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REFEREED PAPER

Henry Beck's Map Style in New York City

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ABSTRACT

The success of Beck's map of underground railways in London led several people, including Beck, to consider applying his techniques to the New York City Subway. The octilinear diagrammatic form, and the symbols for stations and interchanges, have all been adopted in the NYC Subway map at various times. The first attempt, just five years after the launch of Beck's map in 1933, was a comprehensively Beckian solution by Thomas Stephen, a Glaswegian émigré in New York. That was an evolutionary dead-end, but twenty years later the Transit Authority adopted a Beck-inspired map by German émigré George Salomon, who visited London in the 1930s while studying under Eric Gill. Salomon ushered in two decades of diagrammatic subway maps, ending in 1979 with the jettisoning of Vignelli's design, which the Metropolitan Transport Authority has been tentatively reintroducing since 2012. The author uses primary sources to chronicle these episodes of Beckism in New York.

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Introduction

Does the official map of the New York City Subway[1] have features associated with Henry Beck's London Underground map? Or, have earlier versions of the map done so? If so, could they be attributed to the transmission and development of Beck's visual language, or to convergent evolution, or to a common source?

By 'visual language' I mean a cluster of graphical devices and styles used together systematically in a map. The key features of Beck's visual language include: abstracting the subway lines by omitting most of the surrounding topographic details; reducing the layout to an octilinear grid (lines drawn horizontally, vertically, and at 45° diagonals); spreading stations evenly along the lines; omitting unnecessary bends; aligning the subway lines with one another; writing all station labels horizontally without crossing the subway lines or any rivers. It is generally accepted that this visual language reduces the cognitive load – the work that the map-reader's brain has to do – and thereby makes the map quicker and easier to read, and less likely to cause mistakes (Roberts, 2012: 101). Because of these advantages, this visual language has been adopted in several other cities.

At Finchley Central Underground station, there is a plaque (c. 1994) that commemorates Henry Beck, who designed the first diagrammatic map of the London Underground. There is a panel alongside it that reproduces his first published map of 1933, and its caption claims:

> Many other urban transport systems including New York, St Petersburg, and Sydney have used Beck's concept for their maps.

Similar claims have been circulating ever since the 1990s' revival of interest in Beck, which was sparked by a television documentary (Bextor, 1987), the Beck Gallery (Anon., 1993), and a book (Garland, 1994). A few examples suffice. Challand (2010):

> Vignelli's now-classic New York City subway map was first introduced in 1972, following his work on the signage system in the late 1960s. Inspired by London's Underground map designed by Harry Beck in 1933 which, in turn, was inspired by electrical circuit diagrams—Vignelli simplified New York's complex subway system into a clean graphical system.

Bell (2012):

> Detail from Massimo Vignelli and Bob Noorda, New York Subway Sign System and Map (1966–1972), modelled after Beck's London map.

Budin (2014):

> The Massimo Vignelli subway map (or, more accurately, subway diagram), introduced in 1972, was modeled after Harry Beck's simplified map of the London Underground […].

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Should you travel to New York and pick up a copy of the subway map, you will see nothing of Beck's influence. The current map, which derives from a design by John Tauranac's Subway Map Committee in 1979, is essentially geographic, not diagrammatic. Even at the Schermerhon Street headquarters of the Transit Authority, where you can pick up a range of subway leaflets, you will not see a subway map in anything like the diagrammatic form for which Beck is celebrated. Go around the corner to the Transit Museum, though, and you will find downstairs a diagram of the subway on display, dated 1972 (Figure 15). The caption reads:

> In 1972, the MTA issued a new version of the subway map by renowned graphic designer Massimo Vignelli. Intended to highlight subway routes without distracting landmarks or unnecessary detail, it offered a bold, schematic plan that eliminated twists and turns and downplayed geographical features.

This reinforces a common belief that diagrammatic maps of the New York City Subway began and ended with Vignelli's famous experiment. But don't leave the Museum yet. Walk along the platform a few more yards (the Museum is housed in a disused subway station), and you will see an anonymous schematic map of the subway. All the panel says is 'Rapid Transit Guide, 1969' (Figure 13).

If you are puzzled by how there could be a diagrammatic map of the subway before Vignelli supposedly derived it from the London map, then you might like to go upstairs, cross the road and visit the Archives of the Transit Museum, and ask to see the box of papers of the late George Salomon. There you can handle (with white cotton gloves) the earliest known hand-drawn sketch of a fully diagrammatic map of the unified New York City Subway system (published version in Figure 7). It was designed for the Transit Authority (TA) by Salomon circa 1955, a decade and a half before Vignelli's work. Any assessment of the supposed influence of London on the map of New York City's subway must therefore extend beyond the Vignelli map. In fact, we must return to the 1930s.

The subway map was mostly geographically realistic from the system's opening in 1904 until the late 1950s: the geographic map placed the subway lines in a topographic context that showed the boundaries of land masses, the positions of parks and main streets, sports venues, and so on. Even in these halcyon years of geographic realism, however, some mapmakers in the 1930s sought to introduce diagrammicity.

Thomas Stephen's Map, 1938

The earliest known instance of Beck's visual language being exported to New York was a commercial project by Thomas Stephen (1898–1959). Stephen was trained in the Glasgow School of Art, and emigrated to the USA, sailing from Southampton in September 1933. From June to July 1936, he revisited the UK, and the passenger manifest for his return journey showed that he spent at least one night in London (Cunard, 1936). It is therefore likely that he saw the Beck map, and perhaps picked up the pocket edition, in 1936 and maybe also in 1933.

In August 1938, he filed at the Library of Congress a copyright notice for *A Coordinated Subway Map of New York*. The copy of the map held by the Library is a black-and-white photostat (Figure 1), but from the key we can infer that the original used colour-coded lines. The map is strikingly similar to Beck's map, and quite unlike the two most popular New York City Subway maps of the time, by Andrew Hagstrom (Figure 6) and George Nostrand, which were geographic. This was a transmission and development of Beck's visual language. Figure 2 allow us to compare the styles in detail.

The key similarities are as follows. Subway lines were abstracted from the topography, leaving only the schematic outlines of water bodies (principally the Hudson and East Rivers) and parks; no streets or neighbourhoods. Most of the subway lines followed an octilinear layout, although two passages – in Queens and Brooklyn – followed gentle curves. The intervals between stations were mostly uniform. Regular stations were shown by line-width ticks (double ticks at terminals[2]); transfer stations were shown mostly by open circles.

There are also differences. Differences of the first kind are due to Thomas' allowing himself artistic flourishes. More interesting are the second kind, which stem from structural differences in the network and service patterns between the New York City Subway and the London Underground.

Differences of the first kind include: the occasional use of lines at 30° and 60° instead of the 45° of a strict octilinear structure; and the use of two curved passages, as noted above. Although Thomas showed regular stations with ticks, his ticks were horizontal, while Beck's were perpendicular to the line. While Beck strictly wrote all station labels horizontally, Thomas wrote his variously horizontally and at 30°, 45°, and 60°, but he did write them in block capitals as Beck did. Finally, Stephen used small and large circles, as well as ovals, to encompass transfer stations of different numbers of stops, while Beck used only a single size of circle (e.g. Charing Cross and Oxford Circus have the same diameter in Figure 2B), with interchanges sometimes indicated by adjacent circles (e.g. Kings Cross).[3]

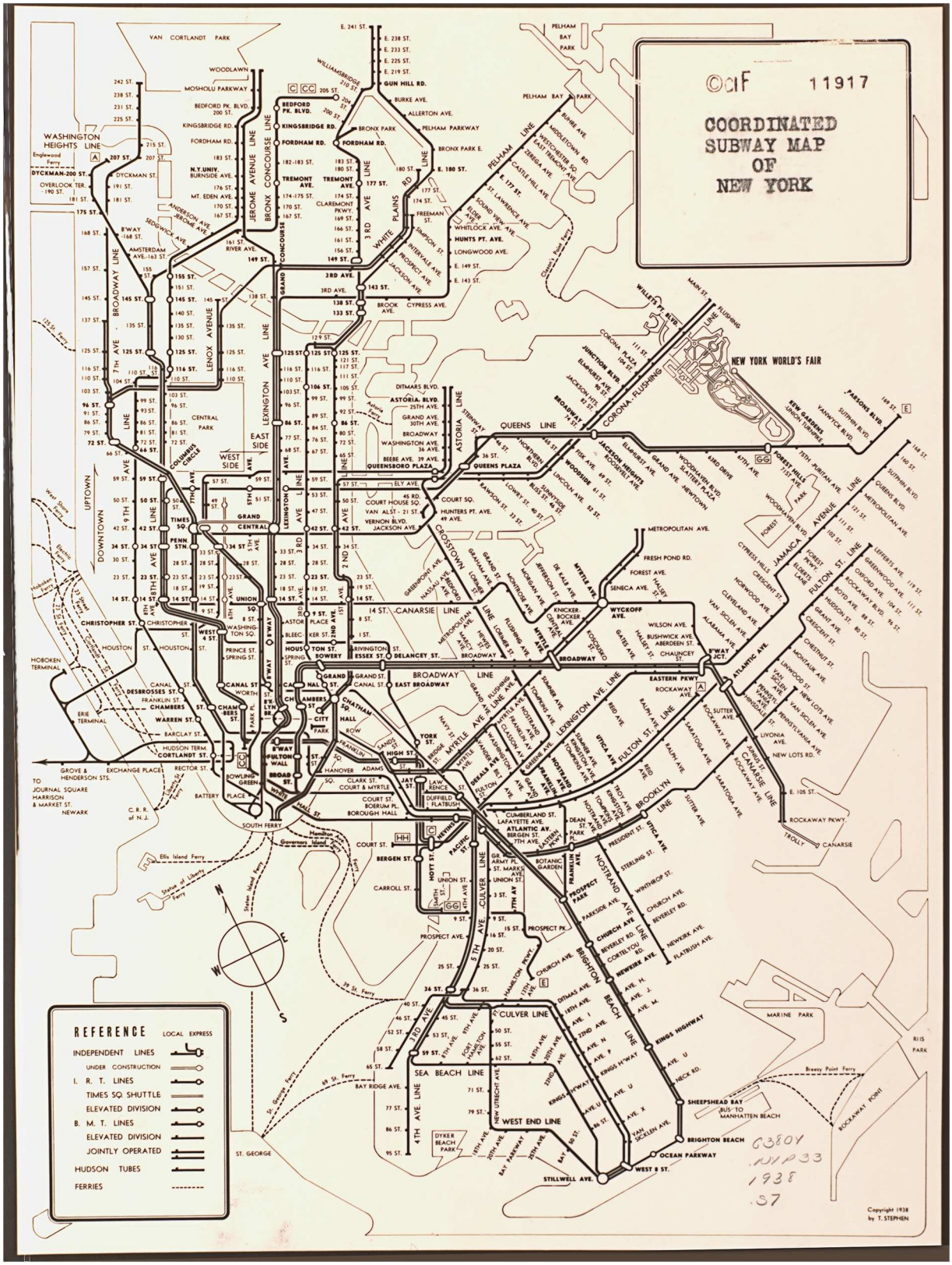


Figure 1. 'Coordinated Map of the New York Subway' (1938) by Thomas Stephen. Collection: Library of Congress. Used with kind permission of Ellen-Ann Stephen.

Differences of the second kind mostly arise because almost all NYC Subway lines have both local and express tracks (the latter skipping some stations), whereas almost all underground lines in London have only local tracks (stopping at every station). Stations where riders transfer between local and express tracks are conceptually similar to ones where they transfer between two different lines: essentially, you get off one train and board another. Stephen therefore denoted both by an open circle (or oval where necessary). Traditionally, the former are called 'express stations', and the term 'transfer station' is reserved for transfers between lines. An

example of the former is 34th Street on 9th Avenue, and of the latter Union Square (both highlighted in Figure 2A).

