MASTER

Little downton
repairing Boston's historic city fabric

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Repairing Boston’s Historic City Fabric

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Looking back on a whole year of graduating, lots of brilliant memories remain. From all the international dinners we have had, to the awesome study trip to New York and Boston; the graduation studio has been a blast.

Throughout the year the studio has been very supportive in reaching this final level of product and design. Of course most of all I would like to thank Pieter van Wesemaal, Christian Rapp and Franz Ziegler in letting me reach my full potential and guiding me through this process all year long.

Lastly I would like to thank all of my family and friends for standing by me all year and offering me support and relaxation when I needed it the most.

Thank you all.

Nik Snellaars
Fig 0.01 Early Urban Research Pasta Model
1. A BRIEF HISTORY OF BOSTON

1.1 Morphology

Boston was established in 1630 on the Shawmut Peninsula, a small land form extending into the Boston Harbour and connected to the mainland by a narrow neck. The neck was formed by the Back Bay and South Bay. The Back Bay consisted of the tidal flats of the Charles River and was divided into two parts by the Gravelly point. On the other side of the South bay the Dorchester Peninsula was located in the area that is now known as South Boston. The first map also shows that Charlestown also used to be a peninsula and that the region contains multiple islands.

The map of 1795 shows the wharfring out process on the peninsula and the neck. Especially the Long Wharf is clearly visible. On the North side of the peninsula a mill dam was realised in the existing cove to create Mill Pond and a bridge was added, connecting to Charlestown.

By the time of the 1852 map, Boston flourished as a seaport due to international trade, the neck had been widened and the shoreline was filled with wharves and warehouses. The South Bay was cut off by the construction of South bridge. The Mill Pond had been filled, railway land was made in the North and a vast amount of bridges crossed the Charles River.

Fig 1.01 Landfill Maps of Boston 1630-2013
The Gravelly point already divided the Back Bay into two parts; the new Mill Dam project used this geographical advantage to construct two tidal basins for the Boston Water Power Company; a small Full Basin and a bigger Receiving Basin. On the map of 1852 one can already see the railroads crossing the receiving basin in the Back Bay which obstructed the water flow and were the first step into the total filling of the Back Bay.

In the 1880 map the Back Bay is filled with housing projects, the city cove is filled by the construction of Atlantic Avenue. The muddy River and the Back Bay fens area are still a marsh but plans are being made to create the first park of the Emerald Necklace Park System.

By 1916 most of downtown Boston was filled. The new major landfill projects occurred in South Boston. At the eastern tip of the original Dorchester Peninsula, the State created a huge dry-dock. The first part of marine park was created. Also the first Charles River Dam was constructed and the first part of the esplanade had been filled.

By 1934 the filling of the East Boston Flats begun as a port development and later on was used for the creation of the Boston Airport. The Charles River filling had widened the Esplanade. The Airport was enlarged in 1950 with the filling of hundreds of acres of flats in East Boston.

In South Boston the U.S. Navy had created new land and piers.

By 1993 the shoreline of Boston reached its present extent. Since 1950 more land had been created for the airport, South Boston flats were filled for piers and so was the South Bay. On the Charles River more land had been created to compensate the construction of the Storrow Drive along the same river.

The final combined map shows the landfilling during the different time periods in the area of Boston. It shows the transformation from the tidal flats that once formed the peninsula to the extended shoreline of the metropolitan area. The overlay of the maps give a good view of the different steps that were taken to fill the bigger tidal flats. These were not filled at once, but over time, as part of a gradually changing and growing city.

A major influence in the landfilling were economic interests and infrastructural projects. Wharves were made, docks were filled in, and new wharves were created again. This wharfi  ng out process continued during the ages of growth and formed the shoreline of Boston. With the growing amount of inhabitants of Boston, this harbour land was needed to provide space for the city.
Fig 1.02 Combined Morphology Boston
1. A BRIEF HISTORY OF BOSTON

1.2 Boston’s City Development

The two maps of the eighteenth century on the right show the street layout and first building blocks in the early development of the city of Boston. The neck between Boston and the mainland is clearly visible, functioning as an entrance to the city but also as a strategic defense mechanism, visible in the walls at the bottom of the map. Beacon Hill, the Downtown area and Fort Point still have their original shape, which would drastically change in the years to come. Along the direction of the neck the birth of Hanover Street can be seen. Later on this will become an important factor in the design process.

As you can see in the maps from the 1800s, the street layout changed a lot, as the city was expanding rapidly. The downtown area, including North End, West End and the area around Scollay square (which later became the Government center) all took shape during the beginning of this century. The Boston Common resided in the area it still does today. The second half of the century includes the filling of the Back Bay and the expansion of the South Boston Harbour area. During this period, train tracks were laid out as well, connecting various parts of the city and across the border. The Emerald Necklace Park System project was also issued in this period.
No drastic layout changes took place in the beginning of the twentieth century around the city center of Boston, however the city kept on expanding. Major additions included the layout changes around the Fort Point Channel, the Western Waterfront including the Charles River Esplanade, and parts of the Emerald Necklace. Various new bridges were also constructed in the early twentieth century. The second half of the century saw some drastic changes, which are visible in the final map.

After the Second World War, major parts of the city were redeveloped, or in other words, demolished. The area which used to be Scollay square was replaced by the new Government center including the new City Hall. West End was removed completely to be replaced by post-war housing. The business district saw a big increase in high-rise buildings.

The Central Artery, the I-93 freeway, constructed during the 1950's had a major impact on the livability of Downtown Boston, and was destroyed only years later. This resulted in an underground freeway in the beginning of the 21st century. In the freed urban space above ground the Rose Fitzgerald Kennedy Greenway was created.
1. A BRIEF HISTORY OF BOSTON

