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Dissertation:

"Walking and cycling discourses study, towards the understanding of the Smart City of Glasgow"

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ABSTRACT

Smart Cities are developing around the world. This trend combines information technology solutions with urban development, in hope to give solution for real city problems. This is the case of Glasgow, Scotland, which in 2013 received a £24m budget to become the first Smart City in the United Kingdom. Consequently, a discourse is presented for social change to solve health, transportation, energy, and public safety.

This paper addresses the discourse of walking and cycling in the city. For the reason that "active travel" helps to create a safer environment in the city, as well as give solutions for health and transportation issues. Therefore, it is relevant to understand if the discourse presented by authorities helps in this transformation. So by walking and cycling inside Glasgow city, inhabitants can help too to transform their urban area.

To understand this issue we use discourse analysis to know how it helps to social change. This methodology supports the idea of understanding how language can transform reality. Therefore, for social studies it is useful to know how language is applied for social transformation.

By analysing the discourses of walking and cycling in Glasgow, we understand that a strong policy will be created in further years. The Smart City of Glasgow will happen in ten years with a properly citizen engagement, and correct data analysis. These results allow an understanding of how other cities in the world can become a Smart City. Consequently, other cities would follow Glasgow example to achieve the Smart City status.

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Introduction

Language plays a strong role in the construction of societies. Nowadays, the emerging discourse about Smart Cities around the world supposed to be a solution for daily problems in the city where this discourse is tried to be implemented. This is the case of Glasgow in Scotland, which has developed in the last four years a schematic program to become what media has called "The Smartest City in the World" (Macdonell, 2015). By using discourse strategies such as policies, public relations, or press releases the City Council wants to overcome a series of challenges, in order to create a safer environment for citizens and visitors. One in particular is to improve the way people commute in a 3 or 5 miles area, in essence by walking and cycling, or what City Council named active travel. Therefore, this research aims to analyse the way which physically active commuting is portrayed by authorities in terms of urban transformation.

In terms of Smart City analysis academia, corporations, governments, institutions, and organisations have developed papers to understand this concept. The main perspective of these analyses is related on the introduction of technology and its implications on government services. The present paper focuses the effort under the promotion of active travel as a part of an ambitious project that intends to tackle four challenges that Glasgow has identified. This project aims to know how Glasgow City Council promotes cycling and walking, by using written language, in order to increase citizen commuting in the city. In this way, we will try to contribute to the understanding of Smart Cities and the way that actual urban areas are transforming to the intelligent model. To do so, we present this research in a three chapter work, which allows us to develop the project of the council.

The first chapter is an overview of the principal aspects that Smart City concept has. We develop the concept of Smart City by contrasting definitions from academia, corporations, and non-government organisations who are pushing this concept in the world. By doing so, we try to relate the concept into Glasgow's idea. In addition, we progress into the project that Glasgow City Council and the Department of Business, Skills & Innovation has created to transform the most populate city in Scotland. This project is the guide to transform Glasgow into a Smart City, but also addresses four challenges that are related is common problems for the citizens. So the intention is to develop the Smart City of Glasgow, using technology and public engagement to accomplish the mission that is reflected in the discourse of the council.

The second chapter will examine on the methodology that we have chosen to analyse the policy, in this case, discourse analysis. This chapter will provide the information about what

discourse analysis is. Therefore, we present the limitations and strengths of adopting this methodology over other kind of methodologies that allow researchers to understand policy language. Also in this part of the research we provide a tool that permits us to decipher what the policy is trying to say, in order to understand how the City Council is framing this urban transformation. Therefore it is relevant to comprehend the different discourses that are involved in walking and cycling in the city, and how those activities are related to the broader project.

The third and last chapter focuses on the analysis of the findings of walking and cycling in Glasgow as a part of what the Council intends to make in the next few years. In this chapter, the analysis is presented in order of each section the policy. Also, we offer a case of study of Amsterdam's urban transformation through different discourses; this is because we consider that this Dutch city enabled a cycling policy that many countries in the world are adopting. Furthermore, in several Smart City rankings the city appears to be in the top 10. Finally, this chapter concludes with a reflection about what Glasgow can learn from Amsterdam in order to become a Smart City.

The result of the whole interpretation enterprise will be developed in the form of conclusions, where we will reflect about the Smart City of Glasgow. With this intention we present the benefits of discourse analysis in policy making, which creates a "political environment" to involve citizens into city decisions. Therefore the process of analysing information that concerns urban transformation in Glasgow will be developed in this part of the research. So in order to discuss what is required by the Glasgow Future City project. As Fairclough mentioned that discourses do not just reflect or represent social entities and relations, they construct or 'constitute' them; different discourses constitute key entities in different ways, and position people in different ways as social subjects, and it is these social effects of discourse that are focused upon in discourse analysis (1992, p. 4). Consequently, the reflection will emphasise the effects of this research.

In the present paper we expose the idea that discourse is a tool to transform environments. This is because, there are identities presented in the discourse, as Fairclough mentions "economic, political and social change and their effects on people's identities, their hopes and fears for the future, their sense of security or insecurity, constitute a major contemporary thematic in academic research, politics, popular culture and daily experience on a global scale" (2003, p. 9). We agreed with Fairclough's statement about that "social phenomena, and therefore social change, inherently involve relations between discourse and the [non-discoursive]" (2003, p. 11), where those relations transcend the social sphere and become part of an ideology; in the present work the ideology of the Smart City of Glasgow. Therefore, the analysis allows an understanding of how society works and how the environment is transformed by discursive practices.

Through this research we will try to answer some questions that concern the active travel policy of the Future City Glasgow project. These questions are relevant to guide this project. The principal question will be: Does Future City Glasgow project implicate a Smart City discourse? The second question is, what active travel discourses are used in the policy-making, and how they are presented? A third question is how does the active travel discourse present the information to engage citizens? The fourth is how Amsterdam has been transformed with help of the discourse, and can Glasgow learn something from it? The fifth is can Glasgow city become a Smart City? With these questions, our research has a clear aim, which is to understand the implications of the discourse in the construction of the Smart City of Glasgow.

Finally, we understand that the relevance of this research can enable new studies on Smart Cities. We think that this research is unique in its type, because the literature in the topic is vast and some are related to technological solutions, urbanism, or engineering, but a discursive analysis has not yet been made. This research intends to understand the social construction of a Smart City through one policy-making process, as well as the implications of it. Consequently, the social development of what we call the Smart City of Glasgow can pioneer new projects around the world.

CHAPTER 1:

Smart Cities an approximation of Future City Glasgow project

1.1 Introduction

Smart City is a concept, initially created by information technology companies, which has been accepted and developed by governments and institutions around the world to solve social problems. These problems, related to population, are the main focus of Smart City policies; however, Smart City discourse goes beyond problem-solving to engage citizens to improve services. In this sense, policies focus on developing "clever solutions allowing modern cities to thrive, through quantitative and qualitative improvements in productivity" (Caragliu, et al., 2011, p. 66). Bunell (2015) points to "expanding possibilities for resisting or reworking the top-down implementation of existing Smart City projects, new technologies may yield futures that exceed official plans" (p. 47). Consequently, the whole idea of what a Smart City is depends, intrinsically, on the government that wants to transform urban areas into a Smart City.

