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Case Study: On Broadway

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4. Case Study

On Broadway

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Modern writers, painters, photographers, filmmakers and digital artists have created many fascinating representations of city life. Paintings of Parisian boulevards and cafés by Pissarro and Renoir, photomontages by Berlin Dada artists, *Spider-Man* comics by Stan Lee and Steve Ditko, *Broadway Boogie-Woogie* by Piet Mondrian and *Playtime* by Jacques Tati are some of the classic examples of artists encountering the city. Today, a city 'talks' to us in data. Many cities make data sets available and sponsor hackathons to encourage the creation of useful apps using their data. For example, the NYC Open Data website, sponsored by the NYC Mayor's Office, offers over 1,200 data sets covering everything from the trees in the city to bike data. On top of that, locals and tourists share massive amounts of geo-coded visual media using Twitter, Instagram and other networks. Services such as Foursquare tell us where people go and what kind of venues they frequent. At the start of a new Cultural Analytics project, Daniel Goddemeyer, Moritz Stefaner, Dominikus Baur and Lev Manovich[1] asked themselves the following questions: How can we represent the 21st century using such rich data and image sources? Is there a different way to visualize the city besides graphs, numbers or maps?

The result of their explorations is *On Broadway*: a visually-rich, image-centric *interface* without maps and where numbers play only a secondary role.

Like a spine in a human body, Broadway runs through the middle of Manhattan Island curving along its way. In order to capture the activities nearby, a slightly wider area than the street itself was included. To define this area, points were selected at 30-metre intervals going through the centre of Broadway, and 100-metre-wide rectangles centred on every point were defined (see Figure 4.2). The result is a spin-like shape that is 21,390 metres (13.5 miles) long and 100 metres wide.

This project's attempt to make a combination of a variety of data sets visible within the same visualization can be seen as an example of 'wide data'. The data was collected from five main sources: Instagram, Twitter,

1 The team's previous work includes Selfiecity: selfiecity.net.

Fig. 4.1: On Broadway display in the New York Public Library (NYPL)

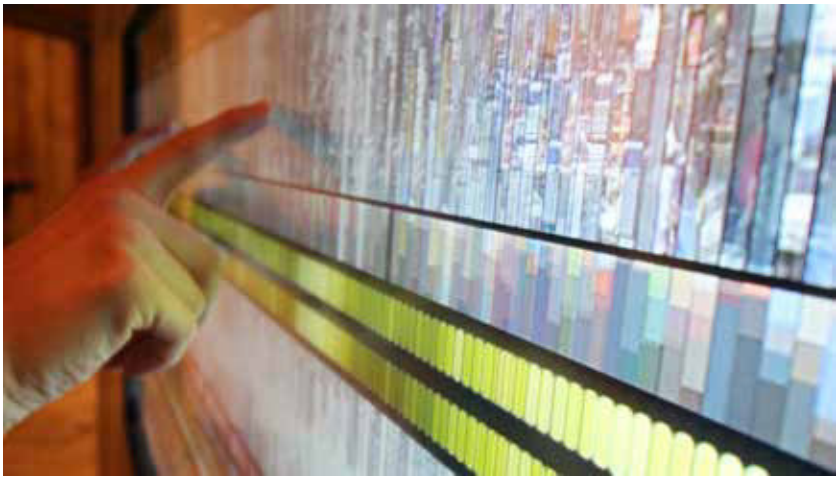
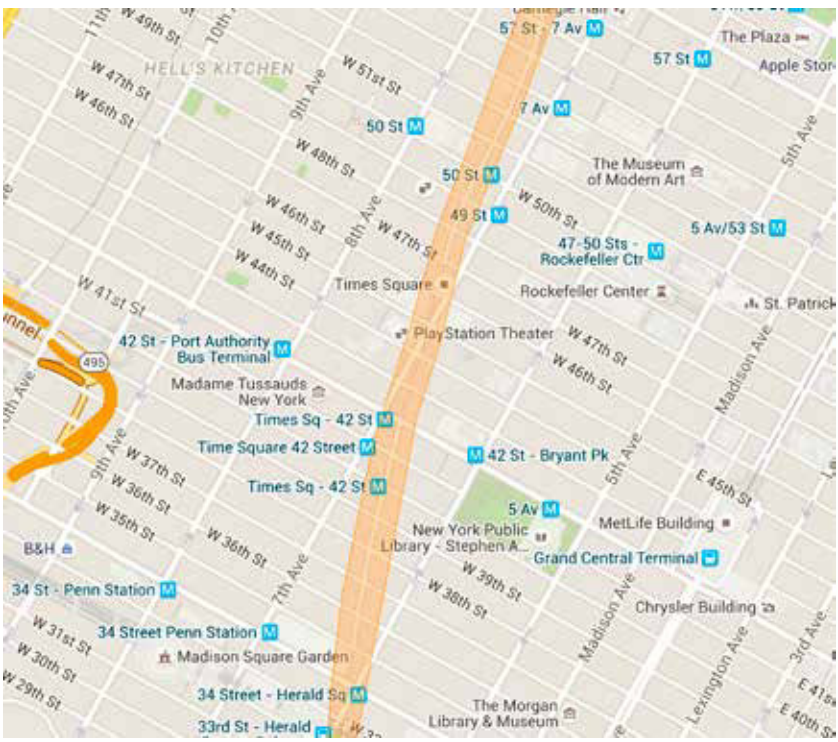