Express services have troubled New York mapmakers for decades, but troubled London mapmakers little: only in three services (slow, semi-fast, fast) of the four-track Metropolitan line.[4] Beck ignored that differentiation in his maps, as it was not needed for journey planning, only for deciding which train to board when you are already on the platform. In New York, the information aids journey planning, owing to the extensive use of express running, and the sometimes large distances skipped by express trains. Stephen was apparently the first person to try to show express and local services within Beck's visual language. Let us look at how he tackled this. Where express and local services are coterminous on one trunk, he drew a single line, with express stations shown as circles. As we saw above, 9th Avenue is an example of this. Where two or more services share a trunk but have different terminals, Stephen drew them separately. Figure 3 illustrates this. From left to right: 7th Avenue – Broadway has express and local services separate, because the local service terminates at 137th Street, while the express extends northwards; 8th Avenue likewise has express and local separate, for at 145th Street, they branch off; and 9th Avenue Elevated has express and local combined, as they share terminals. This seems a natural extension of Beck's visual language for this feature of the subway, although it has some

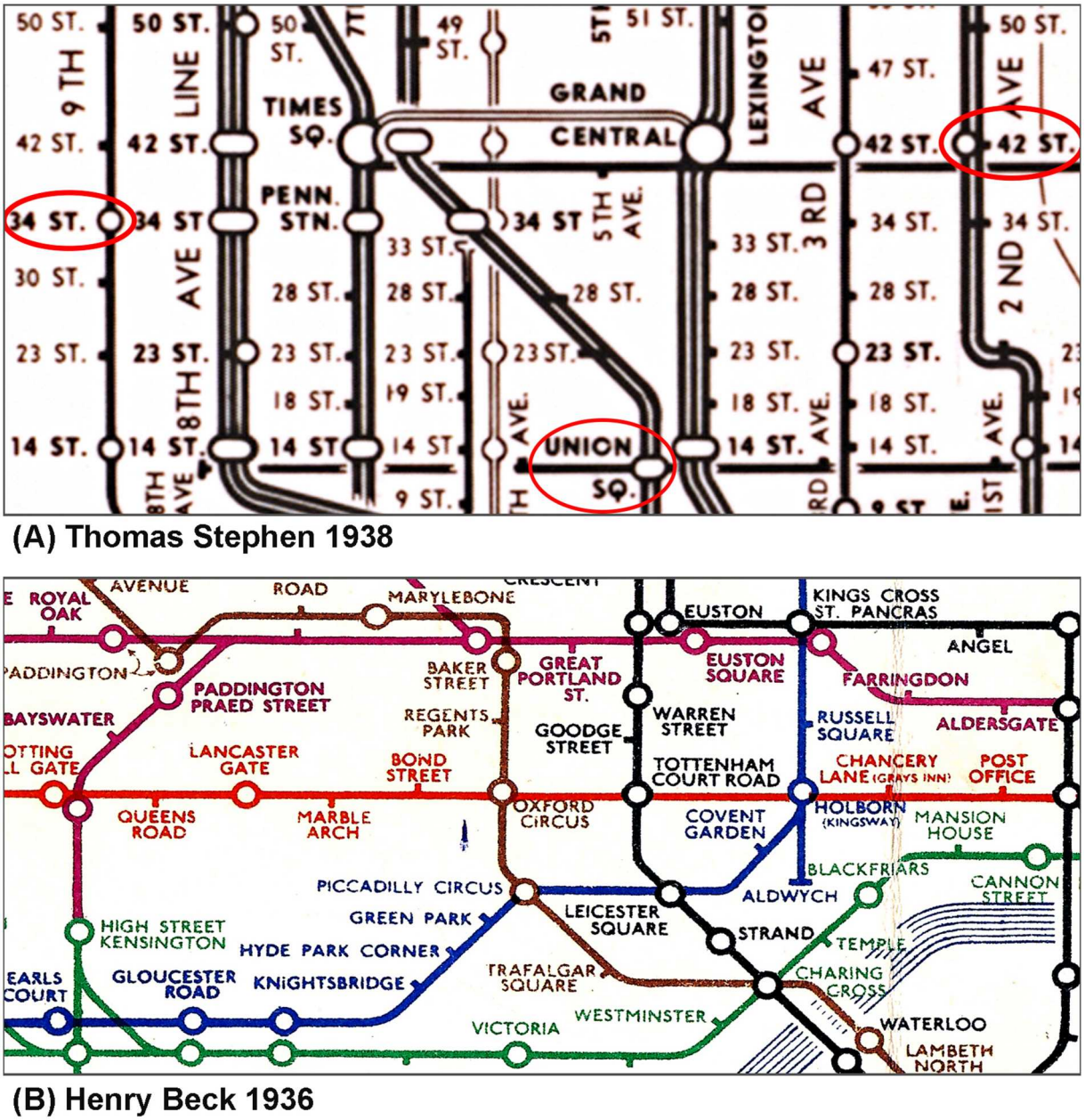


Figure 2. (A) Midtown Manhattan from 'Coordinated Map of the New York Subway' (1938) by Thomas Stephen. Collection: Library of Congress. (B) Central London from 'Railway Map' (1936) by Henry Beck, London Transport. Collection: author.

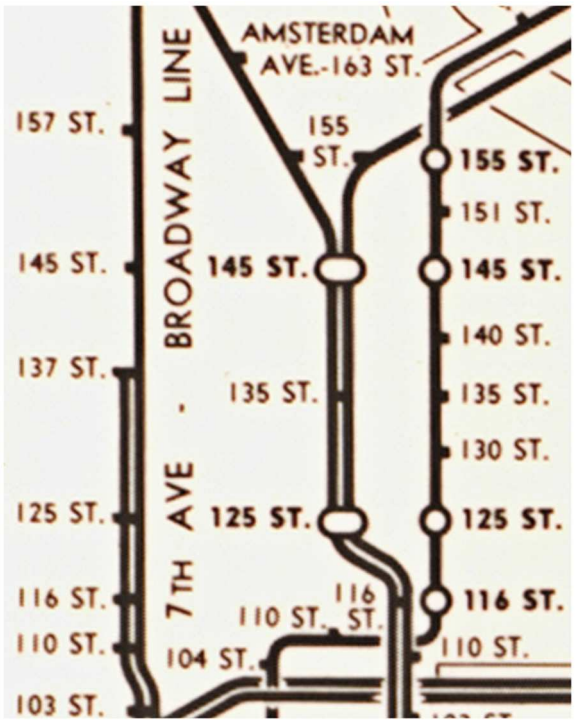


Figure 3. Detail showing branching of two trunks (7th Ave – Broadway and 8th Ave) on 'Coordinated Map of the New York Subway' (1938) by Thomas Stephen. Collection: Library of Congress.

initially puzzling results such as 42nd St on Lexington (highlighted in Figure 2A), which has a circle on the local and express Bronx-bound routes, and a tick on the Queens-bound local service.[5]

Although it is a black-and-white photostat, Stephen's key (Figure 4A) makes sense only if the lines were coloured. Most likely, 1st colour = IND, 2nd = IRT Subway, 3rd = IRT Elevated, 4th = BMT Subway, 5th = BMT Elevated, 6th = Hudson Tubes.[6] What those colours were, we cannot tell. Thus, Stephen has followed Beck's example of using six colours, including black (Figure 4C). This is more ambitious than the colour scheme of the then leading NYC Subway map issued by Hagstrom (Figure 4B), using RBY (red, blue, yellow) + black, which was the norm in lithography before CMYK (cyan, magenta, yellow, key [black]) become standardized in the 1950s and 60s. It is not known whether London Transport used a six-colour offset lithographic press, or two passes of a four-colour press, but evidently Stephen saw that it worked and wanted to emulate it in New York.

The typewritten title indicates the cartouche was meant to be blank and available for commercial copy. Stephen apparently intended to emulate the business model of mapmakers Hagstrom and Nostrand, by selling stocks of the map to businesses such as banks and hotels, with promotional matter printed on the reverse and in the cartouche. As no finished copies of the map have come to light, Stephen's project probably failed to get beyond the copyright stage.

In conclusion, Stephen inherited elements from Beck's 1930s map style and extended them with express services, but deviated from Beck's rigorous visual language in some regards.

Arthur Weindorf's Map, 1938

Arthur Weindorf (1885–1979) was an architectural draftsman working for the Public Service Commission, and later the Board of Transportation (BoT). He was involved in creating subway maps at various times from 1918. In 1932, the BoT opened the Independent (IND) network, and it rapidly grew in complexity until, in 1938, Weindorf created a schematic map with colour-coded routes (Figure 5A). In 1943, after the unification of the IRT (Interborough Rapid Transport Company) and BMT (Brooklyn-Manhattan Transit Corporation) under the BoT, Weindorf made two sketches of the present and future IND network, apparently with the intention of extending this style to the whole, unified subway (Figure 5B).

Whenever people see a schematic map of the subway, there is a tendency to assume that Beck must have inspired it. Here, however, we see no specific stylistic features in common with Beck, beyond the mere fact of schematization. There is, furthermore, no evidence that Weindorf was exposed to the Beck map. Weindorf does not appear in any passenger manifests for ships travelling to New York.[7] Each year he saved up enough