This chapter will focus on the description of the Smart City and how it is applied to Glasgow. This is important because there are many organizations that provide different definitions of what a Smart City is. In this sense, the idea of a Smart City differs between governments, international institutions, corporate organizations and even academia in its purposes, boundaries and consequences. Therefore, it is necessary to set a particular definition that could frame what the Future City Glasgow project, and its policy, identifies as a Smart City. This will involve finding out where the Smart City concept comes from, how it is portrayed by institutions, and what its discourse is. To achieve this, we will use definitions from non-government organizations, government institutions, corporations and academic institutions suggested by ITU[1], which will help analyse how different discourses have repercussions on the Glasgow City vision.

In the second section, we will discuss the plans to develop Glasgow into a Smart City. This project intends to transform Glasgow urban area over the next 50 years but, for the purposes of this research, we will focus on the "Active Travel" policy. This policy refers on walking and cycling enhancement within the city. The reason to do that is because, after reviewing several papers, the common problem to solve in the Smart Cities is transportation. Consequently, we believe that a

[1] International Telecommunication Union, the agency of United Nations of information technology industry.

simple way to commute such as walking or cycling can offer a good solution for traffic in the cities, as well those activities allow to reduce fossil fuel consumption in terms of develop a sustainable environment. Thus this we will examine the way in which walking and cycling is portrayed as complementary to the Glasgow Smart City plans.

In summary, this chapter will focus on Smart City discourses and the boundaries that challenge this concept. Furthermore, we will describe how the concept is applied to Glasgow by contrasting it with the Future City project. Then we will focus on the "Active Travel" policy to understand this fully, so then we can focus on the next steps of this research in further chapters.

1.2 What is a Smart City?

There are many discourses that try to define what a Smart City is. Most of these definitions depend on the idea of using technology to solve urban problems, while other definitions focus on the citizen, infrastructure, or business improvement. As we will see, definitions about the Smart City tend to address the implications of population growth, such as transportation, energy, mobility, citizen engagement, sustainability etc. therefore, academic definitions must be presented.

The idea of a Smart City, after its conception by the information technology industry, was discussed in many papers around the world. Some focus on the social implications that this concept propagated, for example the adoption of technologies. Celino and Kotoulas point out that, "in the context of Internet Computing, we believe that the simplest definition is that a smart city can effectively processes networked information to improve outcomes on any aspect of city operations" (2013, p. 8). Another example is provided by Washburn et al (2010) who conceptualize the Smart City by laying an explicit emphasis on the use of smart computing technologies to make the critical infrastructure components and services of a city more intelligent, interconnected, and efficient (cited in Nam & Pardo, 2011, p. 283). However, enabling technology is not only the aspect that must be considered for Smart Cities. In this sense, Fertner et al. (2007) define it as a "city performing well in a forward-looking way in economy, people, governance, mobility, environment, and living, built on the smart combination of endowments and activities of self-decisive, independent and aware citizens" (cited in Nam & Pardo, 2011, p. 283), which emphasises the citizen as a part of this smart environment. Also, Dameri & Rosenthal-Sabroux (2014) embrace the anthropologic point of view when "the human contribution is necessary, to really embody the smart actions into the daily life of people living, studying, working in the city or also visiting the city for one or a few days for work or tourism" (p. 3). Furthermore, continuous research on Smart Cities, conducted by Vienna University

of Technology, defines it as “a city performing well in a forward-looking way in these six characteristics [smart economy, smart people, smart governance, smart mobility, smart environment and smart living], built on the ‘smart’ combination of endowments and activities of self-decisive, independent and aware citizens” (Centre of Regional Science, Vienna UT, 2007, p. 11).

Corporate discourse on the Smart City tends to enable information technology as a core layer for delivering services to citizens (Wang, et al., 2014). Wang et al emphasise the significance of the Internet of Everything (or Things) in particular, as the number of devices connected to it continues to increase. One of the pioneers of this approach is Cisco Systems, whose “Connected Urban Development” program feeds into “Smart+Connected Communities ”, and demonstrates how to reduce carbon emissions by introducing fundamental improvements in the efficiency of urban infrastructures through ICT (Falconer & Mitchell, 2012, p. 3). The definition of Smart+Connected Communities ties in with the idea of engaging governments, NGOs and companies to improve cities (p.3), with the ultimate aim being to enhance the quality of life for inhabitants. On a slightly different scale, in late 2008 IBM created Smart Planet, which is an initiative that visualizes a more technological, interconnected and intelligent planet (Paroutis, et al., 2013, p. 263). This idea is used by Harrison and Donnelly (2011) for “the application of complex information systems to integrate the operation of urban infrastructure and services such as buildings, transportation, electrical and water distribution, and public safety” (cited in Paroutis, et al. 2013, p.3). Separate to this discourse, German company Siemens talks about sustainable cities, rather than Smart Cities. The company addresses the human factor by saying “people turn cities into living organisms; to thrive, these organisms require a healthy balance. And that’s best expressed by one word: sustainability” (Siemens AG, 2010, p. 4). Siemens go on to offer “solutions” to potential stakeholders, namely governments. But, the discourse around Smart Cities goes beyond corporations and Non-Government Organizations (NGOs), as government organizations have created alternative definitions for Smart Cities.

Although the Smart Cities discourse has created a framework that follows standards of international organisations and could be used by local governments, some local governments have created their own definitions, which attempt to mix the academic and the corporate discourses. For example, the Department for Business Innovation & Skills, in the first instance, defines a Smart City as “showing the shift from the delivery of specific services to a citizen centric approach… this involves closer interaction between citizen and service providers, which is a more personalised response to strategic interdependencies of different services” (Department for Business, Innovation & Skills, 2013, p. 8), where government entities understand citizen enquiries through providing a digital space to interact. This definition supports the work of Dameri and Rosenthal-Sabroux, as well

as that put forward by Nam and Pardo. Alongside it, the European Commission offers the concept of "Cities of Tomorrow", which addresses the diversity of them and encourages "smart specialisation strategies in those cities or regions which face specific difficulties due to the convergence of demographic, economic and social difficulties" (2011, pp. 91-92), in order to determine a framework that can define the future of cities in this region. Finally, the International Telecommunication Union (ITU) presents the idea of the Smart Sustainable City as a frame for policy makers in cities around the world, explaining:

> A smart sustainable city is an innovative city that uses information and communication technologies (ICTs) and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social and environmental aspects. (ITU, 2015)

This is related to a United Nations prediction that by 2030 six out of every 10 people will live in a city (Tranchard, 2013). Here, the real challenge is to build a better place to live, as referred to by Robinson (2015). Therefore, government and non-government definitions support the idea that Future City Glasgow is positing, in order to transform the city into a smart one. Consequently, for the purposes of this research, the final definition of what a Smart City is helps to set a clear objective regarding the following discourses on "active travel" policies.