1.3 The Big Dig

In the middle of the 1900’s, Boston’s status as a major economic center was faltering. The city had been subject to several destructive transportation projects and was “depressed by lack of investment.” John Hynes, who was elected mayor in 1950, set projects into motion, that intended to re-establish Boston as a premier city, including the construction of the Massachusetts Turnpike, the Prudential Center (Boston’s first skyscraper), and the new Central Artery. The artery was intended to alleviate the traffic that packed the roads of city, and serve as part of an “integrated highway network resembling a gigantic wheel; its hub the Central Artery and the proposed Inner Belt Route.” Like many of the highway projects of its day it claimed eminent domain and destroyed over 100 residences and 900 businesses in its path. From the beginning of its construction residents disliked the elevated green highway. The artery physically separated North End from the rest of the city (mostly Downtown), and furthermore it was plagued by traffic issues. It featured 34 poorly designed entrance and exit ramps, accounting for more mileage than the artery itself, that resulted in an accident rate four times the national average. By 1990, traffic jams on the artery were reaching 10 hours per day and jams of 16 hours were predicted by 2010. This and other destructive roadway projects produced a grass roots “people before highways” movement in Boston. Frederick Salvucci, an advocate of efficiency and public transportation who said “highways... destroy something far more difficult to replace,” was well aware of the destructive and isolating nature of construction projects in Boston. As the director of the East Boston City Hall he had experienced first-hand several rounds of destruction of parklands by the city to build and expand Logan Airport. He “was committed to a coherent urban transportation planning idea... rooted in the importance of a modern, clean, safe, efficient public transportation system.” In 1975 Michael Dukakis, a leader of the “people before highways” movement, was elected governor and instated Salvucci as the head of the Massachusetts Transit Authority. In this role he began the plan that would become the Big Dig, directed the reconstruction and expansion of the Red Line, and rebuilt the Orange Line, two train lines that are still in use today.

Sources
3) Ibid, p9
5) The Big Dig. p9

Fig 1.05 Fragment of ‘the Big Dig’ project
The Big Dig Project:

1995: Ted Williams Tunnel
1999: Storrow Drive Connector Tunnel and Bridge
2003: I-90 Extension, connecting to the Ted Williams Tunnel
2003: I-93 Thomas P. O’Neill Jr. Tunnel,
    connecting I-93 to Leonard P. Zakim Bunker Hill Bridge
1. A BRIEF HISTORY OF BOSTON

1.4 The Rose Fitzgerald Kennedy Greenway

After decades of plans for a big thoroughfare in Downtown Boston the first serious plans were made in the 1940’s. A “highway in the skies” that would reduce the traffic jams by elevating traffic above street level was proposed. In 1948 the ‘Master Highway plan’ created by Governor Bradford was adopted and renamed to the ‘Central Artery’.

The 1948 Master Highway plan included the construction of a tunnel to East Boston and a system of radial highways. The system existed of two beltways around Boston – routes 128 and 495 – and the extension of I-95 Northward into the city to be intercepted by an inner belt highway. The I-95 extension and the inner belt would eventually be stopped by citizen’s opposition, but the first segment of the inner belt – the Central Artery - was already completed.³

After seemingly endless delays, construction contracts for the Central Artery were signed in 1951. Due to the construction of the elevated Central Artery more than 10,000 residents got displaced and about 1,000 buildings were demolished. The other delays were caused by a steel strike, rats, disputes over property rights, and objections from residents of the soon-to-be-ravaged neighbourhoods of Chinatown and the historic North End. Finally, the artery opened in 1959; but by that time it was already well on its way to be outdated. Since the opening of the artery,

The problems of the elevated central artery were:

1. Traffic stalled and crawled for more than 10 hours a day because of the more than 200,000 motorist users a day;
2. The accident rate on the highway was four times the national average for comparable urban interstates;
3. Problems of the two tunnels under Boston Harbor between downtown Boston and Boston’s Logan International Airport added to the delays and the frustration of travelers;
4. Annual costs to motorists was estimated at $500 million due to higher accident rates, wasted fuel from idling installed traffic and consequences of major delays;

Sources
5. The elevated highway cut off Boston’s North End and waterfront neighbourhoods from Downtown, limiting their access and ability to contribute to the city’s businesses;

6. Local businesses arguably suffered economic losses due to limited access;

7. Major problems existed with the numerous numbers of entrances and exits, turns that were too tight, ramps without merging lanes, the increasing size of vehicle loads, and safety concerns about roads built before strict federal interstate standards were developed;

8. Environmental and aesthetic concerns mounted as the roads aged and deteriorated with the ever-increasing vehicle loads;

9. The projections looked like that unless major improvements to the Central Artery and the harbour crossings were made, Boston could expect the traffic to inch along for at least 16 hours a day by 2010;

10. On-going traffic jams and/or construction projects continued to impact the economy, environment and the quality-of-life of the citizens of Boston and New England.
dramatic increases in car ownership and usage combined with new commuter patterns filled it with bumper-to-bumper traffic.³

Hardly a decade after its opening, planners began to dream of tearing down the elevated Central Artery, and replacing it with a tunnel between the North and South Stations. Because there was no space to widen the elevated highway or build new express ways through the city, the sinking of the artery was thought of the best solution. This idea evolved into a serious but never implemented proposal in the 1970's. Later on in the 1980's Massachusetts sought federal funds to widen the Central Artery, burying it underground, and to build a third tunnel under the Boston Harbour to Logan Airport.³

One Major problem with the elevated Central Artery is that it is essentially a 1950’s-style “Collector distributor road” designed for traffic within the city, while in fact it had to serve as a 1980’s interstate highway.²

All these problems are supposed to be fixed with the New Central Artery project. During the design of the New Central Artery the officials made clear that the New Central Artery would not solve all the traffic jams and there will still be a morning and an afternoon rush hour. But the traffic jams will not be anywhere near as bad as it would be if the work was not done. Salvucci warns that “if we all say, ‘whoopee’, let’s go back to a 1950’s mentality and all drive to work. We’re going to have a gridlock.”²
Officials actually hoped that people would learn well-functioning habits on using public transportation and avoid driving into town unless they really have to.² The New Central Artery project was approved in 1987.

The Boston Redevelopment Authority was examining schemes for the twenty-seven acres of city land that would become available when the artery was buried beneath the surface - and a debate began about the best way to reconnect the neighbourhoods divided by the artery. This debate continues as the “Big Dig” progresses as the nation’s largest public works project to date.² There were a lot of different ideas for the area, but finally they created more than 45 parks and open plazas in collaboration with the shoreline restoration. This major restoration came to be an important component of the overall construction project.

