Digitising Schematic Maps
Recreating or reinventing history?
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Abstract—Historic schematic maps are well-suited to
digitisation using vector graphic software, and this can assist in
the interpretation and understanding of unpublished or lost
designs. Provided that the potential for anachronisms is fully
understood, it is argued that such exercises can provide valuable
insights into this domain.

Keywords—schematic maps; vector graphics; design
investigations

I. INTRODUCTION

A researcher commencing investigation into the history of
schematic maps will soon discover that the available published
versions comprise a very incomplete record of the development
of the genre. Countless prototypes remain unpublished, and
there are many promising releases that might have benefited
considerably from further development, but were withdrawn
early before refinements could be applied. Worst of all, for
some published designs, all printed copies of have been lost so
that, for example, only tantalising appearances in photographs
demonstrate their existence.

Mapping is an inherently visual medium. For example, the
undoubted success of Henry Beck’s 1933 London Underground
schematic [2] must in part be due to its visual organisation and
impact, providing a uniquely effective graphical device for
comprehending and understanding the structure of the network
[4]. In the absence of pictorial representations, only a partial
evaluation is therefore possible of the viability and potential of
the unimplemented or lost elements of the historical jigsaw.

Schematic maps are usually straightforward to create using
vector graphics software. Hence it is possible to implement and
evaluate various lost or unpublished designs from drawings
and photographs, and also to reconstruct published versions
with a view to investigating the consequences of alternative
design decisions that might have been applied to them.

II. BENEFITS OF DIGITAL RECREATION

In general, digitising a map forces an attention to detail to
its design and construction that would not usually be attained in
the normal course of merely inspecting it visually. Prototype
maps are sometimes rejected for political rather than practical
reasons, and an attempt at implementing these in the form of
their intended end-products can enable an evaluation of their
viability that would not otherwise be possible. For example, the
demise of Henry Beck’s London Transport commission co-
occurs with a deteriorating relationship, in the late 1950s,
between himself and the London Transport Publicity Officer
[2, 4]. Fig. 1 shows a section from one of Beck’s rejected
prototypes, and an attempt to implement this has revealed a
number of problems that hitherto have not been reported.

Going beyond drawings, it is possible to identify written
specifications and proposals for designs that, for various
reasons, were never implemented. Fig. 2 shows a section from
George Salomon’s New York City Subway diagram of 1958,
but his original suggestion was for a colour-coded design that
might have had considerably more utility [5], and this can
easily be investigated. Going further, it is possible to explore
ideas and concepts that might have been rejected prematurely,
and are difficult to evaluate because of the co-existence of less
satisfactory features. One example of this is Henry Beck’s
experiment with 60° diagonals as a means to save space [2, 4].
The design only survived for one issue (Fig. 3) but its potential
can be explored via speculative reworkings.

III. PITFALLS OF DIGITAL RECREATION

Digitising a historic map will result in many anachronisms
and it is essential that these are understood by observers. Some
can be minimised with close attention to the original. For
example, hand-implemented curves are subtle and can be very
difficult (but not impossible) to mimic via Bézier vectors.
Much harder to address is the inevitable variability inherent in

1. Henry Beck continued designing maps in the early 1960s even after London Transport ceased to employ him. Amongst his most ingenious proposals
was a straight line trajectory for the under-construction Victoria Line (illegible) [2]. However, an attempt to digitise his drawing revealed that the diagonal
angle of this was 40° rather than the standard one of 45°. Correcting this ‘narrow’ central London, with adverse consequences for station name
placement. Beck’s proposal was effectively unpublishable without comprehensive reworking, or else the breaking of standardised design rules [4].

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the design and print process, such as imprecise stroke width and unreliable print registration. A digital reconstruction of a map, ink-jet printed, will be more regular and exact than could have been possible even thirty years ago – the first digital London Underground map was issued in 1987 [3].

The major challenge in digitising a map is implementing the lettering. Hand-drawn characters vary in compactness, form and spacing (Fig. 4), and even if this approximates a known typeface, substituting this for a computer font is not entirely satisfactory, with a far cleaner result than would have been possible historically. Even when a design has been typeset, and a computer version of the exact same typeface is available, obsolete print technology results in far more variability than digital reproduction today. For a published map, the extreme solution would be to trace every single letter individually, but it may be argued that this imprecision would look out of place in the context of the exactness of other aspects of the digitised design, such as perfect straight lines of constant stroke width. For implementing a prototype map, with no print version at all for guidance, introducing artificial speculative variability into the lettering would be even harder to justify.

Overall, digital recreations of historic maps can only be representative rather than authentic, but provided that people are fully aware of the necessary compromises and resulting anachronisms, then this should not be regarded as misleading per se. It is suggested here that the potential insights outweigh the costs. Furthermore, it could be argued that the vagaries of the historic production process mask the ingenuity of the original designs themselves, and digital recreation, even of published well-known easily-available versions, enables them to stand beside and withstand comparison to modern-day equivalents in a way that would otherwise not be possible.

REFERENCES