Fig. 4.2: Close-up showing the width of the area centred on Broadway that was used as a data filter

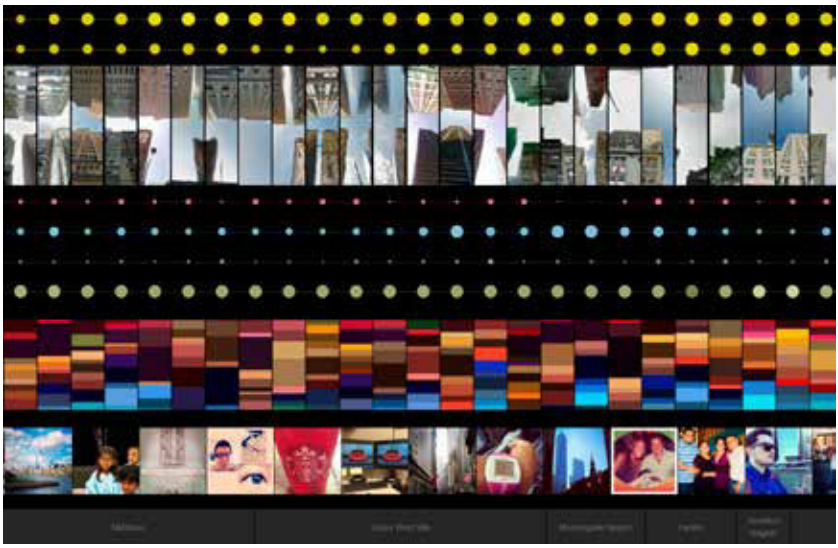


Foursquare, Taxi pick-up and drop-off data and census data from the American Community Service. Using Gnip, a social media monitoring service, all geo-coded Instagram images publicly shared in the New York City area between 26 February and 3 August 2014 were downloaded. This data set contained 10,624,543 images out of which 661,809 are from the Broadway area used for the project. Since the *On Broadway* project is part of the Twitter Data Grant awarded to the Software Studies Initiative, the artists received all publicly shared tweets with images around the world between 2011 and 2014. This data set was filtered, leaving only tweets shared inside the Broadway area during the same time period as was used for Instagram (158 days in 2014). Data from Foursquare could be obtained using its own API. With this service 8,527,198 check-ins along Broadway between March 2009 and March 2014 were downloaded. Chris Whong was able to obtain taxi pick-up and drop-off data from NYC Taxi and Limousine Commission (TLC). Filtering the data set containing the 140 million trips made in Manhattan in 2013 using Broadway coordinates left him with 10,077,789 drop-off and 12,391,809 pick-up locations, a total of 22 million trips. Finally, for the economic indicators, the latest published data from American Community Service (ACS, 2013) was used. It is a yearly survey of the US Census Bureau's sample of the US population. ACS reports the data summarized by census tracks. These are areas that are much larger than the 30 x 100 metre rectangles that are used to define the Broadway area (the 713 selected rectangles cross 73 larger US Census tracks). Given this discrepancy, any Census indicator summarized per track will only approximately apply to the smaller Broadway parts. That is why only a single economic indicator from the estimated average household income is used. This data is shown as one of the layers in the application.

The Visualization

The artwork that directly inspired the project is *Every Building on the Sunset Strip* by Edward Ruscha (1996). It is an artist book that unfolds to 25 feet (8.33 metres) to show continuous photographic views of both sides of a 1.5-mile section of Sunset Boulevard. The interactive installation and Web application represents life in the 21st century city through a compilation of images and data collected along the thirteen miles of Broadway that span Manhattan. The project proposes a new visual metaphor for thinking about the city: a vertical stack of image and data layers created

Fig. 4.3: A close-up of the installation screen showing a part of Greenwich Village area



from the activities and media shared by hundreds of thousands of people. There are thirteen such layers in the project, all aligned to locations along Broadway. As you move along the street, you see a selection of Instagram photos from each area, left, right and top Google Street View images and extracted top colours from these image sources. In addition, the visualization shows the average numbers of taxi pick-ups and drop-offs, Twitter posts with images, and average family income for the parts of the city crossed by Broadway.

Moritz Stefaner comments on how we were interested in how we could enable seamless navigation between high-level condensed views of the city and zoomed in, anecdotal data. In the exploratory phase of the project, we experimented a lot with different remixes and montages of the many data and image materials we had available. The final application reflects this enormous data diversity and richness: from taxi rides and median income to colour palettes and Twitter messages.

Daniel Goddemeyer draws attention to the fact that we were determined not to use a conventional map view and instead focused on creating a new multi-layered interaction paradigm: 'The use of Google Street View images allows users to quickly look at urban physical context of every data point and Instagram image. In this way we are juxtaposing the digital with the physical.'

Goals

With *On Broadway*, the artists would like to raise awareness of the fact that more and more data about people is produced and collected, not only visibly, but also through subtle and invisible practices. By showing the immense amounts of available data within a single visual interface an experience of estrangement is pursued, hopefully leaving the spectator with food for thought.

During the production of this book the team has continued working on the analysis of all the data assembled for the project. The results of this research will be published as academic articles and also as blog posts on www.softwarestudies.com.