1.3 Future City Glasgow project

The strategy that Glasgow City Council follows to transform Glasgow into a Smart City is denominated Future City Glasgow. This was developed by the Technology Strategy Board in order to contribute "a real front-end system integration to deliver additional value and realisation" (Brown, 2012, p. 3). Therefore, the aim of Glasgow City Council is to create a technology infrastructure to enable integration of city systems and data across multiple agencies for city services (p. 3). According to Nam and Pardo, the intelligence of cities resides in the effective combination of digital telecommunication networks, ubiquitous intelligence, sensors and tags, and software (2011, p. 284), creating an environment in which to develop the Smart City of Glasgow.

Brown's strategy (2012) mentions that further development and use of technology throughout the city is possible because the people of Glasgow are technology-literate (p. 3). In this context, Nam and Pardo suggest that a smart city is a humane city that has multiple opportunities to

achieve, and is a centre of higher education and better-educated individuals (p. 285), and where part of its development corresponds to levels of technological literacy. This key element is included by the Smart Cities Council in their indicators used to identify a Smart City (2014). These include:

- Percentage of internet connected households
- Percentage of residents with smartphone access
- Number of civic engagement activities offered by the muncipality last year
- Voter participation in last municipal election (percentage of eligible voters)

According to the Scottish Government, 99% of Scotland's population has access to basic broadband services (2011, p. 19), making it feasible to accomplish the Glasgow 2050 vision. In 2011, Glasgow City Council stated, "We want Glasgow to flourish as a modern, multi-cultural, metropolitan city of opportunity, achievement, culture and sporting excellence, where citizens and businesses thrive and visitors are always welcomed" (Glasgow City Council, 2014). With this vision, the council strives to improve health, energy, transport and public safety. Consequently, the transformation of Glasgow into a Smart City started with a Demonstrator Proposal that facilitates delivery of specific system integration demonstrators for services improvement (Brown, 2012, p. 16).

According to the Feasibility Study by Brown, transforming Glasgow will involve the development of City Management to provide a platform to benefit systems (2012, p. 6). This platform includes a Data Repository, an Intelligent Operations Platform, City Dashboards and a smartphone application to engage citizens in improving council services (p. 6). Additionally, Demonstrators primarily focus on the delivery of integrated system improvements of health, energy, transport and public safety (p. 7). These five systems are: Glasgow Integrated Operations Centre (GIOC), Integrated Social Transport, Sustainable, Social & Safe Street Lighting, Energy Efficiency in Buildings & Housing, and Active Travel Spatial Analysis (p. 6). To understand what demonstrators do, we will examine the characteristics of each.

1.3.1 Glasgow Integrated Operations Centre

The Glasgow Integrated Operation Centre works with Glasgow City Council to monitor and control the city's network of CCTV cameras (2015). This Centre will manage security and traffic within the city, in order to detect unusual activities. Consequently, identified activities will trigger an alarm prompting investigations and emergency services. Furthermore, the Centre serves as a predictive platform using data as an alerting protocol (Brown, 2012, p. 29). IBM, as a supplier of this centre, describes it as:

> A nerve centre, transforming traditional government agency silos into a co-ordinated city or regional management response network. At a glance, it makes it possible for officials to view the overall status of a city and drill down into underlying domains such as traffic, water or public safety in order to monitor and direct response efforts. (IBM 2011, cited in Brown, 2012, p. 29)

The GIOC aims to help build service-enabling infrastructure using information technology solutions. Brown's feasibility study suggests that "the option exists to license the methodology developed by an external ICT supplier or for Glasgow to deliver its own proprietary system" (2012, p. 29). This will create the platform to deliver the services that Glasgow's citizens need.

1.3.2 Integrated Social Transport

One of the challenges that all Smart Cities have in common is transportation. Dameri and Rosenthal-Sabroux state that a new local public transport system, based on low carbon emissions, impacts on both smart mobility and smart environment (2014, p. 8). This trend is followed by Future City Glasgow tending to fleet management and traffic prioritization as areas where improvements within community transport have been identified. The council also intends to operate 204 Assisted Support for Learning (ASL) transport vehicles across the city (Brown, 2012, p. 29), to enable transportation for disable people. Integrated Social Transport tends to involve the installation of mobile data terminals (MDTs) with GPS functionality and the introduction of Bus Information and Signalling System (BIAS) technology in order to procure a more adaptable fleet over time (2012, p. 29). As is said by Cocchia, "thanks to the use of Internet-based infrastructures, the e-services supply regarding healthcare, energy, education, environmental management, transportation, mobility and public safety, has begun to spread among citizens" (2014, p. 26). Therefore, the aim to improve transportation is part of Glasgow's transformation into a Smart City.

Glasgow City Council states that Integrated Social Transport would modernise management of the services and enable providers to use their fleet more effectively (2015). Furthermore, this policy would introduce new technology to minimise route duplication, reducing the number of unnecessary journeys and ensuring buses carry the optimum number of passengers (Glasgow City Council, 2015).

1.3.3 Sustainable, Social & Safe Street Lighting

According to the Future City project, it is useful to understand the impact that dimmed street lighting may have on crime activity, community safety and the perception of crime (Brown, 2012, p. 30), by examining new research into street lighting. Therefore, Glasgow City Council plans to install sensors on lighting columns which will collect data such as footfall, air and noise pollution levels (2015). This data would allow the Council to increase brightness via the operations centre if the noise levels rise (Glasgow City Council, 2015). Dameri asserts that a Smart City needs a strategy for street lighting that addresses renewable energy and energy efficiency (2014, p. 54). She gives the example of Genoa, Italy, as a Smart City which is focusing on technological solutions to reduce CO2 emissions, building efficiency improvements and lighting systems (Dameri, 2014, p. 74).

The council also plans to install intuitive street lights on a stretch of the city's off road cycle routes (Glasgow City Council, 2015), which will be beneficial to Active Travel. The goal is to operate at 40% of brightness in normal conditions, rising to 100% when sensors identify cyclists. The idea is to increase safety in the area, giving people confidence to use routes after dark. This policy also intends to reduce energy consumption by changing the current bulbs to LED lamps (Glasgow City Council, 2015).

1.3.4 Energy Efficiency in Buildings & Housing

The Glasgow Future City project works alongside the Europe 2020 program to target energy efficiency, growth of renewable energy and carbon emission reduction (Brown, 2012, p. 12). The challenge to stop climate change and regulate carbon emissions within cities is also documented by Beatley, 2000; Caragliu, et al., 2011; Dameri & Rosenthal-Sabroux, 2014; Nam & Pardo, 2011; Siemens AG, 2010; Smart City Council, 2014. Fundamentally, the Council must implement management systems that enable energy demand reduction by working with businesses, schools, academia and power providers (Glasgow City Council, 2015). In this way, energy consumption in Glasgow will be reduced in a short period of time, according to Glasgow City Council.

Firstly, Glasgow City Council and Integrated Environmental Solutions developed a pilot proposal for building modelling, sensor systems and Building Management Systems (Brown, 2012, p. 31). According to the feasibility study, this operation will be monitored by the Intelligent Operations Platform, which will provide real-time information and recommendations to building managers

(p.31). Therefore, with the support of Scottish Power[2] and its new Tier 1 Low Carbon Network Fund, the project will ascertain the resources required by network operators in the future (p.31). Furthermore, this solution is endorsed by OECD in order to develop ICT applications for smart grids, smart sensor networks, and systems in the water and health (OECD, 2014 cited by Moir, et al., 2014, p.53). By implementing sensors in buildings it will be possible to understand energy consumption by businesses.

