Hobson's Bay Railway Company, formed in 1853, operated the line (Wikipedia, 2014). In 1859 the Williamstown railway line opened, connecting Williamstown and Geelong to the new Spencer Street railway station (Wikipedia, 2014). Initially, private companies developed the railway lines, then until the early 1980s, the Victorian Railways Department (created in 1856 (Bau, nd).) operated the system.

The railway lines developed further from the centre, associated with the 1880 "Land Boom" in Victoria. The development of the rail system continued, with lines pushed into some suburbs, and some under-patronised lines in inner Melbourne being closed. The lines were electrified and new rolling stock introduced. But, the general configuration of the system was still focussed around one hub – Flinders Street Station – and it continued to be basically a suburbs-Central Business District radiating system.

The Railway Construction Act of 1884 saw the development of numerous lines. An Inner Circle line was established in 1888 and the Outer Circle in 1890 (Danno, nd). However, the circle lines proved not to be economic. The Circle lines were soon closed – the Outer Circle in 1897 and the Inner Circle closed the following century - in 1948 (Danno, nd.).

The next real major change was the construction of the underground City Loop, which opened between 1981 and 1985. This linked Melbourne's two main central city stations – Flinders Street and Spencer Street (now Southern Cross station) – with three new underground stations (Parliament, Museum (now Melbourne Central) and Flagstaff) and the suburbs. Rather than simply radiating from Flinders Street Station to the suburbs, the lines now ran under the city, through 'The Loop'. This is basically the system that operates today – an inner city underground loop linking the original radial railway system.

Before looking at the map being evaluated here, the next section of the paper provides a brief timeline of the maps published to represent the system.

Mapping Melbourne's metropolitan rail system

The initial maps of the system were basically produced as overlays atop of existing road network or cadastral plans. They were rudimentary, but showed the system and its relationship to the growing city. The maps shown in figures 1 and 2 are 'official' maps from 1884 and 1926.

Figure 1. Melbourne suburban rail system. Victorian Railways, Melbourne : Railway Dept. 1884

Figure 2. 1926 Victorian Railways map of Melbourne suburban lines. Victorian Railways. Melbourne: The Railways. Source: State Library of Victoria. http://handle.slv.vic.gov.au/10381/115292. This work is out of copyright.

As well as the official government maps, a number of private publishing companies also produced their own representations of the system. An example of this type of map, showing railways and tramways, produced by the Melbourne Book Depot, is shown in figure 3.

Figure 3. Railways & tramways map of Melbourne and suburbs, 1920. Collins Book Depot. Melbourne: Collins Book Depot? 1920. Source: State Library of Victoria. http://handle.slv.vic.gov.au/10381/115385. This work is out of copyright.

Maps fundamentally followed this general design pattern, with both governmental and private sector maps being made available. With the opening of 'The Loop' in 1981 a new type of map was developed, and the 'look' of the system map was changed to something that promoted this new era of Melbourne's metropolitan commuter rail system.   The map in figure 4 shows the new inner city underground loop and illustrates the 5 electrified lines and connecting non-electrified lines using colour coding.
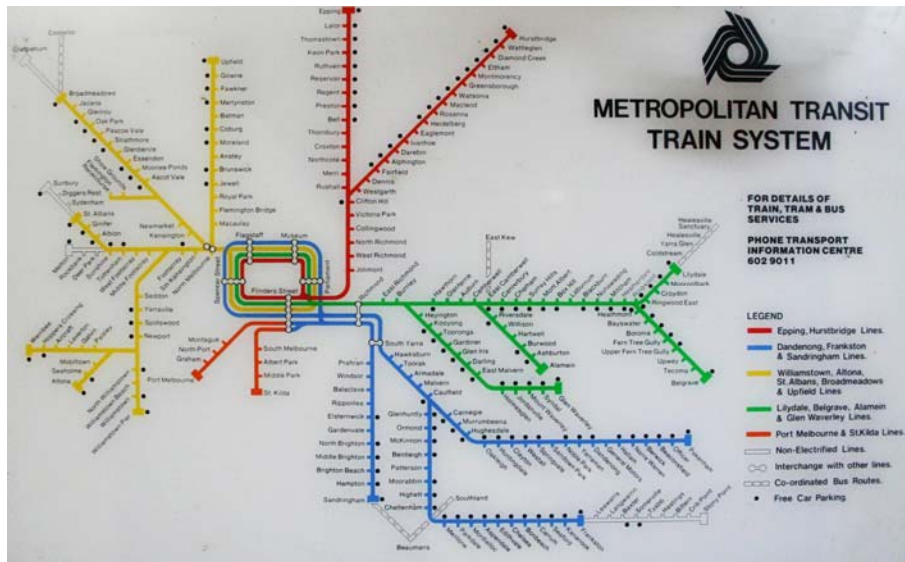
Figure 4. City Loop 1981
Source: http://i2.wp.com/railgallery.wongm.com/albums/melbourne-stations/D181_8122.jpg