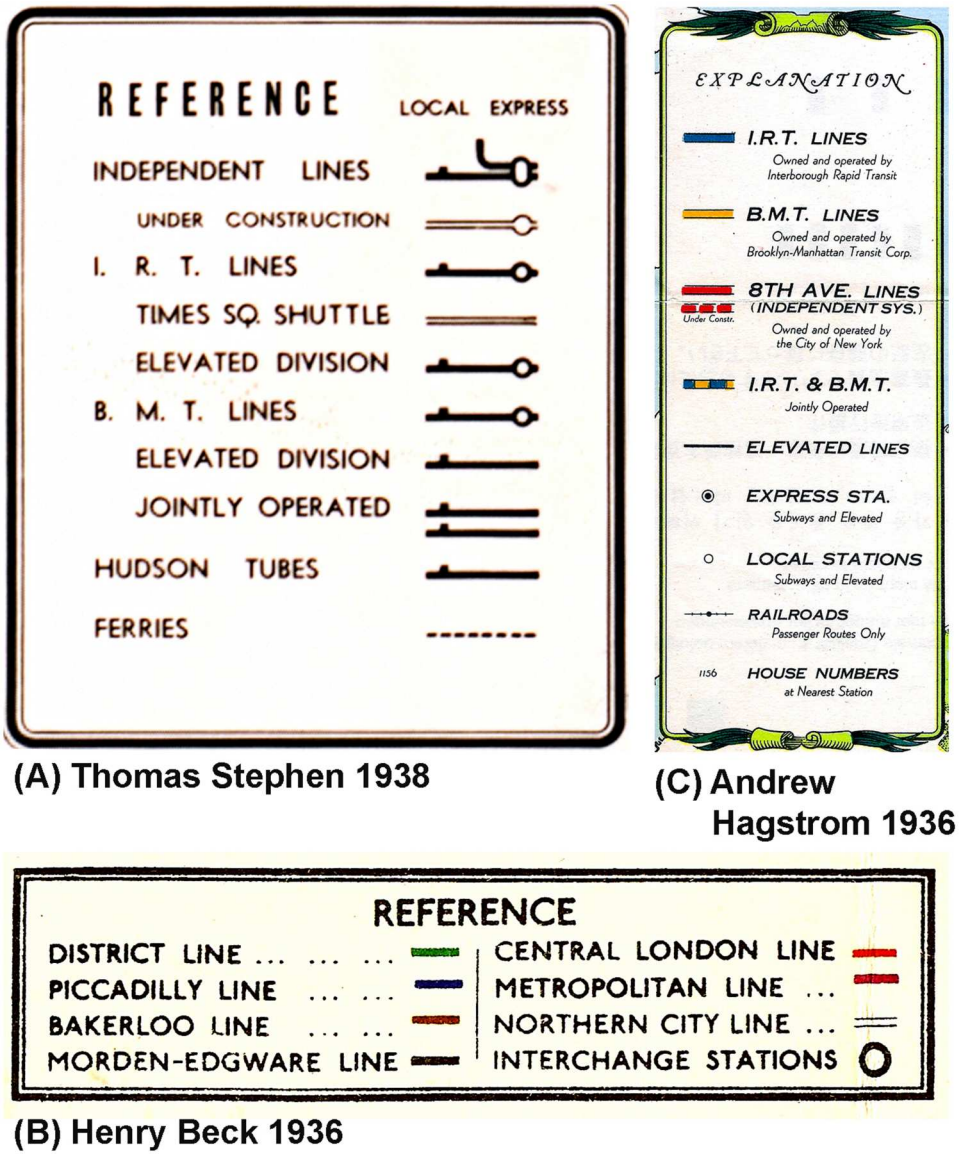


Figure 4. Keys from: (A) 'Coordinated Map of the New York Subway' (1938) by Thomas Stephen. Collection: Library of Congress. (B) 'Railway Map' (1936) by Henry Beck, London Transport. Collection: author. (C) 'Map of the Subway Systems and Elevated Lines of the City of New York' (1938) by Andrew Hagstrom, Hagstrom Map Company, New York. Collection: author.

money to buy one domestic flight ticket, which he used to study New York's topography from the air (Gebhart, 1932).

The tendency to see the influence of Beck everywhere also reflects an over-emphasis on layout, as opposed to other aspects of the map. Weindorf's major innovation in these maps was the colour-coding of end-to-end routes and the display of local and express services using the minimalist 'no dot, no stop' rule. Yet, these are problems of information design on which Beck's visual language is silent.

That year, 1943, the BoT adopted the geographic Hagstrom map as its official subway map, in preference to developing Weindorf's schematic map; and the next year Weindorf retired (Gross, 1980). This decision committed the Board of Transportation and its successor Transit Authority to a geographic map for the next fifteen years. Hagstrom went from being a leading subway mapmaker to a cartographic colossus: by 1948, his subway map was in every car and every station of the subway and elevated systems, every official pocket map (Figure 6), a myriad promotional and commercial pocket maps, and every Red Book telephone directory. Any chance of an official diagrammatic subway map correspondingly vanished.

Henry Beck's Putative Map, 1951

In 1951, it appears Beck himself offered to redesign the New York City Subway map. From his estate, a fascinating item of correspondence has come to light, from Sydney H. Bingham, BoT Chairman, to Henry Beck, dated 24th September 1951:

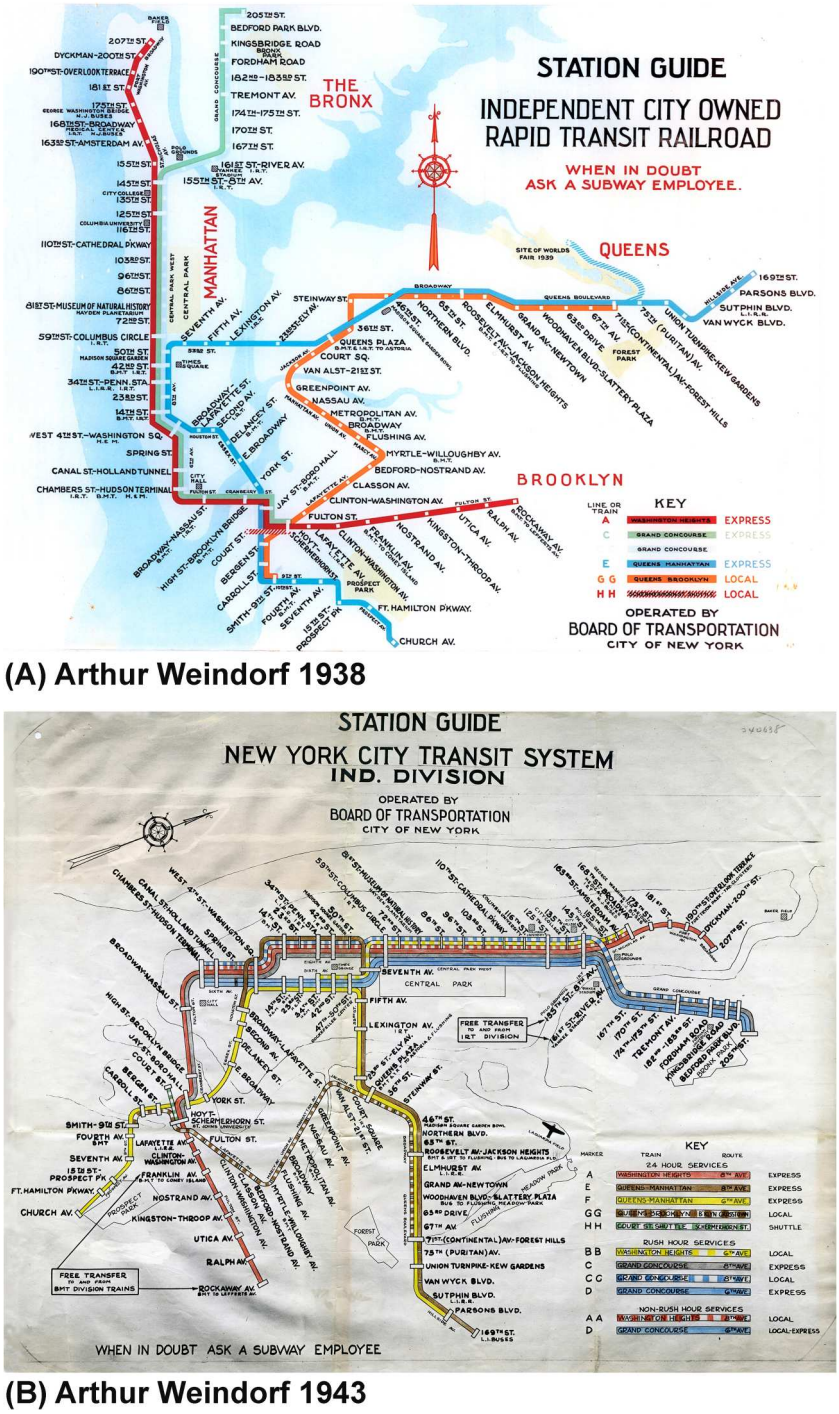


Figure 5. (A) 'Station Guide: Independent City Owned Rapid Transit Railroad' (1938), and (B) 'Station Guide: New York City Transit System: IND Division' (1943), both by Arthur Weindorf, Board of Transportation, collection: New York Transit Museum.

> Dear Mr Beck: I am pleased to send you a map of the lines of the New York City Transit System. You understand, of course, that this in no way commits the Board of Transportation to use any map you might develop, or to pay you for any work you do. (Bingham, 1951)

It is evident from the wording of this letter that Beck had written to the BoT, asking for a copy of the current subway map (the Hagstrom map), and floating the idea of his designing a subway map. No further correspondence has so far come to light on either side of the Atlantic, nor any sketches of a subway map by Beck. We can but speculate on how such a map might have appeared. Roberts (2022) has speculatively offered what might be described as an octilinear diagrammatic rendering of the 1951 Hagstrom map.

George Salomon's Map, 1958

George Salomon (1920–1981) fled Nazi Germany and, during 1936 and '37, studied typography under Eric Gill at Piggott's Farmhouse. While there, he explored London on multiple occasions. He was much taken with the

Figure 6. 'Rapid Transit Lines of the New York City Transit System' (December 1948), by Andrew Hagstrom, Board of Transportation, collection: author.

wayfinding signage of the London Underground, and especially with Beck's map of the Underground.[8] He later conveyed his admiration to his sons: 'My father taught us to revere the Beck Map with the awe others reserve for Magna Carta or the Sistine Ceiling' (F. Salomon, 2003).

Later in 1937, Salomon emigrated to the USA and in 1940 arrived in New York City, whose subway signage appalled him. Even after the administrative unification of the IRT, BMT, and IND, wayfinding on the New York City Subway retained the signage of all three companies, which was inconsistent and increasingly obsolete. Shaw (2011) has documented this state of the wayfinding signage.

Salomon embarked on several years of private data gathering and explorative design. The Board of Transportation, however, evinced as little interest in his proposals as in Beck's communication in 1951. In

1953, however, the Transit Authority (TA) superseded the Board and brought a fresh attitude. Salomon obtained freelance work designing the Authority's in-house magazine and, shortly afterwards, submitted proposals for an overhaul of its nomenclature, signage, and map (Salomon, 1955, 1956). His proposal for systematic signage anticipated Unimark's work in 1966, and his trunk-based scheme adumbrated the Tauranac Committee's changes of 1979. Unfortunately, the Authority declined most of his proposals, probably because of the cost. They did, however, adopt his Beckist ideas for a new map (Figure 7).

For the first time, a rigorous octilinear layout was imposed on the official subway map. This layout was to be borne by the map for the next two decades (apart from some aberrant angles during 1967–1969), and the MTA has been hesitantly reintroducing it since 2012. This is the enduring contribution of Beck's visual language to the New York City Subway map.