After the central artery was completed in January 2005 the city gained substantial traffic-flow improvements. According to the MTA the project has trimmed the average trip through the center of Boston from 19.5 minutes to 2.8 minutes. Greenhouse gas emissions have been lowered in the city and travel times to and from Logan International Airport have greatly decreased. The project had rejoined the neighbourhoods that were separated by the Old Central Artery express-way, the economic impact of the project has pumped new life into the heart of downtown Boston. It enhanced the quality of life for Boston’s residents, businesses and visitors.
2. BOULEVARDS & BARRIERS

2.1 Defining the Greenway

An essay on boulevard street design, applied to the Greenway

‘Can Boston’s Rose Fitzgerald Kennedy Greenway be categorised as a boulevard type as defined in ‘The Boulevard Book’ (2002) by Allan Jacobs?’

INTRODUCTION

Cities constantly have to adapt to the rising amount of street users, whether we are talking about cars, bicycles or pedestrians; they all need their own space. When cities grow, so does the amount of traffic and each city deals with this problem on its own. In Boston’s case they literally tried to lift the problem from the ground level in the form of an elevated highway, resulting in a very much disliked wall in the city. Later, when they tore it down, it still left its mark in the city, leaving a complicated greenway. By using Allan Jacobs’ ‘The Boulevard Book’. An attempt is made to categorise the different parts of the Rose Fitzgerald Kennedy Greenway. By dissecting this complicated route and defining its nature, some knowledge might be gained for possible future developments. So the first step in improving the greenway is defining its current state of being. Resulting in the following research question: ‘Can Boston’s Rose Fitzgerald Kennedy Greenway be categorised as a boulevard type as defined in ‘The Boulevard Book’ (2002) by Allan Jacobs?’

THE ROSE FITZGERALD KENNEDY GREENWAY

In the middle of the 19th century Boston’s status as a major economic center was faltering. The city had been subject to several destructive transportation projects and was “depressed by lack of investment.” John Hynes, who was elected mayor in 1950, set projects into motion, that intended to re-establish Boston as a premier city, including the construction of the Massachusetts Turnpike, the Prudential Center (Boston’s first skyscraper), and the new Central Artery. The artery was intended to alleviate the traffic that packed the roads of the city, and serve as part of an ‘integrated highway network’. Like many of the highway projects of its day it claimed eminent domain and destroyed over 100 residences and 900 businesses in its path. From the beginning of its construction residents disliked the elevated green highway. The artery physically separated the North End District from the rest of the city (mostly Downtown), and above all it was plagued by traffic issues. It featured 34 poorly designed entrance and exit ramps, accounting for more mileage than the artery itself, which resulted in an accident rate four times the national average. By 1990, traffic jams on the artery were reaching 10 hours per day and jams of 16 hours were predicted by 2010. This and other destructive roadway projects produced a grass roots “people before highways” movement in Boston. Led by Frederick Salvucci, after a new governor was instated in 1975, they started a plan that would eventually become known as the Big Dig. Part of this enormous project was relocating the elevated highway underground.
Fig 2.01 3D View Boston Sketch
When the greenway part of the Big Dig was realised in 2006 lots of prime urban space was created right in the city center. And instead of filling it up with more typical office towers, this space was used to reconnect some of Boston’s oldest and most vibrant neighbourhoods by providing additional parks and gardens. This Rose Fitzgerald Kennedy Greenway was finished by the end of 2008. It serves as a linear urban park, combining pedestrian area and traffic entrances to the central artery below. Today the greenway still acts as a barrier in the city, although it is not a physical one anymore. The combination of its historical footprint, its central artery entrances, medians and local and through traffic lanes results in an ambivalent space between districts. So it has improved, but it is still far from an accomplished design.

UNDEFINED SPACE
In my opinion a well-functioning city should guide people through it in a natural way, without harshly interrupting the travel route for either the cars, pedestrians, or any user for that matter. The old elevated highway created a route for itself by destroying everything that came in its way and literally breaking off parts of buildings to reach its destination. After tearing it down it left a strange curved street, which had to deal with many kinds and different directions of traffic. It deals with various lanes of slow and fast traffic on a three-dimensional level, while it tries to give back some green space to the city as well.

These multi-layered traffic problems of the greenway have resulted in an unclear travel space for all the users on ground level. Once you enter the I-93 Central Artery through one of the entrances on the greenway you can easily get to Charlestown or Lower Boston. So the tunnels actually function the way they should. However above ground the central artery has a huge effect on the design and experience of the public space.
Fig 2.03 Section Unter den Linden
One could for example even wonder if the created green space is actually nice to stroll in, while being surrounded by an endless amount of cars.

The issue at hand however is the question of how this ambivalent space could be defined. For defining it could be the first step in making it function better. To be able to understand and possibly act upon this undefined space some deeper knowledge of street design seems necessary. The particular type of street that is used in Boston’s city center seems most reminiscent of a boulevard type of design.

In 2002 urban designer and city planner Allan Jacobs published ‘The Boulevard Book’ on different types of well-functioning boulevards around the world. He categorised them in different ways and tried to pinpoint the qualities that makes them function so well. The greenway combines both vehicle and pedestrian traffic and therefore fits the boulevard design type well. However this way of street design is currently out of favor because of safety concerns and the devotion to vehicle-only roads, but Jacobs’ book tries to show its contemporary significance anyway. Using his categorising methods and some well-known case-studies the Rose Fitzgerald Kennedy Greenway will be tried to be defined.

DEFINING A BOULEVARD
There are all kinds of streets which can be called boulevards, often to make them seem more special than they actually are. However there are some very successful examples of well-designed boulevards. We all know the famous ones Haussmann created in Paris. His ‘percées’, breakthroughs in the city fabric, created important new traffic routes and sightlines in between strategic locations. He also thought that the people of Paris should have more green space in their city and so he designed green zones into his streets, creating what we know today as a boulevard.
Fig 2.05 Section Unter den Linden
In Jacobs’ book three basic types of boulevards are defined. One type, which can be called the ‘Center Median Boulevard’, holds a large green median in its middle, surrounded by roadways and sidewalks on either side. The center median can sometimes be used by pedestrians, but it is not a street or an actual road. Often the median is planted with grass, trees and bushes.

The second type of boulevard, which can be called ‘Boulevard Street’, contains a wide road, accompanied by broad tree-lined sidewalks. This particular type holds wide sidewalks for pedestrians while often being surrounded by well-designed buildings.

The third and last type of boulevard is very different from the others. It actually separates through traffic from local traffic by creating a ‘Multiway Boulevard’. The four lanes in the middle are specifically designed for through traffic, while the side lanes guide local traffic. It uses two green zones to separate the two types from one another, while creating pedestrian zones for both travel and recreational purposes.