Later, with the introduction of three suburban fare zones, the maps were changed to illustrate this. The map from 1994 (figure 5) shows the suburban network and the three-zone fare system. Later, the fare zones changed to just two, and the maps were changed to reflect this (figure 6).
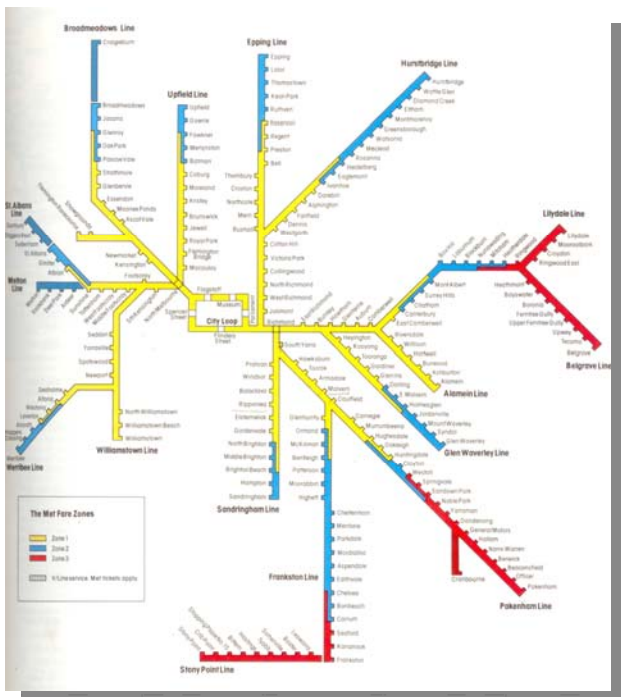

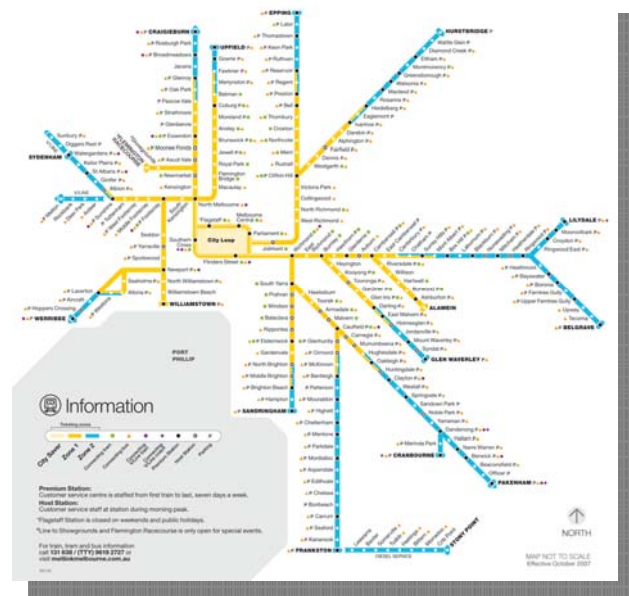Figure 5. Melbourne suburban rail system, 1994.
Source: http://melbpt.files.wordpress.com/2008/06/1994-train-map.jpg

Figure 6. Melbourne metropolitan rail system, 2007.
Source: http://www.mappery.com/map-of/Melbourne-Train-Map

As well as rail-specific maps, there also exist maps illustrating the complete metropolitan public transport system. An example is shown in figure 7.

The maps shown in this section of the paper show just a snapshot of the maps produced of the Melbourne rail system. A number of iterations of the current map have been developed, as well as proposals for new maps. A proposal for a new map of the Melbourne rail system is described in the following section.

Figure 7. Melbourne train and tram guide, January 2014.
Source: http://www.railmaps.com.au/melbourn.png

A new map for Melbourne

Recent promotional material and articles about the design of a new map for the Melbourne metropolitan rail system were heralded as a process that considered users and provided a map which was designed according to 'good' design principles (Milman, 2014). Public Transport Victoria (PTV) is piloting a potential version of a new map (figure 8). PTV has solicited feedback from the travelling public on this new design.

It was developed with due reference to what is considered to be an exemplar of designs for representing transportation systems - Harry Beck's 1931 design map of the London Underground map (first published in 1933) (Garland, 1994). The proposed new map for Melbourne uses different colours for the individual lines and has the 'Beckesque' vertical, horizontal and 45° radiating rail lines, 'ticks' for rail stations and symbology denoting interchange stations.