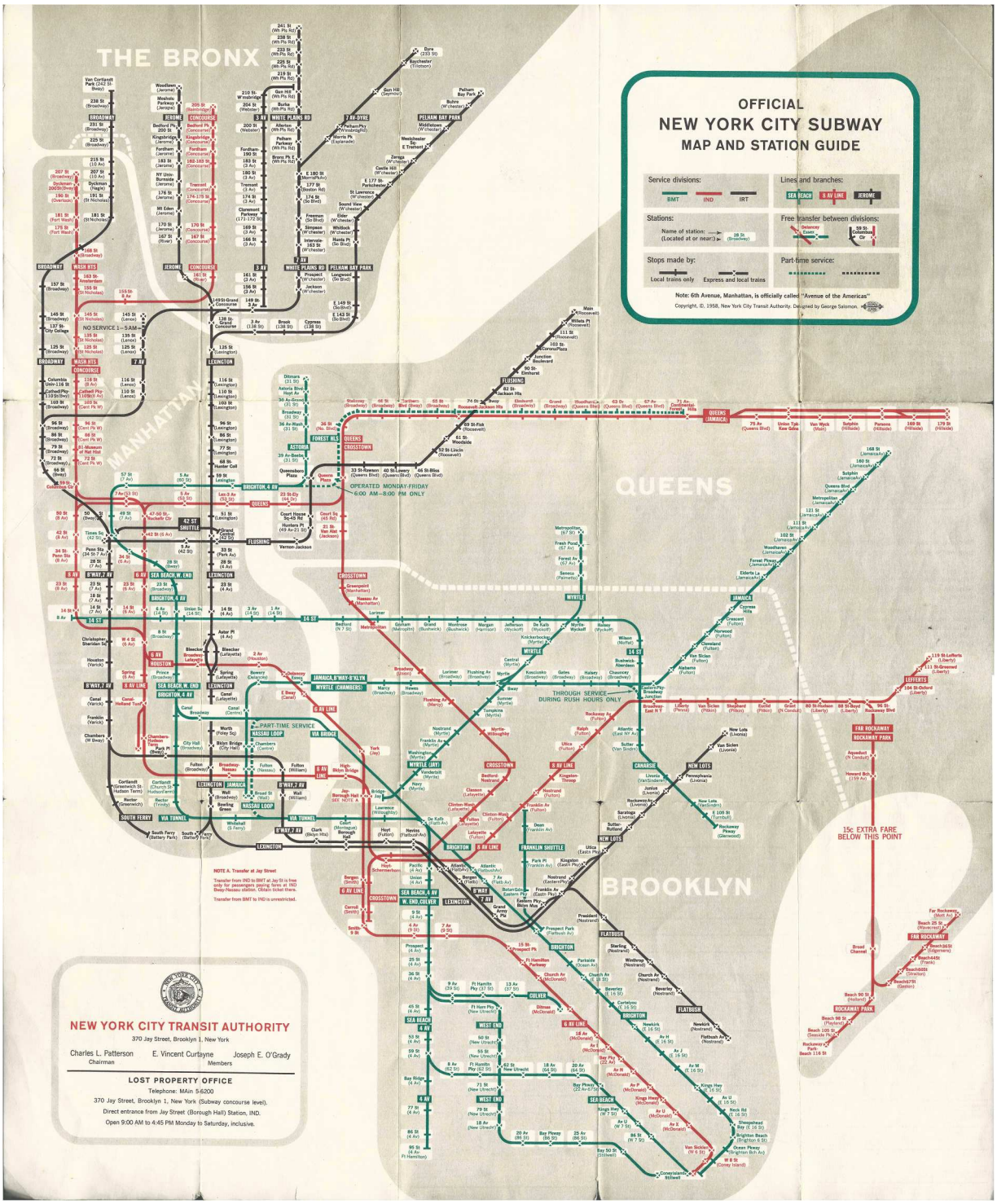


Figure 7. 'Official New York City Subway: Map and Station Guide' (1958), by George Salomon, NYCTA, collection: author.

Besides objective octilinearity, the maps exhibited subjective features of diagrammatic design, such as harmony between different parts of the map. Look, for instance, at the 6th Ave line east of 2nd Ave station in relation to the Crosstown line east of Greenpoint station. The layout has a rigour and elegance that echoes Beck's, but was lacking from Stephen's map.

Salomon also followed Beck's lead in drawing local stations as ticks perpendicular to the line (albeit double ticks, not single ticks), and station names were always written horizontally (albeit mixed case, not block capitals). By rigorously following these rules, Salomon enhanced the legibility of the map.

While Stephen used open circles for both express stations and transfer stations, Salomon employed different symbols. For express stations (which had no counterpart in Beck), Salomon used a line-coloured disk with a white 'X'. For transfer stations, he used adjacent station symbols to signify transfer (e.g. Times Square in Figure 8A). This matched Beck's use of adjacency for interchanges, which Salomon would have seen in the London Underground map of 1937 – for example Kings Cross in Figure 2B.[9] In 1949, Beck re-introduced the white bridge for interchanges, but Salomon might not have seen this new feature of the map.

Salomon did not, however, rely only on station proximity to show transfers. He also drew a white, borderless box around each station, which grew to envelop transfer complexes. For distant stations, this was the only indication of transfers (e.g. Union Square in Figure 8B). This departure from Beck's visual language allowed Salomon greater freedom in layout as he did not have to bend the lines to bring transfer stations close to each other.

Subway station names are ambiguous unless qualified by intersecting streets or avenues. Beck did not have this problem in London. Stephen had the problem in New York but ignored it: e.g. his map has eight 23rd St stations, six 14th St stations, and four 50th St stations (Figure 2A). Salomon adopted a belt-and-braces approach, labelling lines (white text on black) as well as suffixing intersection names to the station names (see 23rd St in Figure 8A and 14th St in 8B).

In conclusion, Salomon's map is a clear instance of the transmission and development of Beck's visual language.

Mondrian as a Common Inspiration?

The idea has been floated that the diagrammatic maps of London and New York City may have been inspired in part by the paintings of Piet Mondrian. For example, Kent (2021) cites some examples of this suggestion. Lloyd (2017) examined this notion and found no evidence that Beck had any interest in Mondrian, while Salomon did consider the colour scheme of Mondrian's painting *Broadway Boogie-Woogie* for his subway map, but rejected it. There do not seem to be any other candidates for a common inspiration.

The Introduction of Route Colouring, 1967

In 1967, the Transit Authority opened a two-mile tunnel under Chrystie Street in Chinatown, as part of a larger programme of infrastructure improvements. This tunnel allowed, for the first time, interworking of the former

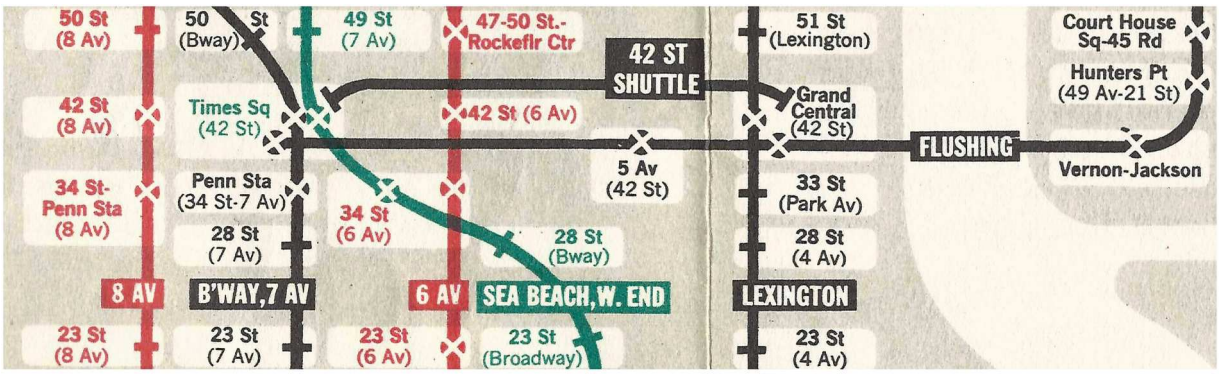


Figure 8. 'Official New York City Subway: Map and Station Guide' (1958), by George Salomon, NYCTA, collection: author. Details showing (A) midtown Manhattan, (B) 14th St line.

BMT and IND networks: trains running on lines such as the 6th trunk (part of the former IND) could run on the 4th Avenue and Myrtle Avenue trunks (part of the former BMT). The impact on mapmaking was seismic. The three-colour scheme for differentiating subway lines as IRT, BMT, and IND (in use since 1933), no longer worked. To find a new mapping paradigm, the TA held a Transportation Map Contest. One of the winners was R. Raleigh D'Adamo, whose proposal to draw each end-to-end route in a distinct colour was adopted by the TA.[10] His contest entry was handed to Professor Stanley Goldstein of Hofstra University, who developed detailed prototypes in 1966. These fed into the final map of November 1967 (Figure 9). Goldstein deviated from the strict octilinear layout that Salomon had created a decade earlier, to give a 'more accurate representation of geography' (Goldstein, 1965: 8). For example, the Crosstown line (route GG, green) was changed from 45° (Salomon, Figure 10A) to 60° (Goldstein *et al.*, Figure 10B).

Figure 9. 'New York City Rapid Transit Subway: Map and Station Guide' (1967), by R. Raleigh D'Adamo, Stanley Goldstein, Jerome Adler, and Dante Calise, NYCTA, collection: author.

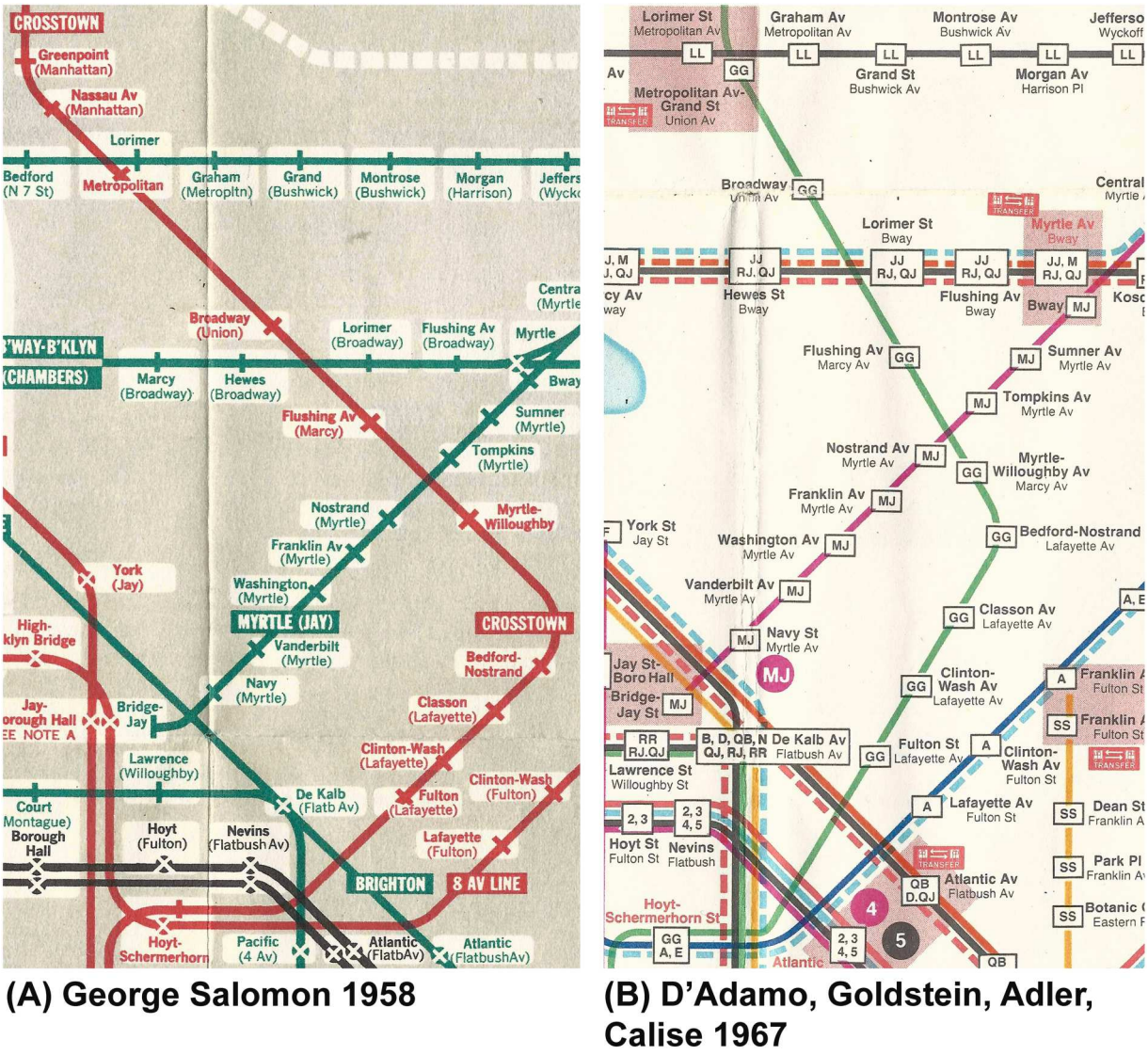
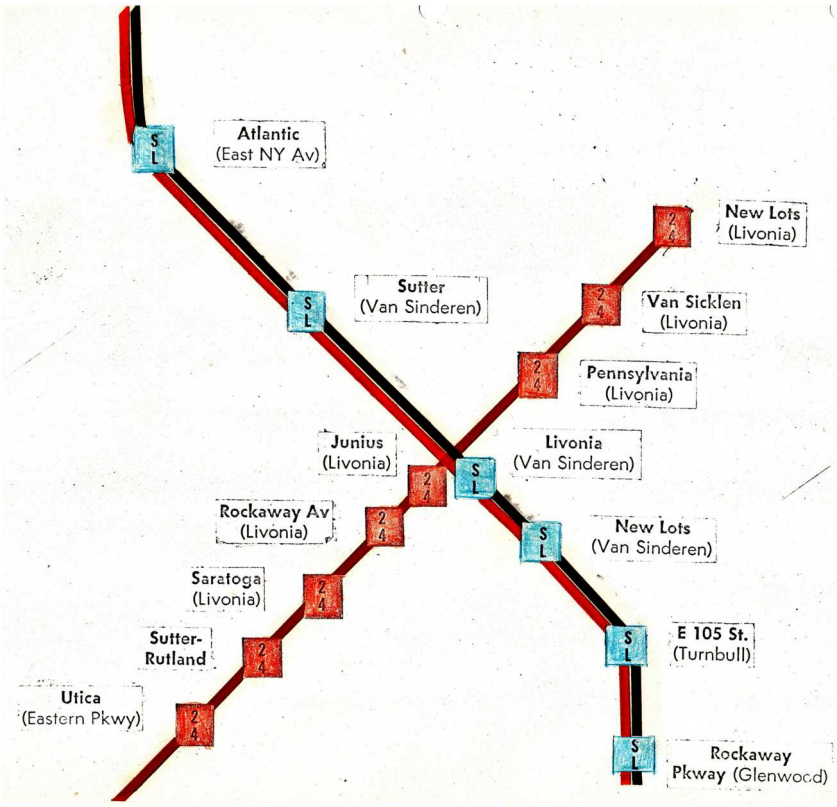