The interesting thing about Multiway Boulevards is that in their unique way of dealing with through and local traffic they actually portray the complicated nature of modern city traffic. A section of typical boulevards can show how a city deals with its large scale traffic issues. This can best be done in a small scale diagram. To broaden the scope, boulevards from multiple countries were chosen to be compared to sections of the Rose Fitzgerald Kennedy Greenway.

CASE STUDIES
A well-known boulevard in Germany is Unter den Linden in Berlin. The boulevard connects Brandenburger Tor to Alexanderplatz and is famous for being a place where the more wealthy people from around the world gather. Even in the old days the bourgeoisie used Unter den Linden to show off their wealth. The presence of a center median with a pedestrian promenade accompanied by trees and benches, flanked by roadways and sidewalks makes Unter den Linden belong to the Center Median type of boulevard types.
Fig 2.07 Section Passeig de Gràcia
For the second case study why not include one of the most famous boulevards of all time? Dating back to the end of the 18th century Avenue des Champs-Élysées in Paris gained fame through its close distance to the Arc de Triomphe and its eventual luxury status. The typical tree lines and its street width make categorising this boulevard pretty easy. With its wide central road, creating four car lanes and its broad tree-lined sidewalks for pedestrians the Champs-Élysées fits right into the second category of boulevard types, Boulevard Streets.

After Berlin and Paris, Barcelona’s Passeig de Gràcia seems more than suitable to be the third and last case study. This boulevard connects Placa de Catalunya, a major public square, to the old Gothic Quarter and the Ramblas. It holds Antoni Gaudí’s famous buildings Casa Milà and Casa Battló and other examples of Catalan Modernism, the Catalan answer to Art Nouveau. Passeig de Gràcia’s traffic is split into local traffic and through traffic. Buses and cars move in both directions and its wide sidewalks with lots of benches and trees make this boulevard a pleasant place to wander through. These characteristics make this boulevard fit right into the third category of boulevard types; Multiway Boulevards.

BOULEVARD CHARACTERISTICS

After explaining how the Rose Fitzgerald Kennedy Greenway came to be and how Allan Jacobs categorises boulevard types, resulting in multiple relevant case-studies, they can be compared to each other. Then again if a comparison should be made with its European counterparts, sections would have to be made at multiple points along the route, to grasp some of the greenway’s complexity. This results in two sections at typical boardwalk locations and two sections at places where entrances to the central artery below lie. Together they will form an overview of the greenway’s street design.

Before we come to this comparison however, a top view of the Rose Fitzgerald Kennedy Greenway can make multiple non-boulevard characteristics become evident. Firstly, its curved shape is far from being a traditional example of a boulevard. Secondly in some places the median seems to be rudely interrupted by the entrances to the central artery below. Third and lastly it does not seem to connect famous buildings or places to each other as much as it is a convenient route through the city for both cars and pedestrians.

However in my opinion a boulevard is more than its destination or the way it deals with occasional entrances to the traffic level below. Because what makes a boulevard such a beloved street design is how all these facets of the street work together in becoming the best street possible for both cars and pedestrians. Even the shown case studies are not perfect boulevards, because they have to deal with so many different regulations and people involved, from inhabitants to public transport offices. The traffic on Passeig
de Gràcia for example moves a bit too fast, averaging almost 32 kilometers per hour, and the way the access lanes are designed forces drivers to use the side roads to make a turn. This results in more local traffic on the side roads and a less enjoyable boulevard experience for all involved. Still Passeig de Gràcia shows lots of other great characteristics, that more than make up for some small traffic issues, because the detailed level of the colourful facades, combined with wide tree-lined sidewalks and elegant benches for one adds a quality to the shopping street that is very hard to match.

So a boulevard can function well without ticking every single box. This is important, because if the Rose Fitzgerald Kennedy Greenway actually does function as a boulevard, or at least partially, it can still function well, although it does not maintain all the typical boulevard characteristics.

SECTIONS
When one takes a look at the first section of the greenway it actually looks very reminiscent of a Center Median Boulevard like Unter den Linden. This particular section can be seen as a representation of the first part of the total greenway. The section shows a broad tree-lined median that even holds some benches. The flanked roadways both carry two lanes and are enclosed by less symmetric sidewalks. Both sides of the streets are enclosed by well-detailed facades that share an almost similar height. It seems to be functioning like a boulevard, as described by Jacobs.

The second section of the greenway shows a much more complicated situation. It harbours sidewalks for pedestrians, multiple lanes for cars and even entrances to the central artery below. However it completely stops the continuation of the pedestrian route alongside the central median of the previous section. It lacks symmetry in both street width as well as building design. One could try categorising it as a Multiway Boulevard, but it would only be vaguely reminiscent of this type and pretty much a waste of time. Though a boulevard does not need to contain all these characteristics to function well, this part of the greenway clearly does not function as a boulevard.

The third section of the greenway is located right in between Downtown and Little Italy. It becomes clear immediately that it misses some sort of facade on the right side, but after looking past that, the rest of the section actually shows a lot of typical boulevard characteristics. There is a center median with some bushes and trees, flanked by two lane roadways and some sidewalks. After some modifications this part of the greenway could actually function as a Center Median Boulevard.

Fig 2.09 Section 1 Rose Fitzgerald Kennedy Greenway, Boston  
Fig 2.10 Section 2 Rose Fitzgerald Kennedy Greenway, Boston
Lastly there is the fourth section at the end of the greenway. It holds many lanes alongside each other and is enclosed by some tree-lined sidewalks and local traffic lanes. In that respect it could seem like a good match with the Multiway Boulevard on paper, but in reality it is of course a giant mismatch. This particular part of the greenway seems nothing like a Multiway Boulevard or any boulevard type for that matter. It is the place in Boston, where its complex infrastructural history is evident the most. A traffic heavy junction like this one would not be expected right in the city center and thus acts like a harsh ending to an otherwise pretty enjoyable route alongside Boston’s historic center.

CONCLUSION
In the end categorising the very different sections of the Rose Fitzgerald Kennedy Greenway according to Jacobs’ Boulevard Book may have seen like an illogical thing to do. Indeed a lot of non-boulevard characteristics seemed apparent in the greenway’s sections, but the valuable information that is gained on the parts that actually do or could function as a boulevard can influence future developments a great deal. In fact the parts that lack boulevard characteristics could be exaggerated even more so the ‘existing boulevard’ can function even better.