The map also shows the V/Line (intra and-inter state rail system) train connections and where the *MYKI* (electronic ticketing system) and paper tickets may be used. The different fare zones no longer exist, which is reflected on the map, with no suburban zones shown.

Initial reactions from the travelling public have been quite positive, with Public Transport Users Association spokesman Daniel Bowen saying: "*"My initial impression: I quite like this*" (Carey, 2014, p. 2).

So, the map concept has been launched for comment, initial comments are positive and, from first inspection, the map does accord to Beck's concepts of 'good' design for effective communication of an urban rail network. Closer inspection of the map is warranted, to ascertain whether the map does accord to the design guidelines that Beck proposed. As well, since Beck's map accorded to the design 'suite' of graphics promoted and employed by The London Passenger Transport Board (now Transport for London (TFL)) to promote a modern, efficient, coordinated rail system, this factor also needs to be considered.

The next section of this paper describes Beck's map and other system maps that have been developed using his design concepts.
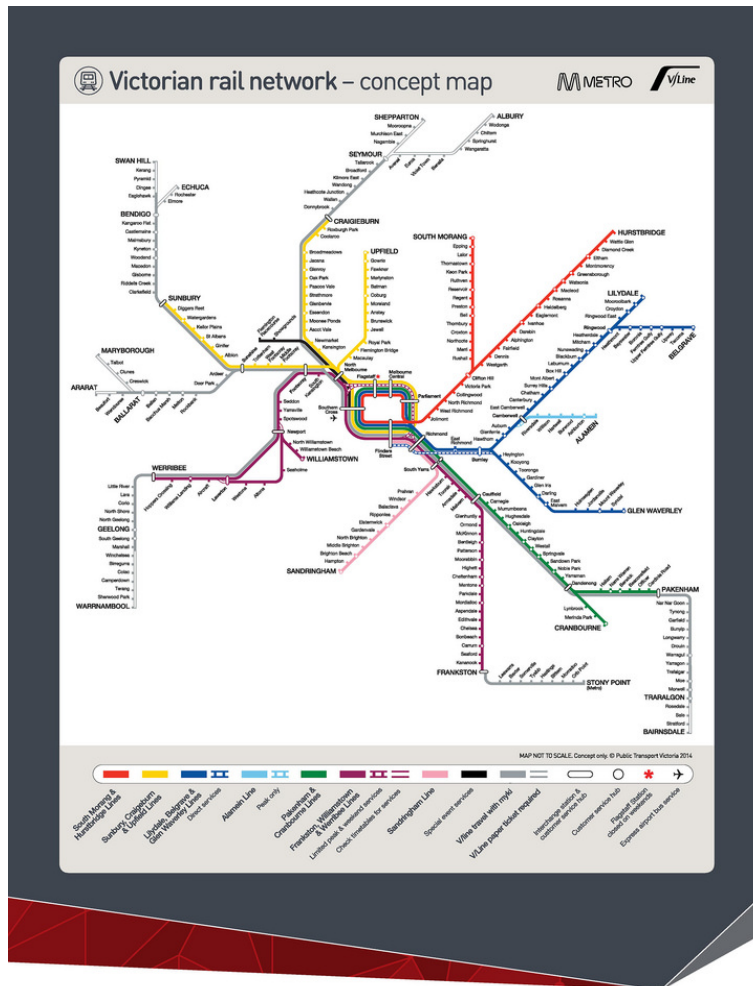
Figure 8. Proposed new map for the Melbourne rail transportation system. Source: tumblr_n434oaHHsA1r54c4oo1_1280.jpg

Exemplars of metropolitan rail system mapping: Harry Beck and 'followers'. A benchmark for evaluation.

Henry (Harry) Charles Beck (1902 – 1974) worked as an Engineering Draughtsman in the London Underground Signals Office at the London Passenger Transport Board. During a time that he was laid-off, in a time of austerity, he developed his ideas for a different way of portraying the London Underground system. Beck's pocket version design was printed (figure 9) as a trial run and, according to Garland (BBC, 1987), the public loved it. 850,000 copies of the map were in circulation within two months after its introduction (Garland, 1994).

Looking at Beck's design certain rules can be noted:

- Except for the Thames River, the geography 'above ground' was removed;
- Only horizontal, vertical or 45° lines were used to demarcate rail lines;
- Each rail line was colour coded (as per the F. H. Stingemore map of 1927 that Beck's map replaced);
- Stations were denoted by 'tickmarks';
- A distinctive symbol was used to show interchange stations;
- The centre of map was enlarged for better representation of stations in the central area of London; and
- The outlying extents of the rail system are closer to the centre, to facilitate a more comprehensive map.
- The distances between railway stations did not accord to the actual, 'above ground' distances, but altered to afford clearer demarcation of stations.