Figure 10. Detailed showing Crosstown Line from (A) 'Official New York City Subway: Map and Station Guide' (1958), by George Salomon, NYCTA, collection: author. (B) 'New York City Rapid Transit Subway: Map and Station Guide' (1967), by R. Raleigh D'Adamo, Stanley Goldstein, Jerome Adler, and Dante Calise, NYCTA, collection: author.

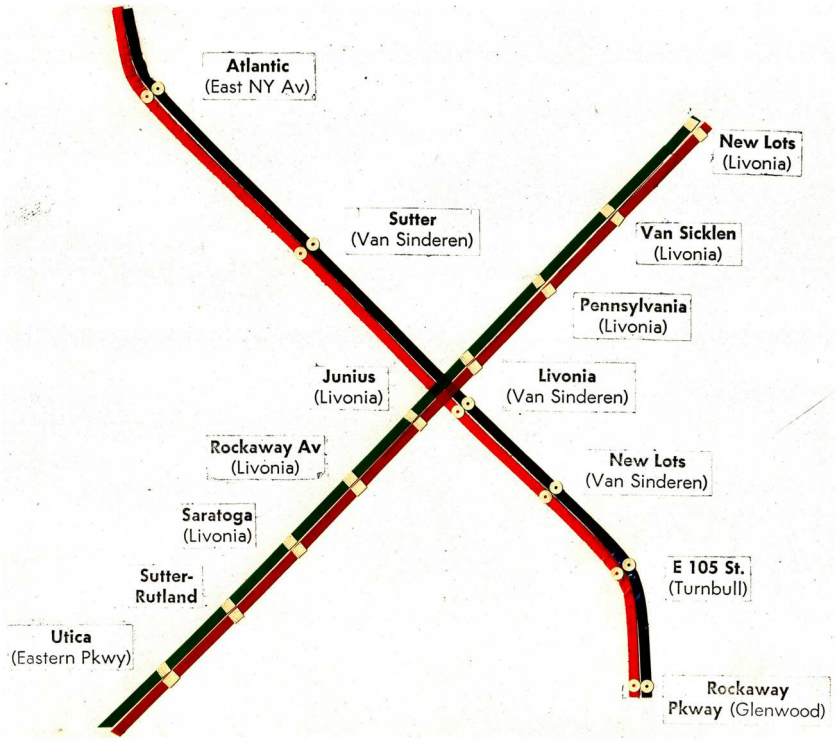
Deeper than the slight loss of octilinearity, however, was the change of station symbolism to allow routes to be differentiated. Two strands of thought that were inherited from Beck were 'minimalist station symbolism' and 'minimalist line symbolism'. One had to be sacrificed in order to accommodate the extra route information that now had to be shown. But which one?

Goldstein submitted to the TA four prototypes, although only nos. 3 and 4 are of interest (Goldstein, 1965, his figures 8 and 9). Prototype no. 3 followed 'line minimalism': each trunk was drawn as a single line, but each station was shown as a box that listed all the routes that stopped at that station (Figure 11A). Prototype no. 4, instead, followed 'station minimalism': in each distinctly coloured route, a dot represented a stop (Figure 11B). In the latter prototype, a station had no separate symbol of its own, but was represented by a co-location of dots, each representing a stop. Goldstein recommended prototype no. 4.

In fact, the Authority decided to sacrifice both line minimalism and station minimalism. Jerome Adler of the Design Division merged Goldstein's prototypes nos. 3 and 4 (Adler, 1966): each station was represented by a box that listed the routes stopping there, and each route was drawn as a distinctly coloured line (Figure 12). This redundancy destroyed any minimalism or elegance. All that was left of Beck's influence was the (mostly) octilinear layout. The 1967 map was not considered successful. This was partly because of its superfluous complexity, and partly because the train and station signage took months to be updated to match the map. It went through two further editions, and the 1969 version (Figure 13) formed the stage for the next revolution in the subway map, in 1970.



(A) Stanley Goldstein 1965, prototype no. 3



(B) Stanley Goldstein 1965, prototype no. 4

Figure 11. Prototype nos. 3 & 4 (his figures 8 & 9) from 'Methods of Improved Subway Information' (10th June 1965) by Stanley Goldstein, collection: New York Transit Museum.

The Route Planning Map, 1961–1967

Owing to printing delays, the new design was not available as a pocket map when the Chrystie Street Connection opened on 26th November 1967. Only a station wall map existed (Perlmutter, 1967). So, the Transit Authority printed a card bearing a diagram of the new routes (Figure 14A). This caused much confusion – not just because routes, colour-coding, and nomenclature were new – but mainly because this was a planning map,

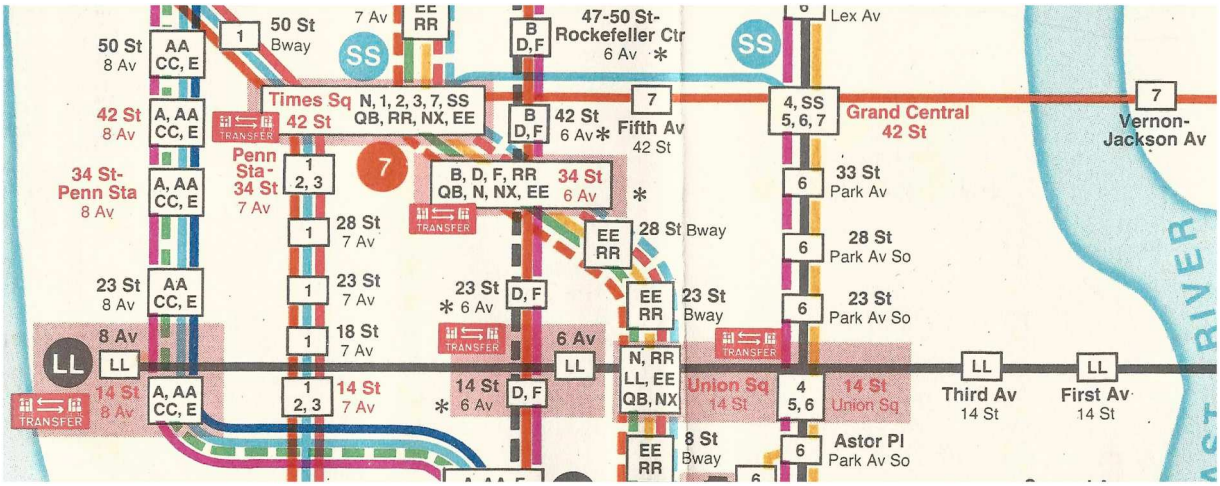


Figure 12. Detail showing midtown Manhattan from 'New York City Rapid Transit Subway: Map and Station Guide' (1967) by R. Raleigh D'Adamo, Stanley Goldstein, Jerome Adler, and Dante Calise, NYCTA, collection: author.

pressed into use as a makeshift passenger map. It showed only the eight new routes, but no indication of old routes closed, renamed, or rerouted.

Its origins are unclear. Figure 14B shows the only known ancestor, from a planning report by the TA to the Board of Estimate in 1961, and never issued to riders. Circumstantial evidence suggests this belonged to a series, perhaps starting as early as the Authority's first plans for the Chrystie Street Connection in 1954.

The maps are multilinear but not at Beck's octilinear angles: besides horizontal and vertical, we see 45 and 55° (1961) and 24°, 28°, and 37° (1967). The corners are sharp, not curved as Beck's or Salomon's were. The earlier map had no stations marked, while the later one marks stations with dots in each route, in the manner of Vignelli's 'no dot, no stop' rule.[11]

The separation of routes (A, E, and so on) is the biggest difference from Beck but also the biggest similarity to Weindorf's IND maps. The Transit Authority needed to separate the routes in order to visualize the effect of the Chrystie Street Connection on the service patterns. Having done so, they needed to adopt a diagrammatic layout as the multiple lines could not fit in a realistic plan of Manhattan. Therefore, the 1961 map seems to be a logical solution to a specific problem in route planning, and the 1967 card map a rushed re-purposing of it to give riders at least some information when the Chrystie St Connection opened. There is little similarity to Beck: it appears to be an independent branch of map evolution, driven by factors unrelated to Beck's endeavour to clarify the London map for passengers.

Massimo Vignelli's Map, 1972

The prestigious design firm Unimark International, Inc. opened its New York office in 1965, headed by Milanese designer Massimo Vignelli. In 1966 and 1968 it won contracts to provide the Transit Authority with design guidance for improved wayfinding signage and a Graphics Standards Manual, published in 1970 (Shaw, 2011). This signage redesign was well received and, in July 1970 the TA awarded Unimark a further contract to redesign the subway map, published in August 1972. The concept of the new map was created by Vignelli, and the detailed design work carried out by Joan Charysyn under Vignelli's design direction.

The Unimark process of designing the map started from the 1969 edition (Figure 13).[12] Vignelli restored the octilinearity by rectifying the 60° angles, and restored station minimalism by reverting to Goldstein's prototype no. 4 with its 'no dot, no stop' rule. The lines were further decluttered by removing the broken lines that Goldstein had put in for part-time services. The result was a map that restored the elegance of Salomon's map (1958) while at the same time adopting D'Adamo's (1964) idea of colour-coded routes (Figure 15). The map received accolades in the design industry and was popular with the general public, as shown by sales of Vignelli merchandise throughout the 1970s.

It is the Vignelli map that people usually think of when they say that the subway map was 'inspired' by Beck. But was it? I put this question to Vignelli in an interview. His answer was no, he did not model his map on Beck's, but asserted that he and Beck were compelled by the logic of the information design problem itself to arrive at the same principle, namely minimalism as implemented in a uniform, octilinear diagram, abstracted from almost all topography.

Figure 13. 'New York City Rapid Transit Subway: Map and Station Guide' (1969) by R. Raleigh D'Adamo, Stanley Goldstein, Jerome Adler, and Dante Calise, NYCTA, collection: author.