The greenway has to manage very different layers of traffic and is bound by its predecessor’s footprint. It would benefit greatly from a boulevard type street design, whether it is a Center Median, Boulevard Street or even a Multiway Boulevard type, some clarity would help guide the various users as well as give them a worthwhile experience of Boston. At the moment only parts of the greenway can be categorised as a boulevard type and even they could be questioned. This actually leaves the research question to be answered in a, mostly, negative way. However let it be noted that the European case studies could act as an excellent example for future Bostonian street design. So eventually the Rose Fitzgerald Kennedy Greenway could do for Boston what the Champs-Élysées did for Paris.

SOURCES
4) Ibid, p9
6) The Boulevard Book. p9
7) Ibid, p9
8) Ibid, p9
9) Ibid, p35

Fig 2.13 Section 3 Rose Fitzgerald Kennedy Greenway, Boston
Fig 2.14 Section 4 Rose Fitzgerald Kennedy Greenway, Boston
2. BOULEVARDS & BARRIERS

2.2 Natural Barriers

What the previous essay has proved, is that the greenway does not exist out of one uniform street design. It resembles boulevard type street design in some sections, but the ramps guiding cars to the central artery below rudely interrupt what might have been a pleasant boulevard.

However this interruption, like the essay suggests, could be exaggerated even more. When one looks at figure 2.16 for example, a natural divide can be made in between parts of the greenway.

The left part has been shown to have clear resemblances of a boulevard type like Unter den Linden in Berlin. The second part behaves in a very different way. It functions like an island enclosed by two walls, made up by the ramps on each side. The third part actually still resembles its former structure today, namely the Bulfinch Triangle. Once its triangular plot was broken into two by the elevated highway, but nowadays it could function like it did then once more.

Accumulated these greenway characteristics make up a natural divide into three parts.

Whereas the left part’s route is stopped by the ramps of the second part it leads to a natural finish in Christopher Columbus Park. These ramps act as a confusing segment on the route however. Can people continue to the historic center or not?

The ramps on the right side of the second part have such a size that they function as a hole in city structure and block off the third part of the greenway.

Clearly the problems of the first and third part of the greenway are minimal compared to those of the second part. This particular part resides right in between Downtown and Little Italy, shows the biggest infrastructural problems and could actually work as a connector between the various districts of Boston. If this part will function better, the whole greenway will.

From this point on this particular part of the greenway will act as the research location.

Fig 2.17 Natural Divide in Boston’s Greenway
3. MASTERPLAN

3.1 Old & New Boston

As aforementioned, the elevated highway destroyed everything in its path and thus created a wall and later, when it was tore down, a gap in the city.

So the city used to be connected through built area right in the site between Downtown and Little Italy, formerly called the Haymarket. Nowadays this area is filled with ramps, roads and green space. Looking at how it functioned back in 1935, before the elevated highway came, could help future design plans.

Of course the elevated highway was not built without any significant reason. The endless traffic jams, that plagued the city then, were a clear example of how the old city fabric could not deal with the rise of the automobiles of that period. Nevertheless figure 3.01 shows exactly how the destroyed buildings of 1935 would fit in today’s city structure.

Mainly focussed on pedestrians and horse carriages this structure would not function very well nowadays. However the way it neatly fits in today’s building site says a lot about how much effect this highway has had and still has on Boston.

Fig 3.01 Combination Image of Boston’s old and new Haymarket
When one takes a look at the current situation in figure 3.03 after looking at the previous figure (3.01) it becomes clear rather fast that there is literally a lengthy gap in the city.

So what can be learned from the old situation?

1) Hanover Street used to be the main street connecting Little Italy to the other districts. The facades of the buildings next to the street were aligned and continued from what is nowadays known as Downtown to all the way down the coastline (fig 3.02).

2) Salem Street connected to Hanover Street in the middle of Haymarket and split the traffic into two routes through Little Italy (fig 3.02).

3) A lot of building plots still remain the same after all these years, so refilling them seems to make sense in an almost organic matter.

4) North Street used to be connected through the Haymarket and held a small square (fig 3.02).
3. MASTERPLAN

3.2 Environment

As mentioned rather elaborately this area of Boston symbolises a lot of Boston’s turbulent history. This can be seen in the buildings and districts surrounding the Haymarket area.

Quincy Market for example used to reside next to the water, but because of all the land filling, nowadays it lies next to the greenway.

Old Faneuil Hall used to be the market hall, where all the routes led to. At the moment the vertical direction of the greenway overshadows these horizontal routes and the moving direction for pedestrians remains unclear. In figure 3.10 an impression of how the directions of the city used to function can be seen (red lines).

The Government Center acts as a separated Brutalist island, totally lacking human scale. However in the coming years lots of green will be added to its square to relate to the Bostonian citizens more.

Christopher Columbus Park and Boston’s Inner Harbour are two beloved area’s alongside the coast. Both have been influenced a lot of course because of all the land-filling and create a pleasant walk along the coast into Little Italy.
3. MASTERPLAN

3.3 Concept

After the previous research it has become clear that the coming of the elevated highway has resulted in a literal change in direction of the city. In figure 3.10 an impression of Boston in 1935 shows how much the elevated highway has destroyed and how it was finally replaced with the greenway.

Figure 3.11 shows an early sketch of the Masterplan that already tries to cope with this change in direction.

The final Masterplan on the next page tries to deal with this change of direction by restoring Hanover Street and Salem Street through architectural interventions and creates a new pedestrian route guided by Boston’s many historic monuments and coastlines.
3. MASTERPLAN

3.4 Masterplan

The final Masterplan that is shown on the right, includes several new architectural interventions (in red), one demolished building (at location 1) and some added trees (at location 2).

When a tourist or shopping pedestrian follows the boulevard part of the greenway he can either go right to Christopher Columbus Park or left to Quincy Market and Faneuil Hall.

A route alongside the coastline of Little Italy, through Hanover Street and finally passing the Government Center and Quincy Market becomes evident. In this way both the pedestrians and the cars have their own travelling routes alongside the monuments of Boston.

The circular route is connected in the middle by the new buildings of Hanover Street and ‘new’ Salem Street. They offer shops, a restaurant and lots of terrace space for the shopping people or tired tourists.

The Masterplan deals with the ramps to the central artery and the historic city planning, resulting in a hybrid Masterplan of historic and modern influences.