Secondly, a pilot project is underway to test insulation methods for tenement flats and to collect data on their impact on energy consumption (Glasgow City Council, 2015). Given that Glasgow has more than 60,000 tenement properties, the data collected will be of great interest. This work attempts to develop a tool which enables people to identify land where they would like to position renewable projects and receive information on the planning site (Glasgow City Council, 2015). Included in this is an action plan with six strategic action areas: encouraging innovation, maximising the impact of pilot and demonstration projects, empowering consumers, developing supply chain, identifying skills requirements and improving dialogue and engagement (Brown, 2012, p. 32). The outcome of this aims for citizens to have home energy efficiency (Technology Strategy Board, 2013, p. 43). With this, it will be possible to measure and achieve a community goal for energy consumption.

1.3.5 Active Travel

The last Smart City strategy presented by Glasgow City Council sets out a plan to enhance cycling and walking in the City of Glasgow. In the study it is proposed that Active Travel will help to manage traffic volume by facilitating and promoting it for the citizens of Glasgow (p.13). As well, Active Travel is considered as an integration of city systems in itself demonstrating economic, health and quality of life benefits while contributing to environmental sustainability and encouraging use of alternative modes of transport (p. 32). In this respect, Low observes that "the most advanced cities around the world are […] trying to live better with the three modes of transport: walking/cycling, collective transport, and private vehicles and effectively to integrate their use" (Low, 2010, p. 5). There is a clear incentive to integrate different modes of transport for commuting and the use of technology to enhance these activities is provided by the City Council.

[2] Scottish Power has existed since 1901, and today is owned by the Spanish energy firm Iberdrola, one of the largest utility companies in the world focused on delivering a sustainable, greener energy future. (2015)

Regarding the technology that it is used by citizens, Glasgow City Council and IBM presented a proposal to understand the complexity of walking and cycling in the city. To achieve this goal, Glasgow City Council uses Space Syntax to focus resources on key individuals and organisations to identify and map the current infrastructure for active and sustainable modes of travel in Glasgow on a city-wide basis (p.33). Additionally, the council will provide a smartphone application to encourage citizens to provide information and, collectively, map the city (p. 33). By doing so, it is supposed that mapping the way in which the active travel infrastructure co-exists with public transport infrastructure and services will be a further extension of this approach (p.33). Clearly, it could also boost for tourism if Glasgow was seen as a city where it was easy to walk, cycle and access the range of public transport options (p.32).

The data collected by the Future City Glasgow project will inform the creation of new Active Travel policies. For example, people who currently cycle will be able to use an app to identify the routes they use to travel around the city, which feeds into a map-sharing scheme and presents the results on a Map Glasgow website (Glasgow City Council, 2015). This app will also allow communities to share their knowledge though access to an admin portal that lets them upload data, images and geo location points (Glasgow City Council, 2015). The council conceives that walking and cycling are the most common forms of active travel (Glasgow City Council, 2015); therefore the active travel policy is perceived as a fundamental strategy for the Future City Glasgow project.

1.4 Conclusion

The ITU definition of a Smart and Sustainable City fits in with the idea of transforming Glasgow into a Smart City. By introducing ICT solutions, the council intends to improve the quality of life for inhabitants, making more efficient urban services that will be necessary for city growth, and preparing the city for new generations. This project intends progressively to transform the city over the next few years. Consequently, the aim to become a Smart City, in the case of Glasgow, will help citizens, businesses and visitors

For this purpose, the active travel policy has been chosen in order to understand the potential role of walking and cycling policies for smart city inhabitants. The present research focuses on the voices that promote cycling and walking in urban areas. This provides different approaches where Smart Cities can integrate active travel concepts to their policies on transport and commuting, in order to improve their sustainability. In reviewing these policies and the dialogues surrounding them, we can understand how can be applied to Glasgow.

To achieve this, it is necessary to develop a methodology that enables an understanding of the relevant discourses on Active Travel and this will be done in the following chapter. A policy analysis will examine the idea of walking and cycling in cities, using the example of Amsterdam. The capital of the Netherlands has been chosen because of the way in which cycling and walking have transformed the city since 1970. Needless to say that this policy analysis will be made in the third chapter of this research, the second chapter will offer a methodology aspect to the discourse analysis.

Chapter II

Discourse Analysis as a methodology

2.1 Introduction

After understanding the concept of Smart City and how it will be applied to the Future City Glasgow project, specifically by the Active Travel policy, it is necessary to review discourse analysis, which will be used as the methodology for this research. This will involve reviewing the implications of adopting this methodology and looking at how we are going to develop a framework where different voices are involved. In this project there are many agents involved, such as: Glasgow City Council, Future Cities Catapult, the Department of Business Innovation and Skills, and various organisations that encourage cycling in Glasgow. With so many voices involved in the promotion of walking and cycling in the city, it is pertinent to develop a methodology to understand those voices.

In this chapter, a brief definition of discourse analysis will be discussed and its implications and limitations will be explored. Finally, we will apply a framework of the insights that we are looking for in this research and we will set the criteria to expand the discourses involved in the policy-making of "Active Travel".

2.2 What is discourse analysis?

To understand discourse analysis, or discourse studies, it is relevant to think about the communication process. Van Dijk states that discourse is identified as an element of both social events and social practices (Van Dijk, 309), while Hajer explains that "discourse is seen as synonymous with discussion, or is at best understood as a 'mode of talking'" (1995, p. 44). Sharp and Richardson explained that "[discourse] clearly means different things to different researchers, and to their audiences, varying from strictly linguistic approaches that focus on communication to approaches that embrace ideas and actions" (2001, p. 193). Michel Foucault, for example, believed that discourses include language practices, but not linguistic descriptions (Foucault cited in Van Dijk, 2011, p. 305). Similarly, Sharp and Richardson, citing Jacobs, posit that such investigations become not the discovery of some ultimate 'truth' but rather a means of 'providing coherent and consistent explanations for events' (Jacobs, 1999, in Sharp & Richardson, 2001, p. 194). Additionally, Gasper and Apthorpe observe that the idea of discourse analysis involves 'argumentation analysis' when,

through precise readings of text and subtext, it emphasises discursive moves as being moves in logic as well as of style or community (1996, p. 2). Despite all the authors expresed a common argument on text and language, for us discourse can be consider as complete strategy that involves text and actions towars a mutual objective. Consequently, the definition of discourse analysis that we will use in this research will focus on the relations or interactions between different actors through written languages.

Discourse analysis as a methodology for this research provides a framework to understand these interactions. This framework could be developed under certain elements but in order to define which elements can be studied we need to look at what authors say. For this reason, Van Dijk sees discourse analysis as ranging from analyses of abstract sentences, conversation or argumentation structures on one hand, to laborative studies of cognition or mental representation, as well as etnographic observations of socially situated talk and interaction (2011, p. 2). He argues that discourse can be part of research on social interaction, power and domination; communication, abstract structures and dynamic strategies (2011, p. 3-5), while Bayman explains that discourse is concerned with the strategies employed in trying to create different kinds of effects (2008, p. 500). Hajer, on the other hand, says that argumentative discourse theory suggests that only an element of either of these narratives is understood by others in the context of their own knowledge of a particular story-line (1995, p. 120). Jacobs observes that discourse analysis provides significant insights that are not always evident from other research methodologies (2006, p. 40). For us, discourse analysis can be understood as a comprehension of text and its interaction(s) with the Therefore, policies that are related to Smart Cities and enhancing “active travel” will be analysed in terms of language.