> Everything goes back to Beck. You know, everything goes back to logic, you know, and everyone who's done anything really goes back to London to a certain extent. (Vignelli, 2008, 2:14:37)

He regarded Beck's map as an early exemplar of the proper design discipline based on a structural grid, which had been discovered independently by Beck and the Bauhaus. Here is his praise for Beck's working method, at the famous debate with Tauranac:

> [referring to the London Underground map] 'The father of all contemporary kind of subway map: […] based on a structural grid. This was designed in 1931—it's just about my age—by Mr Beck for London Transport, the Underground. It is really the most clear map in the world: nothing comes even close to the clarity of this map'. — Vignelli (Cooper Union, 1978, 0:3:39)

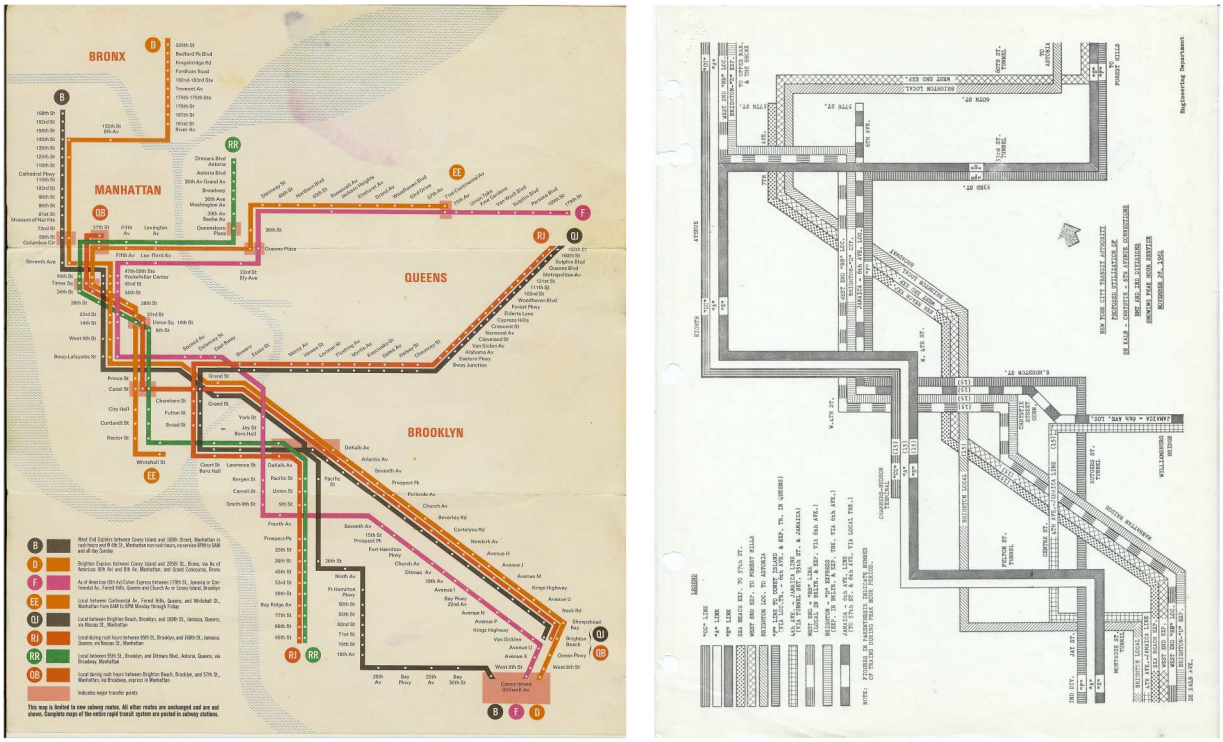


Figure 14. (A) 'New Subway Routes' (1967), anonymous, NYCTA, collection: author. (B) 'Proposed Utilization of De Kalb – Chrystie – 6th Avenue Connections' (28th November 1961), anonymous, NYCTA, collection: New York Transit Museum.

As the 1972 Vignelli map was based on the 1969 D'Adamo-Goldstein design, which came from the 1958 Salomon map, which was explicitly inspired by Beck's 1933 London map, we may say that the Vignelli map has the Beck's visual language in its lineage, but hardly that it was inspired by Beck. From 1967 onwards there was more to the information design of the subway map than the layout. The rendering of route information, and especially of express and local services, is an extra burden that has no counterpart in Beck's map.

Vignelli insisted that he followed an objective design discipline, not a subjective artistic style: 'there is no art whatsoever involved in designing a subway map' (Cooper Union, 1978, 0:19:26), and 'Minimalism is not a style' (Vignelli, 1999). While a style can reappear only through transmission and development, a design principle can also be rediscovered independently. The latter is how Vignelli saw his method of design.

We may also note Vignelli's regret that he did *not* follow Beck, as recorded in Hustwit's (2015) interview with Vignelli:

> Now, 75 years ago, in London, they did the first map with a 90- and 45-degree grid like this one here, and it's been working fine in London for all this time. […] And now I just realized that maybe, possibly, I made a mistake by indicating, even in a deformed way, the areas—Manhattan, Queens, the Bronx, et cetera. I probably should have done what they've done in London—not have any indication of the geography. It's a completely blank, white background so that there is no suggestion of geography whatsoever.

This is not entirely valid, as Beck included the River Thames as a landmark to allow the reader to orientate herself, making the city 'legible' in Lynch's (1960) terms. On that basis, it would suffice for the subway map to include only the East River and the Hudson River and omit Jamaica Bay, the Narrows, and the Atlantic Ocean, and the eleven parks that the map shows. Vignelli's remark here does, however, resonate with an anecdote told to me by Beatriz Cifuentes of Vignelli Associates: during the printing of Vignelli's 2008 *Men's Vogue* map, the blue ink ran out, and some copies were printed with no water bodies at all—which Vignelli regarded as a serendipitous improvement, although not one that could be retained.

What we can say is that Beck and Vignelli shared a disdain for any geographic features that were not strictly needed for navigating the transport system. Vignelli took this to its limit in his abstract prototype maps for the Washington DC Metro (Lloyd, 2012: 22–25). Beck took is as far as he dared by straightening several lines in 1943 (e.g. changing segments of the Northern line from diagonal to vertical). For Vignelli, this was the minimalism of the New Bauhaus school of design, to which he subscribed. For Beck, it was apparently a personal desire to tidy things up.[13]

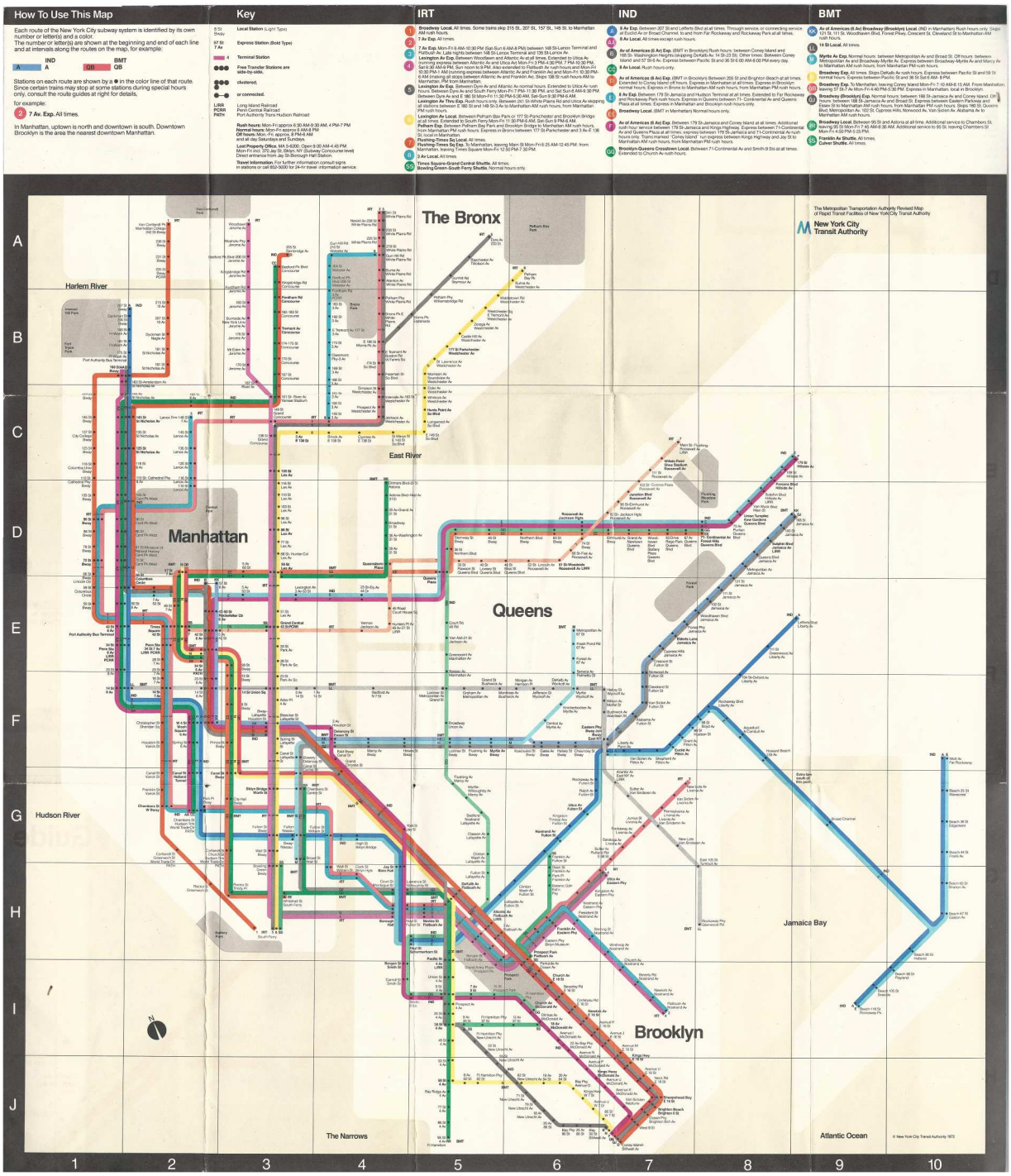


Figure 15. 'New York Subway Guide' (1972) by Massimo Vignelli and Joan Charysyn, Unimark International, Inc. for NYCTA, collection: author. NYC Subway Diagram © Metropolitan Transportation Authority. Used with permission.

There is a tension between Vignelli's claim to have developed his map from first principles and his use of the 1969 map as a starting point. If he had not started from there, would his map have looked different? Comparing Vignelli's map (Figure 15) with its two ancestors, the 1969 and 1958 maps (Figures 13 & 7 respectively) we see striking structural similarities. Is this just the influence of physical geography? Comparing those three maps with Stephen's 1938 map (Figure 1), we see a common influence of geography but also a substantive innovation in Salomon's map that is inherited by Vignelli's. Judging from other maps that Vignelli created *ab initio* – his prototypes for the RER (Réseau Express Régional) map in Paris (Lloyd, 2012: 91–92) and the Washington DC Metro (Lloyd, 2012: 22–25)[14] – we may surmise that he would have developed a similar visual language, although the actual shape of the New York map could have been very different. His RER design began hexagonal (Lloyd 2012: fig. 6.7), and one of his Washington prototypes comprised parallel lines (Lloyd 2012: fig. 2.8). Furthermore, Roberts' (2013) orbital map of the New York City subway points to another direction

in which to think outside the Beck box. We can only guess how the Vignelli map might have looked if Salomon had not imposed Beck's octilinear grid on New York City fifteen years earlier.