Figure 9. Beck's first published map - the 1933 'pocket 'version. Source: Source:http://www.ltmuseum.co.uk/omnibus/pg/1919b.htm#
Image in the public domain (a UK artistic work other than a photograph, made available to the public more than 70 years ago).

Evaluation

Basically, the evaluation compared the proposed new map for Melbourne according to the 'rules' that made the Beck design work. These principles were listed earlier in the paper. The outcomes of the qualitative evaluation are provided in table 1.

Table 1. Considering the proposed new Melbourne map with Beck's design criteria.

Beck design criteria	Proposed new map for Melbourne
Geography 'above ground' removed (except for Thames River)	No geography 'above ground' whatsoever
Only horizontal, vertical or 45° lines for rail lines	Only horizontal, vertical or 45° lines for rail lines
Rail lines colour coded	Rail lines colour coded
Distinctive symbols for interchange stations	Distinctive symbols for interchange stations
Centre of map was enlarged for clarity	Centre of map not enlarged enough
Outlying extents of the rail system 'moved' closer to the centre	No real compression of outlying stations.

Opinion of the map with respect to Beck's design rules and the new map's affinity to other PTV corporate imagery

The map

The map could be improved by adding a stylised Yarra River and Maribyrnong River. This would assist users of the map when deciphering their general location in the city. Also, the centre of the map needs to be enlarged much further than in the current design. (See figure 10 for an enlargement of the central part of the proposed new map for Melbourne) At present this part of the map is much too crowded, and the design would be greatly improved if this were done. Also, the map needs to compress the outlying stations, thus making the map easier to read, and to consider the extent of the services provided by the various lines.

The rail line colours mean nothing – they relate to no previous symbology for different lines. Also, the map seems a little 'remote', from a design perspective, from its 'sister' graphics used by the Met. The map is somewhat of an orphan, when compared to other graphics products used in the Melbourne public transport system. However, having said that, all of the graphics used are really a hodge-podge of various graphics designs. A selection of these can be seen in figure 11.

Figure 10. Central section of the proposed new map for Melbourne. Source: The Guardian, 21 April 2014. (theguardian.com)

The proposed map and its relationship to other PTV graphics

Looking at what had happened in London in the 1930s provides the 'formula' for how, with the appropriate choice of graphics, architecture and vehicle design, a comprehensive, modern image was promoted. For Beck, having his map accepted was not just related to the design of the map, but also to getting his map published. He needed to convince The London Passenger Board's publicity officer, Frank Pick (1878-1941), that his design accorded with the graphics communication concepts championed by Pick. Pick guided the overall public 'look' of The London Passenger Transport Board, and what he chose had to reflect 'the new', modernism and the *avant-garde*.

From its formation in 1933 the London Passenger Transport Board promoted itself, its facilities and rolling stock so that it appealed to the general psyche of Londoners at the time. This was reflected in the design of things like the London Underground stations, buses and train rolling stock and the graphics that promoted the transportation system and the fact that it was part of contemporary London, a city of the age of electricity (Garland, 1994).

This reflected the British modern consciousness of the time, and Beck's map had to be accepted not just for its communication effectiveness, but also whether the design had been completed with due regard to the design ethics that related to all artefacts that were scrutinised by Frank Pick.

Figure 11. A selection of Melbourne public transport signs. Photo: William Cartwright, August 2014.

Beck's map <u>did</u> accord to the overall 'look-and-feel' of other London Passenger Transport Board graphics. The same cannot be said for the new map proposed for Melbourne by Public Transport Victoria.

Conclusion

The proposal for a new map for the Melbourne rail system is certainly a development by Public Transport Victoria that must be applauded. As well, seeking public comment on the design affords 'crowd-sourced' critique and suggestions.

The qualitative evaluation showed that the map generally 'works', albeit with work needing to be done to remove the clutter in the inner sections of the map and to foreshorten the extent of the suburban rail lines reach. As well, the map could be improved by the addition of a stylised representation of Melbourne's two main rivers: the Yarra and the Maribyrnong. This would greatly assist locating and navigation.

Perhaps the problem that cannot be overcome is that the map is somewhat an orphan, within a cluster of other orphan graphics and signage used by Public Transport Victoria. This is a bigger design coordination problem that is beyond just the design of this map. Perhaps a modern-day Frank Pick could help here!

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