Fig 3.12 Final Masterplan
4. DESIGN

4.1 Location

After finishing the Masterplan for the Haymarket area, the focus was laid on a crucial smaller part (fig 4.01). In fact the place where Downtown and Little Italy meet physically is the most important aspect of the total Masterplan. It is where all the different kinds of traffic, local and through traffic and of course pedestrians, come together next to a big park right in between the two districts.

It is a prime location, for it is near the water, Boston's historic city center and both the Government as well as the Financial district. In the Masterplan an architectural intervention on this spot could minimize the gap left by the ramps. It could reconnect Downtown and Little Italy and become a crucial part of the new pedestrian route through Boston's historic and touristic center.

Right on this spot old Salem street should be restored to its original shape and reconnect the districts through architectural intervention.
4. DESIGN

4.2. Morphology

1) In the first phase of the morphology research the design for Little Downtown was started with a huge block filling the complete building site.

2) However to deal with all the different directions of traffic and the need for connecting streets, mainly Salem Street, this block was divided into three parts. Working together as an ensemble while guiding different types of traffic with its building shape. Salem street still has its historical curve and pulls people in by revealing only part of the ending of the shopping street. By creating different building heights within the ensemble a more human scale could be reached, fitting well with its proposed program of restaurant, apartments and shops.

3) By pushing the shard-shaped contours of the building blocks inside at the location of the red arrows walking routes are continued and people are triggered to 'look around the corner', creating an interesting shopping area. The green arrow shows the patio created in the apartment block to give the residents more private space and natural light.

4) The final shapes of the building blocks fit well into the context. They respond to the surrounding building heights, create terrace space for shopping people and tourists, guide people through a transfer zone between districts and above all introduce a third building type next to the ones of Little Italy and Downtown.
4. DESIGN

4.3. Concept

The three buildings work together as an ensemble on both an aesthetic as well as a functional level. However because of the cumulated size of the buildings the main focus has been on the two smaller buildings. These two buildings accompany ‘new’ Salem street on both sides and lead people to the terraces across the street.

The smaller triangular building consists of a three-level restaurant with a roof terrace. It looks over Hanover Street and holds some shops on ground level. The building consists of a ‘hard core’ with open space around it. The facade functions like a transparent box showcasing an inner restaurant with its own ‘table construction’. 

The second slightly bigger shard-like building is an apartment building with shops on ground floor level. It has an ‘open core’ in the form of a patio, surrounded by built space connected to the facade. So in contrast to the triangular building's facade the second building's shell is physically connected to the various floors.

Fig 4.05 Concept drawing Salem Street
Fig 4.06 Building Concepts
Fig 4.07 Early Sketch Ensemble View from park
4. DESIGN

4.4 Facade Research

So these two buildings have their own concepts, which are actually reversed versions of each other. Together with the bigger third building they form an ensemble, but because of their different shapes and sizes this is as clear as it could be.

The facade plays a big part in the experience of the buildings as an ensemble. It should visibly connect the three buildings, while guiding people in a natural way through the shops and streets. It should be able to be transparent, but also to be more private (for the residents).

Following the floor plans of the buildings a rhythm was chosen that connects to the walls, creates realistic glass plate sizes and results into an aesthetic rhythm that does not come across as too industrial.

This resulted in a vertical grid, partially connecting to the construction walls and partially for purely aesthetic reasons, and a horizontal grid connecting to the floors (possibly at a distance).

This is shown in the image on the right. Although this rhythm shows a lot of the desired qualities it still has a rather industrial look.

That is why a facade research was done to create an approachable facade that works for all three buildings. This is shown on the next two pages.

Slight changes in the thickness of the columns and beams and the way they connect to each other resulted in these eight possible facades.

In the end in most of these facades the slight changes had a gigantic effect on the image as a whole. That is why the facade option that is incorporated into the final design is the last, almost minimalistic, one.

It has minimal changes in its design, but the slight curve around the edges of the windows results into a drastically different experience of the facade as a whole.
Fig 4.06 Grid Design Facade
4. DESIGN

4.5 References

The Economist

Architect: Alison & Peter Smithson
Year of realisation: 1964
Location: London, England

From the architect:
In 1959, the Smithsons were commissioned to design a new headquarters for The Economist magazine in Piccadilly. Inspired by the narrow lanes and courts of the old City of London, they created an elegantly spacious pedestrian plaza as a trio of finely detailed towers, each built on a different scale, clad in traditional Portland stone. The office interiors were based on their lengthy research into the working practices of The Economist journalists. At the opening the editor Sir Geoffrey Crowther said that the staff had felt 'trepidation' on first meeting the Smithsons but took 'leave of them now with awe and affection'. The success of The Economist project secured a commission for the new British Embassy in Brasilia. Alison and Peter produced their design after conducting yet more rigorous research - this time into how the embassy's staff worked. One senior diplomat described their scheme as an 'embassy of great beauty and certainly the most efficient embassy building ever conceived'.

Why this reference project?

What makes ‘the Economist’ such a relevant reference project is the way it plays with the balance between inner and outer space. Both are equally important in a transparent design of multiple buildings, that all three maintain their own character and atmosphere.

In the facade, major changes in rhythm and opening sizes result in major effects on how the buildings are interpreted. Whereas together they seem to work as an ensemble.
Gibraltar (Oostelijke Handelskade Housing)

Architect: Claus en Kaan Architecten
Year of realisation: 2004
Location: Amsterdam, the Netherlands

From the architect:
The Gibraltar housing building holds 11 floors. On the ground floor are six living/work houses that have a double height. Above these, from the second until the 11th floor, lay 60 apartments in the sector social rent. The facades of the building are not typical for social housing. The image of this building, deriving from the cool and systematic facade, is more like that of an office.

No individual apartment is recognized in this repetition of floor-height windows. The light, creamy colour of the concrete contrasts with the mainly dark colours used in the Eastern Harbour district. The facade on the north side, near the waterfront is less strict. This is where the main entrance is located. Here a large glass membrane opens up the interior where coloured corridors and interior balconies are visible.

Why this reference project?
The unconventional facade for an apartment building makes this project an interesting reference project. The way the separate windows are emphasized through the thickness of the window frame and how altogether they create a very monumental facade has been very influential.

Although the materialisation of ‘Gibraltar’ is very different from the created facade design of Little Downtown, the way it plays with detail lines and curves has played an important part in the facade research.