The Tauranac Committee's Map, 1979

The remnants of Beck's visual language in Vignelli's map were removed by the Tauranac Committee in 1979. To understand why, we need to understand the context. The mid-1970s were financially hard years for New York City, and especially for the Metropolitan Transportation Authority (MTA), the parent body of the Transit Authority (TA). As part of its campaign to increase ridership, especially off-peak, MTA Marketing launched a campaign of promotion and new channels of information delivery, such as the Culture Bus and the *Seeing New York* guidebook (Tauranac, 1976). Following on from this, John Tauranac was appointed chair of a Subway Map Committee, whose aim was to replace the Vignelli map with one that would serve better the interests of marketing the subway. Tauranac steered the committee's four-year deliberations toward a geographic map, which showed colour-coded trunks (instead of colour-coded routes) and each station was represented by a list of routes that stopped there (Figure 16). Tauranac had unwittingly reverted to Goldstein's prototype no. 3. This was, of course, a reversal of what Vignelli had achieved.

Was this the extinction of Beck's visual language in the subway map? Not quite. There is more to Beck's visual language than an octilinear layout: namely the symbolism of stations and interchanges. In fact, there is some evidence that the design of transfer symbolism has a greater impact on map usability than the colour scheme, and maybe even than the layout (Lloyd *et al.*, 2018).

The ur-map of the new design was the one printed in *Seeing New York.*[15] In this map, transfers were represented by black lines (Figure 17A). Two years later, in a map exhibited at the Cityana Gallery, the black lines were augmented with yellow boxes to try (unsuccessfully) to make transfers clearer (Figure 17B). After the Cityana exhibition, Tauranac (1978) proposed open circles with white bridges to represent free transfers, in the London style. Beck had re-introduced white bridges in 1949 (Figure 17C), and Paul Garbutt in 1964 made the device clearer by combining the white bridge with black circles instead of line-coloured circles (Figure 17D), which is the style that Tauranac would have seen in 1978. This Beck-Garbutt device was used effectively under Tauranac's design direction, drawn by Nobuyuki Siraisi of Michael Hertz Associates (Figure 17E). White-bridge transfers were kept until Michael Hertz moved the map production from mechanical to digital, with a pilot map in 1996 and production maps from 1998. In the new digital format, Hertz dropped the white bridges and reverted to the black line as used in *Seeing New York* in 1976. Black lines were supplemented with ovals and different sizes of circles. That resulting map finally relinquished any connection with Beck.

The Subway Map Debate: Vignelli v Tauranac, 1978

Before moving on to the tentative start of a new era many years later, let us rewind to the Subway Map Debate at Cooper Union on 20th April 1978. Almost entirely ignored by the press at the time,[16] it has become a noted milestone in the transition from Vignelli's diagrammatic map to Tauranac's geographic map. The debate comprised little more than rehearsed pitches, rather than an exchange of reasoned argument, and skirted around the elephant in the room: why did the MTA really want to jettison the Vignelli map? Nevertheless, it did give clear statements of the two opposing worldviews.

Vignelli began his slideshow by parading twenty metro maps from around the world, including the 1977 edition of the London Underground station wall map, which he called, 'the father of all contemporary kind of subway map'[17] (Cooper Union, 1978: 0:3:39).[18] Vignelli's first point was that the map must be part of a system (recapped at 0:19:35). The subway diagram was one component in a set of three deliverables, alongside a local area map and a 'verbal map'. These, in turn, were situated at points in a subway station where route-planning information was needed, supported by a systematic installation of wayfinding signage. The signs themselves were also part of a system with consistent typeface, style, structure, and placement. Within the subway map, the same stylistic elements – type, colour, symbolism – projected the graphic system into every detail of the map. His second point was minimalism: the system, including the map, should omit any unnecessary details. The result of applying these principles was the diagrammatic subway map. This systematic approach mirrored the wayfinding on the London Underground, where Beck's map was the linchpin of a wayfinding apparatus comprising Pick's signage and Johnston's type (Howes, 2000).

Tauranac's first point was that the design of the map must *not* be driven by adherence to a system. Each fragment of information that is relevant to navigating the city via the subway must be included on the map, and each segment of the map should be the best way to express that fragment of information, without regard

Figure 16. 'Subway Map' (1979) by the Subway Map Committee chaired by John Tauranac, executed by Michael Hertz Associates for the MTA, collection: author. NYC Subway Diagram © Metropolitan Transportation Authority. Used with permission.

to other parts of the map, and without regard to any design 'ism'. His only isms were pragmatism and eclecticism. For example, this approach is seen in the station names, each of which was fitted individually into a space on the map, without regard to the orientation of other names. In the debate, Tauranac listed various navigational details that Vignelli had omitted because they did not fit readily into his pared-down system. Vignelli defended those omissions thus:

> The information about the train is given to you at the point of fruition, which is right on the platform. However, you can always ask, if you don't want to go down to the platform to find out that your train that day doesn't run, you can always ask, if you have that doubt, ask the [token booth], and there they can give you all kind of information in details. […] That kind of information should not be printed in the map because it only adds a layer of information which is irrelevant, unnecessary at that point of fruition. (0:20:32–21:07)

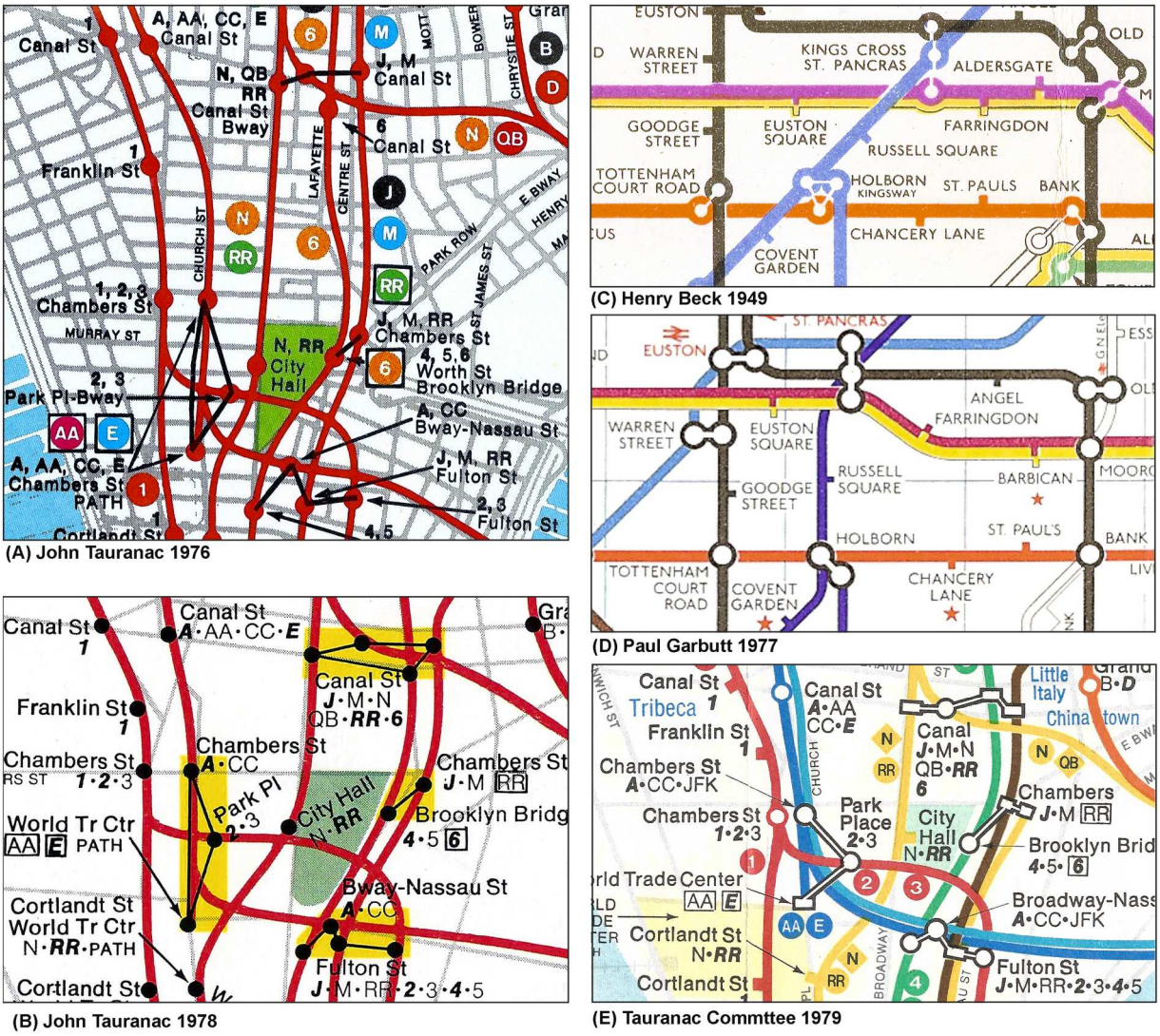


Figure 17. Details showing transfer stations in lower Manhattan from (A) 'Seeing NY' (1976), by John Tauranac, executed by Michael Hertz Associates, MTA, collection: author; and (B) Map of New York City Subway for Cityana exhibition by John Tauranac, executed by Michael Hertz Associates (map drawn by Nobuyuki Siraisi) (1978) MTA, collection: author. Details showing white-bridge interchanges from (C) 'Diagram of Lines' (1949) by Henry Beck, London Transport. Collection: author; (D) 'Diagram of Lines' (1977) by Paul Garbutt, London Transport. Collection: author; and 'Subway Map' (1979) by the Subway Map Committee chaired by John Tauranac, executed by Michael Hertz Associates (map drawn by Nobuyuki Siraisi), MTA, collection: author. NYC Subway Diagram © Metropolitan Transportation Authority. Used with permission.

Vignelli was able to create a minimalist diagram only by excluding those unsystematic details, while Tauranac embraced the details and his design was correspondingly complex. Tauranac highlighted minor errors of omission and commission in Vignelli's map, and panellist Peter Laundy objected that these did not warrant jettisoning the map:

> In listening to Mr Tauranac's explanation at first of what he found lacking in Mr Vignelli's map, I found there were a lot of things that he mentioned but each one of them, as I jotted them done, I said, 'Yes, but—'. Can't the thing that you find wrong be improved on the current map? Or can't it be a slight modification? (1:09:00)

In fact, the debate was a show-trial. MTA Marketing had already resolved to jettison the Vignelli map, and Tauranac had already resolved to replace it with a geographic map. He confirmed this many years later in an interview (Tauranac, 2009b: 0:8:34):

> Ovenden: 'So, hypothetically, then, at that stage, if the next edition of that map [Vignelli's] had put those geographical things back to where they should be, how much better or worse would it have been?'
> Tauranac: 'It wouldn't have made any difference'.
> Ovenden: 'I thought you might say that'.

However valid Tauranac's critique of the diagram, it did not provide the main impetus for dumping it. Lloyd (2022) has argued that the MTA changed the map mainly as a marketing exercise, an understanding already indicated by committee member Bronzaft (1981):

> This new transit map was unveiled in June 1979 […]. Whether or not it will prove successful in fulfilling the committee's goals of attracting the public to its transit system as well as giving riders a map they can use with some ease remains […].

As each mapmaker paternalistically considered his own method to be self-evidently the best, the debate made no appeal to popular opinion or objective usability. Indeed, the scientific study of the usability of transit maps barely existed and certainly had not reached its current maturity (Roberts, 2012). Apart from acknowledging Beck's design as 'the most clear map in the world' (Cooper Union, 1978: 0:4:10), Vignelli did not present it as an exemplar to be followed, but rather as another instance of applying the correct principles: removing unnecessary detail and organizing the map systematically on a grid. Just as the Vignelli map was created by one man's will, it was destroyed by another. Bronzaft (2010) recalled Tauranac's autocratic role:

> Susan Berman [Director of Marketing] and her predecessor just let John do what the fuck he pleased. They really never oversaw John. They let John do what he wanted.