2.3 Discourse Analysis limitations and strengths

Discourse analysis focuses the attention of the researcher on language but this approach has limitations and strengths, both of which must be examined. Hajer argues that “discourse is a specific ensemble of ideas, concepts, and categorizations that are produced, reproduced, and transformed in a particular set of practices and through which meaning is given to physical and social realities” (1995, p. 44), under this statement we can understand how and where discourse works whether is valid or not. Then a problem is set to the researcher while analyses the discourse. Gee presents a difference between “validity” and “having a point”, and that this is reflected in how much data this method supplies (1999, p. 7), considering that as a qualitative method, depends on how deep interpretation the researcher does into it. Finally, Gilbert and Mulkay mention that, discourse

analysis sets as empirical repertoire or a contingent repertoire which where are less likely to present their findings as the inevitable outcome of their experimental engagement (Gilbert and Mulkay, 1984 cited by Bryman, 2008, p. 503), furthermore interpretation tasks an enterprise, for non-linguistic researcher, it is a clear limitation for discourse analysis. Even while many data sources are contemplated to investigate, it is difficult to determine which source help.

On the other hand, benefits of using discourse analysis can be found in the abilities of the researcher. In this sense, these depend on the sociological, communication and linguistic abilities of the researcher. Gee assumes that discourse analysis "helps to explain how and why language works the way it does when it is put into action; and contributing to important issues in some 'areas'" (1999, p.8). These areas, as we mentioned previously, are social, communication and linguistic. Fairclough, as well, uses Dreyfus and Rabinow's work to justify Foucault, who opted for a focus upon discursive practices in an effort to move beyond the two major alternative modes of investigation available to social research; structuralism and hermeneutics (1982, cited in Fairclough, 1992, p.38), strengthening knowledge about the uses of language in society. Alongside, Bryman observes that discourse analysis scientists were more likely to recognize their own role in the production of scientific findings, rather than present their findings as the outcome of their experimental engagement (2008, p. 503), so the role of the scientist in discourse analysis is merely hermeneutic, or interpretative. However, Bryman identifies that discourse is conceived as a 'generative mechanism' rather than as a self-referential sphere in which nothing of significance exists outside it (2008, p. 508). Van Dijk points out that discourse analysis does not just provide an account of what goes on in organizations; it is also a process whereby meaning is created, namely 'who uses language, how, why and when' (Van Dijk, 1997 cited in Bryman, 2008, p. 509), something that Bryman supports with the concept of "intertextuality", which focuses on the social and historical context in which discourse is embedded (Bryman, 2008). Therefore, the researcher can develop, through empirical knowledge, the ability to use discourse analysis.

2.4 The instrument

In order to analyse the data from the discourse, a tool called a filling table will be used. The filling table will help divide the policy and allow a proper analysis of it. It will contain paragraphs of of the Glasgow Active Travel policy alongside different discourses that are related to walking and cycling promotion in other cities.

The analysis categories that we will be looking in the discourses of active travel are:

Title	Date	Author	Status	ID Number

As a plain table, this model will help to identify, not only the Active Travel policy, but different discourses that are involved in it. 'Title' will correspond to the analysed discourse; 'Date' gives the details of when it was published; 'Author' details the institution/organisation or writer of the policy. 'Status' identifies where the discourse resides (e.g. website, book, or government press release). Finally, an 'ID Number' column has been added in order to give each document a unique identifier. The complete table will be in the appendices as Appendix A. However, to understand how this policy interacts with the concept of the Smart City, it is necessary to add another table that allows us to differentiate between the application areas of active travel:

	WALKING	CYCLING	TECHNOLOGY	AUTHOR
HEALTH				
TRANSPORT				
ENVIRONMENT & ENERGY				
PUBLIC SAFETY				

This table will be populated with the information that Table 1 identifies as a part of the active travel policy. The columns divide the data into 'walking', 'cycling', 'technology' and 'author', allowing connections to be made between ideas from different discourses. The vertical axis lists the areas Future City Glasgow seeks to address with its policies. This means that we will identify the ideas that are related with Future City Glasgow challenges, in other words the tasks is to read the discourses and recognise whether a walking, cycling, or a technology-related indicator of the story-line used in the discourse. In the case of the information provided by the different discourses that we are analysing, a blank space will appear in the filling table. The table will appear in Appendix B of this research. The results of the analysis of those discourses will be represented in the next chapter.

2.5 Conclusion

Discourse analysis, as we can see, presents a variety of perspectives. This methodology seeks to provide an understanding of how to analyse the various voices that inform the Smart City concept. According to Hajer, the task of the political analyst is to explain how a given actor secures

the reproduction of his discursive position (p. 51). He also suggests that “human interaction is not related to roles and ritualised social practices but to discursive practices in which people are provided with what they call [subject-positions]” (pp.52-53). This means that these ‘subject-positions’ are the results of this discourse/language interactions within society. Furthermore, Fairclough distinguishes three aspects of the constructive effects of discourse: firstly, it helps in the construction of what are variously referred as ‘social identities’; secondly, it observes the social construction of relationships between people; and thirdly, that discourse contributes to the construction of systems of knowledge and belief (1992, p. 64). Therefore, by using the filling table tool, we will be able to understand how these interactions are framed by the active travel policy for Future City Glasgow.

CHAPTER 3:

DISCOURSES OF "ACTIVE TRAVEL",

AS A PART OF THE SMART CITY OF GLASGOW

3.1 Introduction

The final chapter of this research is the analysis of the discourses that are involved in active travel promotion in Glasgow, alongside their implications for the concept of the Smart City. In the previous chapters we have talked about the Smart Cities concept and how it is framed and utilised by the Future City Glasgow project, and we have explored the relevance of discourse analysis. This final chapter intends to present the analysis of those discourses that are in the Appendix A and B. These lists present the official voices of the Scottish communities that are involved in the promotion of cycling and walking within the city of Glasgow, in order to create the Smart City. Consequently, this chapter will provide the analysis of the voices and their implications in the transformation of this Scottish City.

In order to understand how these discourses interact and their implications in the construction of the Smart City discourse in Glasgow, we must examine the results of the discourse analysis. One of the aims of this process is to discern areas of commonality between the various discourses. Next we will develop the Amsterdam city case study, which will provide significant insights into how to promote citizen participation and is a well-known example for urban cycling; in fact the European Cyclists' Federation observes a 36% increase in bike journeys in 2014 (2015), and that the Dutch city is a model of the Smart City around the world (Bunell, 2015, Caragliu, et al., 2011, Centre of Regional Science, Vienna UT, 2007, Dameri, 2014, European Commission, 2011). Finally, with an understanding of the discourses of Glasgow's Active Travel promotion, we will discuss the challenges in creating a similar model to Amsterdam. By doing so, we expect to understand how the Smart City of Glasgow is framed by the Active Travel policy enahacement.