Fig 4.12 Facade rhythm Gibraltar
Fig 4.13 View windows Gibraltar with design details
Municipal Center for Citizen Activities

Architect: Sección B Arquitectura
Year of realisation: 2010
Location: Plaza los Luceros, Seville, Spain

From the architect:
Sección B Arquitectura received the commission for the partial demolition of an unfinished building to recover the volume of the building that used to be there. They were asked to design a project that would render the recovery of the volume compatible with the neighbouring program (spaces for neighbourhood organizations, Information Point for Women, adult studies, multi-purpose room).

- Eco-design, to achieve the maximum energy efficiency.
- Privacy for the neighbours.
- Maximum comfort, designing all rooms with natural lighting and ventilation.

To reconcile all of this, it is necessary to open courtyards that provide natural light and ventilation to the basement. The gap of the basement ramp is used, and a central and secondary courtyards are opened. This generates a volume composed of two bodies connected by a courtyard, that becomes the heart of the project formally and functionally.

Why this reference project?

Because there was a need for parking in Little Downtown and this needed to be resolved on the actual building plot, there had to be found a way to create ventilated parking space inside one or more of the ensemble buildings. Both the restaurant building and the apartment building already have little space for their own functions; so creating parking space there was not an option.

Also the fact that the Central Artery exists below the building site made sure that the parking should be resolved above ground.

Luckily the third ensemble building has lots of space for parking cars and the entrance can actually be combined with the entrance to the ramps.

However how do you incorporate naturally ventilated parking space into a transparent facade that works as an ensemble? By using designed fencing like Seccion B did for the Municipal Center.

It does not interrupt the rhythm and transparency of the facades, while adding an extra layer of inner-outer connection.

Fig 4.14 Night view fenced facade Municipal Center
Fig 4.15 Detail fenced facade
International Criminal Court

Architect: Schmidt Hammer Lassen Architects
Year of realisation: 2014
Location: The Hague, Netherlands

From the architect:
When designing the new permanent premises of the International Criminal Court, the point of departure was to communicate trust, hope and – most importantly – faith in justice and fairness. The building should have the courage to be an ambassador for the credibility of the ICC.

The project and its architecture should be impressive and grandiose but should always relate to humans and the human scale. It is important that a formal institution like the ICC does not constitute barriers for people. On the contrary, it must express the very essence of democratic architecture.

Why this reference project?

Throughout the design process the facade design evolved into a transparent pattern of windows and curved lines. The slight curve the separate windows show in their corners results in a much more approachable facade for the public.

However this makes materialising the facade a lot harder. It should not be too heavy, but it should also be able to carry large glass quantities.

The International Crime Court Facade uses a composite facade to reach these properties. The windows function as modules in a larger ensemble. This alternative for a lightweight, transparent and high detail level facade system is used as an important reference for Little Downtown’s facade system.

Fig 4.16 Detail composite facade
Fig 4.17 Ensemble view composite facade
5. PROGRAM

Little Downtown’s program consists of various functions.

The smaller triangular building consists of a restaurant for the most part. It also has three shops next to Salem Street and a roof terrace.

The bigger shard-like building has ten shops on its ground floor level and forty-five middle class and luxury apartments on higher floors. In its center there is a patio for the residents.

The third building which was only designed on facade level as an ensemble and function-wise, has three shops, 180 parking spaces and multiple floors of office space.

In the image on the right the various floors can be seen in an isometric view. The routing is shown and one can see how the different floors can interact with each other.

Fig 5.01 Program and routing in Isometric
6. PLANS

The design process on plan level has literally been a ‘layered one’. Throughout the whole process carefully placing different shapes and facade openings across from each other played an important part in creating the best ensemble on both an urban and an architectural level.

By placing layer on top of layer the changes in balance could be spotted early on and helped to develop the shapes and sizes of the buildings, but of course also their interior designs.

The two buildings making up New Salem Street had to constantly be compared to each other on every level of the building design. From the varying functions and their locations to the actual facade and the distance between them.

On the following pages the plans of both buildings will be shown. A part of the third large parking/office building is shown as well. As a reference to the design process sketched interior is used to show the functions of the various rooms. All the floors of the restaurant building are different, whereas the floors of the apartment building are similar apart from the ground floor.

The three non-rectangle buildings can be placed onto a rectangle grid of 5 by 5 meters, creating a not too complicated construction scheme.

Fig 6.01 Sketching Method with grids and layers
Fig 6.02 Plans Ground Floor 1:400
7. SECTIONS

In the following sections the interaction between outer and inner space becomes clear. The sections show how the facade works as a thin membrane between two worlds. Also the inner private world of the apartment building becomes clear. Through an entrance on the left side residents enter their apartment building and can enjoy a private urban space right in the center of Boston. It provides trees and grass but of course also light to the inner facade.

This inner space has its own atmosphere created by the use of concrete and different brickwork of the ground floor. The pattern of the glass used in the inner facade has a rhythm that results in a playful grid that opens up the backside of the apartments while still remaining private enough.

Each building showcases its inside functions and this is expressed in a careful manner in the different facades. The restaurant building is totally transparent. The apartment building sometimes has tinted glass and makes use of French balconies. The third office/parking building also has tinted glass and uses naturally ventilated fencing for the parking area.

In the sections of the restaurant building one can see how the various floors interact with each other, resulting in a constantly changing view and experience of the open space.
Fig 7.03 Location Sections

Fig 7.04 Section Apartment Building 1:400
Fig 7.05 Short Section restaurant building with kitchen 1:400

Fig 7.06 Long Section restaurant building 1:400
8. FACADES

After the ensemble morphology research was finished, each of the buildings had to be connected through their appearance.

What followed was the earlier mentioned facade research, that resulted into a grid that followed the main walls and floors, but also created a unique facade for each of them. Inspired by ‘The Economist’ in London by the Smithsons a visible ensemble was created.

The facade research finally added a tiny curve in the corners of each window frame resulting in a facade system that is much more approachable than the original grid design.

Together these facades create a continuously changing view, because of the shapes of the buildings, but also because of the varying grid of the facade itself.

Some glass is tinted for more privacy and sometimes there are French balconies for the residents. The parking in the large building is naturally ventilated through fencing. These are all implemented well, so they do not interrupt the total ensemble view.

Every facade raises a bit above the roof to create a clear end to the building and serve as a railing for roof terrace visitors.
Eventually when people are going to live in the apartments or when the shops get occupied, it is going to influence the view of the facades.