The Vignelli Map Redux, 2008, 2012 *et seq.*

In 2008, at the invitation of *Men's Vogue* magazine, Vignelli worked with two members of Vignelli Associates, Yoshiki Waterhouse and Beatriz Cifuentes, to create an updated map. The new map used a visual language closely matching that employed by Vignelli and Charysyn in 1970–1972, but with some improvements. they also updated the color-coding scheme from the 1972 route-colouring to the 1979 trunk-colouring. A few years later, the MTA invited Vignelli Associates to create a digital version of the *Men's Vogue* map, for use in the new MTA Weekender website (Berg, 2021). The design was later also used for MTA's *Planned Work* 'maplets'. Vignelli Associates and, after Vignelli's death in 2014, Waterhouse Cifuentes Design have maintained the rigorous octilinear layout. In this respect, they may be said to have inherited an element of Beck's visual language that was brought over by Salomon in the 1950s.

The MTA Subway Diagram 2021 *et seq.*

In September 2021, the MTA started to display its pilot Customer Information Centres (CIC) in a handful of stations (Deighton, 2021; Dudley, 2021; MTA, 2021). The CIC comprises four maps pasted directly onto the wall: a local area street map; a geographic local bus map; a geographic city-wide subway and bus map; and a Subway Diagram (Figure 18). The latter seems to derive from maps developed by Waterhouse & Cifuentes, albeit with certain divergences. In any case, the map is octilinear, and therefore has Beck's visual language in its distant ancestry. The geographic subway map in the CIC owes nothing to Beck, nor indeed to the Tauranac Committee. Its thin lines that hug the topography are more redolent of the traditional style of bus maps than of subway maps.

Why did New York Jettison the Diagrammatic Map?

Why has New York City had a geographic transit map for almost half a century, when almost every major metro system in the world has a diagram? This puzzlement stems from two common beliefs: that the purpose of a transit map is *simply* to help riders to navigate the transit system; and the best kind of subway map is *always* a diagram. These beliefs are not always true.

The purpose of a transit map is what the publisher intends, not what the rider wants. During the mid-1970s, MTA Marketing took control of the new subway map from the TA's Public Information department. A representative of MTA Marketing attended the first National Transit Marketing Conference (1975) and the new thinking was later summarized by a co-sponsor of that conference, the Urban Mass Transit Administration (UMTA, 1979). Top of the list of aims for transit marketing was this:

> System maps should have these primary goals: to promote ridership in general and increase off-peak ridership, increase awareness of the transit system, improve job accessibility for the disadvantaged, promote tourist use of the system, reduce the costs of other transit information dissemination programs, and help improve transit's image.

The map's primary purpose was no longer to guide the rider. For example, adding green parks to the map was expected to make the city look more attractive, albeit at the cost of adding cognitive load to the map. This shift of policy drove the creation of the new subway map. Its seed was in Tauranac's *Seeing New York*, a detailed tourist guide to New York City for the visitor surge expected in the Bicentennial. It contained for the first time an official geographic map of the subway. That map formed the basis for the work of the Subway Map Committee, which in 1977 came under Tauranac's chair and hence the Marketing department. The development of the new map ran in

Figure 18. Photograph of the pilot Customer Information Center (CIC) (20th January 2022), MTA, photo: Reka Komoli. NYC Subway Diagram © Metropolitan Transportation Authority. Used with permission.

parallel with an intensive programme of posters, newspaper advertisements, and television advertisements, aimed at boosting off-peak ridership. The MTA's purpose in creating the new subway map was to sell the subway to potential riders; Tauranac's purpose in steering its creation was to produce a 'didactic' map that informed the map reader about the city as well as the subway.

Since 1979, an urban myth has developed that subway riders collectively rejected the Vignelli map. This claim was rebutted by Lloyd (2022) whose argument can be summarized as follows. First, riders were not given a choice between maps: whatever map was handed out at ticket booths, that was the map that riders had. Second, the Vignelli map was no more abstract than the diagrammatic subway maps of the preceding fifteen years, starting with Salomon's in 1958. Third, sales of merchandise imprinted with the Vignelli map were very strong, indicating that the public liked the map. Fourth, opinions about the subway published in local newspapers in the period 1972–1979 covered many issues but *not* the map: my own search found one letter criticizing the Vignelli map (Teague, 1974) and one praising it (Lietzmann, 1976).

A year after the new map came out, Treib (1980) was the first revisionist I have found who maintained that the Vignelli map was jettisoned because of its supposed unpopularity. Years later, I asked him about the source of that judgement. As far as he could recall, it was 'generally understood' that the map must have been rejected for this reason: 'public reaction could have caused the actions of the MTA, otherwise why would they change the map? There had to be reason for their action, some source for their information' (Treib, 2018). With no official explanation for the change, New Yorkers guessed the reason. When that guessed explanation started to circulate in journals and then books, it became established. And, if the Vignelli map had caused such a fuss just because it was a diagram, then it must have been the first diagram. Thus, the myth grew into a self-sustaining story: Vignelli's map was the first diagrammatic map, and subway riders rose up and overthrew it.

Building upon that myth, people ask: What is so peculiar about New York City that it cannot have a subway diagram? In fact, diagrammatic maps are as valid in New York City as anywhere else. The subway acquired a geographic map in the 1970s for specific historical reasons, which have been summarized by Lloyd (2022).[19] It subsequently acquired a diagrammatic map online in 2011 for specific technical reasons, to show weekend route changes for engineering works (Lloyd, 2012). The MTA (2021) is now piloting a diagrammatic map (Figure 19) alongside the current geographic map, recognizing that the two cartographic styles have different strengths and weaknesses. Beck's octilinear layout will likely continue to be used in one branch of the New York City Subway map for the foreseeable future, in parallel with a geographic map.

Figure 19. 'Subway Diagram' (21st September 2021), MTA, download (no longer online). NYC Subway Diagram © Metropolitan Transportation Authority. Used with permission.

Conclusions

We started with what seemed to be a straightforward question: what influence has Henry Beck had on the New York City Subway map? The answer turns out to be somewhat nuanced. The major line of transmission and development is through George Salomon, who explicitly imported the strict octilinear layout with concomitant features such as harmony and balance, as well as line minimalism and station minimalism (including a variant of the Beck tick mark). Those cartographic characteristics have ebbed and flowed in various redesigns of the subway map, but the octilinear layout persists in one branch of the MTA's map offerings.

The white-bridge symbolism, which Beck re-introduced in 1949 and Garbutt improved in 1964, was adopted into the subway map in 1979 but relinquished in 1998 and has not been seen since.

For a metaphor, consider gene-tracing programmes that provide crude pie-charts of where your genes are from. (Apparently, I'm 6% Viking.) As a figure of speech, we may say that the MTA's Subway Diagram has 10% Beck in its 'intellectual DNA' (via the Salomon lineage), but the geographic map now has nil (via the Tauranac lineage). The unqualified assertion that the Subway Diagram was 'inspired' by Beck is misleading because the largest part of its information design is concerned with the representation of individual routes, including local and express services, which Beck never had to address in London. This in no way belittles the achievement of Beck's visual language, but the complexity of the New York City Subway system requires a depth of cartographic resources that go beyond what Beck needed.

Notes

1. New York State has had three subways: in New York, NY, Rochester, NY, and Buffalo, NY. I will refer to the first as 'the New York *City* Subway' or just 'the subway'. The subway was first run by the Interborough Rapid Transit Company (IRT), the Brooklyn-Manhattan Transit (BMT), and the Independent City-Owned Subway System (IND). It was unified under the Board of Transportation (BoT) in 1940, which was superseded by the Transit Authority (TA) in 1953, which in turn came under a new parent organisation, the Metropolitan Transportation Authority (MTA), in 1968.
2. Terminology: I am using 'terminal', 'transfer', and 'rider' for New York, 'terminus', 'interchange', and 'passenger' for London.
3. The white bridge, first seen in anonymous maps issued by the UERL (Underground Electric Railways of London) in 1909, was not re-introduced by Beck until 1949 (Figure 17C), and therefore unknown to Stephen.
4. A 'route' is a path from one designated station to another; a 'service' is a provision of passenger trains on a route, and may be 'local' (stopping at all stations on the route) or 'express' (skipping some). A 'line' is a physical grouping of tracks that may encompass several routes and (if branched) several termini or terminals. A 'trunk' is a major line with branches at one or both ends.
5. Even this glosses over the complex service pattern of the 2nd Avenue Elevated.
6. The Hudson Tubes connected New York City with Jersey City under the River Hudson but were not considered part of the subway.
7. Searches made in online genealogical repositories.
8. Biographical information about George Salomon gleaned from the author's interviews with his widow Mathilde, and sons Frank and Richard Salomon.
9. Fortuitously, Salomon missed the redesign of the Underground map by Hans Schleger ('Zero') in late 1938.
10. D'Adamo was unaware of Weindorf's short-lived use of this concept on the IND in 1938.
11. Lloyd (2012) speculated that the 1967 New Routes map might have stemmed from Vignelli's earlier involvement with the Transit Authority in 1966 (Blake, 1968). That speculation was refuted by the late Joseph D. Korman's discovery of the 1961 map, which predated Vignelli's arrival in New York and the founding of Unimark International, Inc. in 1965.
12. Stated by Charysyn (2011). Corroborated by mistakes in the 1969 map, which were propagated into the 1972 map, and not corrected until the design was reworked from scratch by Vignelli, Waterhouse, and Cifuentes in 2008. For example, the 1969 map incorrectly placed the bend in the Pelham Bay Park line at Morrison Avenue, and the 1972 map followed suite. It is not until the 2008 redesign that the bend was correctly moved south to Whitlock Avenue.
13. In Beck's words: 'Looking at the old map of the Underground railways, it occurred to me that it might be possible to tidy it up by straightening the lines, experimenting with diagonals and evening out the distance between stations', quote by Garland (1994: 17).
14. I omit São Paulo's metro map, in light of Pezzin's (2013) contention that the original map concept predated Unimark's involvement.
15. 'Ur-' is a standard prefix indicating an original or primordial. So the ur-map is the first in this series, and had no predecessor.
16. It was reported only by *The Westsider*, a local paper in Manhattan (4th May), the London *Times*, (8th May) and the *New Yorker* (24th July).
17. Although his wording hints at transmission and development, Vignelli never followed through with such a claim. He seems rather to have been attributing priority rather than paternity to Beck.
18. References are to the Cooper Union digital copy of the analogue tape. I do not use Standards Manual's published transcription in 2021 as it is inaccurate.
19. As the MTA was silent on why it jettisoned the Vignelli map, others claimed the credit. Arline Bronzaft's claim as 'map-slayer' has gained some traction but contradicts what few records we have. First, Frederick Wilkinson, who convened the Subway Map Committee and chaired it till the end of 1976, displayed a geographic subway map as early April 1975 (Wilkinson, 1975a), and instigated the Committee in July (Wilkinson, 1975b), while Bronzaft first attended in November (Wilkinson, 1975c). This defeats Bronzaft's claim to be instigator of the committee. Second, the geographic map that formed the foundation of the eventual published map of 1979 began life in the *Seeing New York* project, 1974 to 1976, again preceding Bronzaft's involvement. Third, Tauranac, who chaired the committee in its latter years and steered the development of the map, never read Bronzaft *et al.*'s (1976) report (Tauranac, 2009a). To be sure, Bronzaft contributed to discussions alongside the other twelve members of the committee, but there is no evidence that she played a decisive role.

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