3.2 The Discourse of Active Travel in Glasgow.

The Glasgow City Council documents analysed in this research show that they are still working on the development of a policy that enables active travel as a part of Future City Glasgow project. There is a strong commitment to incentivizing and promoting walking and cycling as part of

a healthier way of living, alongside combining public transport and walking in the city. Transport Scotland conducted a National survey in 2012 where 66% of adults made a journey of more than a quarter of a mile by foot in the last seven days, but 55% said that had walked for pleasure or to keep fit at least once in the same period of time (2014). However, according to Glasgow City Council, in 2005 trips made by walking made up just 16% of all journeys in the city (2015). This makes it challenging for the city to maintain and increase walking journeys. Consequently, the promotion of Active Travel in Glasgow is relevant to all the strategies that the Council are developing and is not just a part of the Future City Glasgow project, but is an important factor in the continuous enhancement of infrastructure.

Similarly, there is a common strand through the four pillars of the Future City Glasgow project (health, transport, environment & energy, and public safety), which is the promotion of walking and cycling. The active travel policy aims to incentivize walking and/or cycling as a convenient (GCC 01, 02, 04), affordable (GCC 01, 02, 04, 07), and environmentally friendly activity (GCC 03).

Although all the discourses analysed present useful information about the four pillars, public safety was hardly referred to as a specific discourse because it was presented as an integration of CCTV coverage, in the hope that this would reduce anti-social behaviour incidents (Brown 2012, p.13).

3.2.1 Walking

In the documents listed in appendix A of this research, walking is the most common topic in Active Travel. In fact, the physical activity of walking is listed in 12 of the 13 discourses analysed. For example, the GCC 02 document helps to clarify how walking can improve the city by focusing on the health benefits that walking provides to citizens. This document is written as a conversation, in informal language, with few scientific references, because it is a part of the Council's Glasgow East End 'On the move' project. The document explores the benefits of walking and cycling by pointing out that "active travel uses fat as a fuel, so as you travel, you're getting healthier for free. Adults are recommended to do 30 minutes of moderate activity on most days of the week to stay healthy, this shouldn't be too hard" (Glasgow City Council, 2015). The intention of the council is to keep active travel in people's minds. Another example is presented on the ownership cost of a car in Glasgow:

> [The] running cost per mile for a new car worth £12-14,000 is 20.02 pence per mile. Cost per mile for a new car worth £12-14,000 covering 10,000 miles a year is 49.34 pence per mile so if you travel 3 miles to work and back, that's £1.21 - £2.96 a day.

> Not too much perhaps, but that's £302.50 - £740.10 a year. Think what else you could spend that money on if you took the 15 minutes to cycle instead. (Glasgow City Council, 2015)

This uses the discourse of economy in order to incentivize the transformation of the city. By emphasising the benefits of physical activity, the council addresses the need to improve the number of people walking. Foucault suggests that 'economic discourse' is defined by a certain constant way of relating possibilities of systematization interior to a discourse, other discourses that are exterior to it, and a whole non-discursive field of practices, appropriation, interests and 'desires' (Foucault, 1972 cited in Fairclough, 1992, p. 48), which emphasises the idea of walking promotion as pleasing to citizens' economy. Consequently, this kind of discourse could be seen as a strategy to encourage inhabitants to prefer one mode of transport over another, and to the common benefit for all.

Clearly, the discourse of walking in the active travel issue embraces the public health strategy as an essential part for Glasgow City Council. Public health strategies are trying to increase life expectancy in the UK (Brown, 2012, p. 11) and walking reduces weight and decreases a person's chances of getting ill (Glasgow City Council, 2015), therefore the pertinence of promoting this physical activity is referred to in half of all the discourses analysed. In this respect, Brown suggests that "the work focuses heavily on the role of placemaking and planning in reducing health inequalities and developing innovative ways of working across integrated city systems (2012, p. 12). This is also something Fairclough pointed out in order to understand the success of the strategies by saying "the rules for the formation of strategies determine which possibilities are realized (1992, p.48).

3.2.2 Cycling

Within the active travel discourse, cycling complements walking as an activity to promote a healthier lifestyle for Glasgow's residents. In this respect, all discourses analysed in this research presented cycling activity as integral to the challenges of the Future City Glasgow project, namely health, transport, energy and environment. In comparison with the walking enhancement discourse, cycling is represented as core option for commuting less than one to three miles. This discourse is also representative of transport challenges because it looks to enhance the bike use in the East end zone. For example, GCC 06 announces a program that focuses on two aspects of bikes and security for people who do not own a bicycle, or commute in the night: "refurbish used bikes to make them run like new, and will be sold on for much much less than a new bike. If you are cycling at night, you

will also need lights for your bike to make you visible to other road users" (Glasgow City Council, 2015). These aim to motivate cycling participation in Glasgow over the next few years. Similarly, in the GCC 05 document Gordon Matheson, Leader of Glasgow City Council says:

> The city's new Connect2 cycle route will also provide a link from Kelvingrove through Anderston to the city centre and the introduction of an automated cycle hire scheme will also encourage people to travel around the city by bike. I'm looking forward to the launch of Glasgow's Future City cycling apps and hope people will seize this opportunity to participate in the project and be part of the solution to problems like traffic congestion, obesity and poor health. (Glasgow City Council, 2015)

This project provides a safer route between West and East, as well an information technology solution to increase citizen participation. Cycling, as an activity, embraces many aspects of the Smart City discourse as it focuses so much attention on technological sensors and applications. As with the walking enhancement documentation, Glasgow City Council presents this information in an informal language that can be understood by all readers; at the same time the friendly discourse encourages citizens to be fit by riding to work or school.

In the discourse, cycling is portrayed as an easy solution for transport issues inside Glasgow. All the communication papers embrace the possibility of reducing car and public transport use, as well as polluting emissions, in the city by building more cycling infrastructure. To paraphrase Van Dijk, by understanding conversational discourse means that we can understand social issues (2007, p. 283) and this allows us to examine how society, or in this case Glasgow City Council, frames a problem. For example, the Open Glasgow video (13) uses a discourse that promotes a cycling app by presenting cyclists' issues and how they deal with these problems, and in addition the video explains the relevance of downloading the cycling app and helping city planners and developers, as well other cyclists, to know where to create the proper infrastructure for the city. This kind of discourse is related to Foucault's work, which made an important contribution to a social theory of discourse in such areas as the relationship of discourse and power, the discursive construction of social subjects and knowledge, and the functioning of discourse in social change (Fairclough, 1992, p. 38). The social theory that Fairclough talks about is related to the social changes that discouse can help, which in this case is to promote cycling and reduce traffic congestion in Glasgow.