However this ‘second facade’ created by the users actually helps each facade to create their own atmosphere. The way the users influence the function or privacy of the space behind the facade creates a diverse experience for everyone involved.

The facades are designed as such that this outside influence creates individual looks, but still keeps its role as an ensemble. People on both the inside and the outside influence and respond to each other, thus creating a constantly changing experience of the total ensemble.
9. DETAIL FACADE

Originally the created facade design would be executed in aluminium. However with the curves of the window frames that would be almost impossible, and very expensive, to do.

That is why in the final design the facade system is done in composite material. Because composite materials can be pressed, the desired shape can be easily achieved and is a lot more affordable than its aluminium counterpart.

In the principle example shown on the right, the facade system is attached to the concrete floors using a steel frame. The separate modular window frames can be attached to each other and then hung from the steel frames.

In the restaurant building the same detail is used, however instead of the concrete floor there is a light steel construction carrying the window modules.

In the right top corner a part of the French balcony is shown with a part of tainted glass integrated into the window frame modules. In the left corner below one can see how the fencing is integrated into the same detail design. The steel fencing is tightened in a small frame and then like the glass placed into the composite modules.

Fig 9.01 3D Detail Facade Overview
Fig 9.02 3D Detail Facade Close-up

- Tinted Glass
- Rubber
- Composite Window Frame
- Naturally Ventilated Steel Fencing
- Insulation
- Steel Framing
10. IMPRESSIONS

The following impressions show the three levels of relations between the ensemble.

First there is New Salem Street; the historical street that has been redeveloped with its typical curve. The brickwork of the ground floor continuous inside the ensemble buildings and emphasizes the fact that only pedestrians can use this street. The curve of New Salem Street guides people towards the other side of street while offering several shops along the route.

Secondly there is an impression of the inside environment of the restaurant building. It shows how the different floors interact with each other and to the facade. Below there are various shops which have a unique relationship to the upper (restaurant) floors.

Lastly an impression of the ensemble as a whole, as seen from the park, is shown. One can see how the buildings respond to each other and create a family of buildings of all different shapes and sizes. Some glass panels are tinted, for more privacy and one can even see the fencing used to ventilate the parking of the third building. The entrance to these parking floors and the ramps in the back can also be seen.
The 3D section on the right page shows all the crucial design qualities of the ensemble design.

It shows the interaction between outer and inner space of New Salem Street. It shows how the different facades work together to create a well balanced ensemble. The contrast between public space and private space can be seen in the patio of the apartment building. It has its own green space and more private facade design.

One can see where the terraces are located across from the park. New Salem street guides people alongside various shops towards the terraces across the street and into touristic Little Italy.

Together these three buildings are implemented seemingly in the existing context, while having an original design. They play with the balance of the outer and inner space and restore a once lost route of Bostonian history. The people of Boston can finally forget the mental and physical imprint left by the elevated highway and enjoy a modern well embedded ensemble.
11. IMAGE SOURCES

Fig 1.01 Early Urban Research Pasta Model
Made by Author

Fig 1.02 Combined Morphology Boston
Made by Architecture of Smart Mobility Studio

Fig 1.03 Boston City Development 1764-1935
Made by Architecture of Smart Mobility Studio

Fig 1.04 Boston City Development Map 2013
Made by Architecture of Smart Mobility Studio

Fig 1.05 Fragment of ‘the Big Dig’ project
http://www.massdot.state.ma.us/Portals/8/Images/bigdig/completion_lg.jpeg

Fig 1.06 Original plan Central Artery
http://i499.photobucket.com/albums/rr354/Charliemta/OriginalCentralArteryplan.jpg

Fig 1.07 The infamous elevated central artery
www.va.minambiente.it

Fig 1.10 Downtown before the ‘Big Dig’
http://pinkunderbelly.files.wordpress.com/2011/02/boston-the-big-dig.jpg

Fig 1.11 Downtown after the ‘Big Dig’
http://upload.wikimedia.org/wikipedia/commons/b/bf/After_Aerial_Photo_of_Greenway.jpg

Fig 2.01 3D View Boston Sketch
Made by Author, using source material from Google Earth

Fig 2.02 Street View Unter den Linden
Made by Author

Fig 2.03 Section Unter den Linden
http://www.far-lcl.asso.fr/IMG/jpg/avenue_des_champs-elysees_july_24__2009_n1_modifie-1.jpg
Made by Author

Fig 2.04 Street View Champs-Élysées
http://www.far-lcl.asso.fr/IMG/jpg/avenue_des_champs-elysees_july_24__2009_n1_modifie-1.jpg
Made by Author

Fig 2.05 Section Unter den Linden
http://www.far-lcl.asso.fr/IMG/jpg/avenue_des_champs-elysees_july_24__2009_n1_modifie-1.jpg
Made by Author

Fig 2.06 Street View Passeig de Gràcia
http://crewwing.files.wordpress.com/2012/07/passeig-de-gracia.jpg
Made by Author

Fig 2.07 Section Passeig de Gràcia
http://crewwing.files.wordpress.com/2012/07/passeig-de-gracia.jpg
Made by Author

Fig 2.08 Top View Greenway with Section Locations
Made by Author, using source material from Google Earth

Fig 2.09 Section 1 Rose Fitzgerald Kennedy Greenway, Boston
Made by Author

Fig 2.10 Section 2 Rose Fitzgerald Kennedy Greenway, Boston
Made by Author

Fig 2.11 Street View Section 1, Boston
Google Earth

Fig 2.12 Street View Section 2, Boston
Google Earth

Fig 2.13 Section 3 Rose Fitzgerald Kennedy Greenway, Boston
Made by Author

Fig 2.14 Section 4 Rose Fitzgerald Kennedy Greenway, Boston
Made by Author

Fig 2.15 Street View Section 3, Boston
Google Earth

Fig 2.16 Street View Section 4, Boston
Google Earth

Fig 2.17 Natural Divide in Boston’s Greenway
Made by Author, using source material from Google Earth

Fig 3.01 Combination Image of Boston’s old and new Haymarket
http://tinyurl.com/nsd2klv

Fig 3.02 Old Haymarket with important streets in red
http://tinyurl.com/nsd2klv

Fig 3.03 Boston’s current Haymarket, with location of Elevated Highway shown in yellow
Made by Author, using source material from Google Earth