3.2.3 Technology

In terms of technology, the discourse around the Future City Glasgow project is simple and straight to the point: by using the smartphone apps, the city will be improved. In addition to these mobile applications, the Council has installed sensors as a mode to measure the number of cyclists and pedestrians commuting in the city. In this sense, Future City Glasgow uses technology to drive innovation in the city. For example, Glasgow City Council document (02) mentions that, in order to get fit, citizens should have a pedometer which can count 3000 steps, which is the equivalent of 30 minutes walking (2015). This exemplifies interaction between health policy and transport. Another example is presented in the Glasgow City Council document 05, which expresses that "analysis of the information collected will be used to influence future spending in the city and determine the measures needed to address issues raised such as safety and accessibility" (2015), thereby explaining the purposes of data collection. Furthermore, the same document points to the benefits of having technology in the city: "intuitive lighting, phone apps and mapping tools will be piloted in Glasgow in a bid to increase cyclist safety and promote active travel" (Glasgow City Council, 2015), which demonstrates a goal for the council to create a safer environment for anyone who is in Glasgow. In this respect, the aim to use technology to enable safe active travel for citizens is explained formally.

At this point, technology is the enabler for the Smart City discourse that we discussed in the first chapter. However, it is important to remember that allowing people to participate in this transformation is one of the first goals of the Smart City. This is mentioned by the Department of Business, Innovation and Skills: "a Smart City should enable every citizen to engage with all the services on offer, public as well as private, in a way best suited to his or her needs" (2013, p. 7). Therefore, the aim should be to provide a tool that allows citizens to interact with their government in order to suit their needs. With this intention, the Glasgow City Council document (07) announces that Future City Glasgow funded a Sustrans[3] project to develop a cycle route auditing tool for smartphones, which tracks, assesses and rates cycle routes from their phone (2015). This tool is relevant to Fairclough's observation regarding the interdependency of the discourse practices of a society or institution: texts always draw upon and transform other contemporary and historically prior texts (1992, p. 39.40), in terms of the possibility to transform the city. Consequently, the app is part of a complex discourse for the Smart City of Glasgow, but this discourse is of most value when compared to the experience of another city, in this case

[3] A charity organization that encourage people to travel by foot, bike or public transport. This organisation also works with families, communities, policy-makers and partner organisations to create better places to live. (Sustrans, 2015)

Amsterdam, which is considered a model of a Smart City (Dameri, 2014), and, for the purpose of this research, a model of cycling integration.

3.3 Case of Study: Amsterdam as a Smart City and a cycleable city, the citizen discourse

In terms of citizen engagement and city transformation, Amsterdam offers a possibility to understand how the urban environment can be changed by encouraging inhabitants to participate publically. Between 1950 and 1970 traffic congestion, unsafe roads and parking problems decreased liveability in many Dutch cities (De Lange, 2012, p. 7). In addition, as is presented by Aluvihare, et al., early 1970's plans were develped to extend and expand the roads network, but led to large scale and violent protests, as the people of Amsterdam wanted to keep their city livable and safe (2014, p. 3). This had a significant impact on the city's infrastructure. This example can allow Glasgow citizens to embrace the viability of cycling in the city. According to Van der Horst, a complex combination of public pressure, policy making and physical planning transformed Amsterdam (2014, p. 4). Between 1960 and 1970 cars quadrupled in number, having a negative effect on road safety; fatality rates climbed before cycling communities joined together and forced the city council to take action (Van der Horst, 2014, p. 07). This is a clear example of how stakeholders can intervene in city planning. In terms of discourse, Chilton and Schäffner observed that this discursive strategy as a resistance, opposition or protest led to changes in the structures of political powers (1997, p. 212).

City planning in Amsterdam was a challenge between 1970 and 1980, when a complex cycling route network was developed (Van der Horst, 2014, p. 08). This cycle network has 500 kilometres of routes (2014, p. 09) which, according to Hilhorst: "was tough going in the beginning, because the network had to be created at the expense of the space available for cars. In practice however, it was often the pedestrian space which was reduced" (cited in Van der Horst, 2014, p.8). City transformation pursued the idea of creating a secure environment for cyclists, as well as for pedestrians. For example, the policy intended to increase safety, infrastructure, parking, education and promotion, which resulted in separate cycle lines of red asphalt that protect cyclists using the routes. Alongside this, the introduction of paid car parking and, as Van der Horst explains, demographic changes - meaning an increase in people with higher levels of education - led to a cycling boom in Amsterdam (2014, pp. 9,11). Aluvihare argues that "the basis for easier, quicker and safer cycling is the design and construction of a sophisticated cycle network with a clear hierarchy of routes" (2014, p. 16). This network has proved to be a real succes with an average volume of 2000 cycling commuters per hour on popular main routes (Aluvihare, 2014, p. 16), whilst

Glasgow routes are used by 9255 cyclist over an average two day period (Glasgow City Council, 2014)[4]. It is worth highlighting that the active travel policy tends to create more infrastructure for cyclists, depending on the most common routes for commuting. Therefore, Amsterdam shows a gradual transformation because the main stakeholders (cyclists and pedestrians) chose safety over car traffic and space and this helped to create the network that divides cycling, walking and car driving in the city. But this cycling project, despite its longevity, has not concluded yet and needs more technology to increase the number of cyclists in the Smart City of Amsterdam.

The transformation of Amsterdam into a Smart City began in 1994 under the concept of a Digital City, which aimed to modify information systems in order to make them more user-friendly (Cocchia, 2014, p. 28). Cocchia explains that the transformation has been a bottom-up phenomenon, grown from the free use of the Internet by citizens to share their opinion before the local elections (2014, p. 33). This demonstrates technology having an empowering action of the citizens, allowing them to become more active in the city's decisions. Cocchia agrees that the term 'Smart City' appeared when the Municipality of Amsterdam assumed the leading role in implementing several smart initiatives in the urban area. (2014, p. 33). For example, Mitchel et. al, discuss projects that were launched, beginning in 2006, as Amsterdam identified ways to improve sustainable living/working, public spaces, and mobility. Most recently, the city has been exploring the potential for a connected public lighting infrastructure (2013, p. 7). This leads to a clear objective to connect all of its citizens by 2018; once connected, residents and businesses will be able to access rich information and media resources, friends and colleagues, and a wealth of innovative services that will improve life across the city (Mitchell, et al., 2013, p. 8). As a result of doing this, input from citizens can be obtained by providing ideation platforms to develop a better city (e.g. the Amsterdam Smart City Platform), or competitions to take advantage of open public data to develop apps, useful data mash-ups or new services (Manville, et al., 2014, p. 54). Henceforth, the concept of Amsterdam as a Smart City is represented as a model for corporations, governments and institutions around the world.

3.5 What could Glasgow learn from Amsterdam?

It is clear that Glasgow has a long way to go in order to create a similar urban environment to Amsterdam, however, the Future City platform has the potential to provide the real changes that Glasgow's inhabitants need. The discourse expressed by local authorities defines health, transport,

[4] Needless to say, this map will be provided in the Appendix 3 which shows electronic counters for cyclists that commute in the city centre.

environment and energy, and public safety, as necessary challenges to address in order to increase the life quality of all citizens. Beyond that, discourse plays a role in engaging citizens to create communities, or, as it is proposed by Fairclough, as an actively constituting or constructing society on various dimensions: discourse constitutes the objects of knowledge, social subjects and forms of 'self', social relationships, and conceptual frameworks (1992, p. 39), that support the idea of community, which is the base of the urban transformation, as in Amsterdam's case. In the case of governments and citizens, Gee defines social interaction as "the distribution of 'social goods'" and it is these social goods which make up the challenges for the Future City Glasgow project (Gee, 1999, p.83).

In addition, it is important to note that Glasgow and Amsterdam are different in terms of population, territory, language and culture. However, both cities pursue the idea of improving the life quality of their inhabitants. Glasgow's population in 2011 was just under 593,000 (Scotland.org, 2015), while Amsterdam in 2012 had 820,654 inhabitants (Amsterdam.info, 2015). In territory, Amsterdam is slightly bigger with 219 km2, while Glasgow occupies a total area of 175.5 km2[5]. In terms of language, Amsterdam is predominantly Dutch speaking but many citizens can speak English (Amsterdam.info, 2015); in Glasgow, however, the population can speak either English, or Gaelic, or Scots, and sometimes two languages (Scotland.org, 2015). Final and undoubtably, the culture of both cities is represented in many ways that have allowed participation and a sense of belonging from their inhabitants, which makes it possible to achive common goals in the cities. Despite the differences, the Scottish city can learn about the "relative" success of the Smart City of Amsterdam by creating its own strategy to achieve this goal.

This learning outcome can be seen as what Fairclough described as a "discourse technology" (1992, p. 215), which include activities such as counselling, teaching and advertising. He explains that that modern societies are characterized by a tendency towards increasing control over more and more parts of people's lives (p. 215). However, discourse technologies are increasingly being used in specific institutional locations by designated social agents (p. 215). With this discourse technologies concept, an understanding of the way in which Glasgow as a Smart City can have implications for its citizens' control should be recognised, while the same technology can also be seen as empowering citizens. This is frequently accompanied by the unconvincing claim that it is 'not about controlling the behaviour', that it is a matter of 'influencing' people but not 'manipulating' them (Fairclough, 1992, p. 218). In essence, the potential uses of discourse technologies demonstrate how Glasgow City Council can use policy-making to influence its citizens

[5] These data correspond to Google database.

to transform the city. In such a way, the citizens empower themselves by creating communities that work alongside with the council, in the same way that Amsterdam's people did in the 1970s.

Another area in which Glasgow can learn from Amsterdam is the creation of a city platform that allows entrepreneurs to develop information technology solutions that are presented for the "common good" (Manville, et al., 2014, p. 24). For example, Glasgow City Council provides the tools for walking and cycling enhacement using smartphones. Amsterdam understood the relevance of creating this environment to allow citizens to participate more, while Glasgow seems to provide the tools but not enough enhacement to increase citizen participation. Such enhancements were not proposed in Glasgow's feasibility study; perhaps because challenges to health, transport, environment and energy, and public safety, are currently seen as more important than creating jobs for Glasgow. Nonetheless, the city has particular strengths in the growth sectors of low carbon industries, engineering, design and manufacturing, life sciences, financial and business services, and tourism and events, building on links with local academic institutions (Scottish Government, 2011, p. 34), which can allow entrepreneurs to tackle these areas, leaving the Council to investigate the other challenges.

Finally, Glasgow citizens should be more active in terms of participation and strengthening the community's use of discursive elements to allow more participation. In this case, the use of the platform Open Glasgow provides information to make better choices, which makes smart citizens. Therefore, Glasgow's people should participate actively either using the Open Glasgow platform, or by downloading the mobile application for walking and cycling in order to provide more data for the Council to use for the benefit of the community. By doing so, Glasgow has the potential to achieve the goal of becoming the smartest city in the world (Macdonell, 2015).

Conclusion

Through this research we have understood the implications of the concept of the Smart City, how is portrayed by institutions and organisations all over the world, and how this concept can be framed as a discourse to change societies. The concept behind the Smart City supposes to give a solution for new millennia challenges in the cities, for example overpopulation, pollution, sustainability, and energy consumption. This research presents a wide aspect of the Smart City idea, but a deep angle for improving citizen engagement in one particular area. The present research has given a frame to understand how Glasgow City Council can develop a policy to transform the city into a Smart City, through the Future City project in next ten years to achieve the goal of city transformation. Beyond this point, we understand that this challenge will take time to be achieved.

One of the aims of this research was to answer a range of questions. The first of these was related to whether the Smart City discourse, exists. In the process of doing this project the implications of adapting this discourse in Glasgow city are clear, as the consequences are explicit in the whole aspect of the policy-making of active travel, and the other proposals. This is because active travel uses information technology to understand the data given by the citizens. In this respect, the Future City Glasgow project does not offer a clear statement about a Smart City, however this project adopted what Robinson mentions, that "[Smart Cities] are led from the top by a strong and visionary champion, smart cities have a stakeholder forum of committed city stakeholders and smart cities invest in technology infrastructure" (2012, cited in Brown, 2012, p. 3), and continues by developing the idea of technology adoption in the text. Therefore, a discourse to move towards to the Smart City exists in Glasgow City.

Our second question has been answered in the third chapter. It was referred to the terms of how these discourses were used, and now they were presented. But, these discourses are presented in such a manner that citizens can be engaged by the ideas that are embodied in. It is clear that all discourses are linked in order to create a strong argument for this engagement. Nonetheless, this citizen engagement should be more proactive. In other words, the purpose of the discourses does not present a plan that motivates people to adopt active travel as a common way to commute, either to work, school, or entertainment places. These can be confusing, and need to be supported by the community. Consequently to strength the active travel policy, it will be necessary to involve more people and stakeholders (e.g. cycling groups, schools, or work places, and business hubs) in order to make the policy stronger.

The third objective that we had set it is related to the aspect of how the discourse is presented. Although, this question has already answered in the last paragraph, discourses of active travel intend to embrace the idea of health, economy, and living well in order to pursue the goal of walking and cycling improvisation within the city.

Our fourth objective, which was related to the discourse between Amsterdam and Glasgow, has been addressed in the third chapter. By definition, Amsterdam citizens were the principal stakeholders to transform the city, so if Glasgow City Council wants to create a similar success, then citizens must participate in the Smart City. Subsequently, stakeholders should participate, demand and support the Council to make this transformation possible.

The last question we wanted to answer was related to the construction of the Smart City of Glasgow, and whether it would be possible? The answer is that a continuous process to transform the city will take time. People from the city must be digitally literate in order to build the Smart City of Glasgow. The Council should continue to present new ICT solutions for young generations, such as the Open Glasgow platform, to be more participative in city decisions, and therefore create the intelligent citizenship of the Smart Cities.

After this reflection, we can summarize all the aspects related to the construction of a discourse that involves citizenship in the new Smart cities. Furthermore, this analysis can lead new analyses in the transition to Smart Cities around the world, offering new alternatives for studying the social implications of the Smart City discourse. By doing so, we must think that cities should identify their own challenges in the same way that Glasgow has done, if those cities intend to transform the Smart City. We believe that the Smart City of Glasgow can be implemented by participation of the walking and cycling stakeholders, who will be the principal beneficiaries of this policies. The discourse played a strong role in social change, this must be adapted and adopted by the citizens and the Council. And finally, the interaction between government and citizens, and vice versa, determines the success of the Smart City.

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APPENDICES

Documents to analysis

Title	Date	Author	Status	ID number
Active travel	2015	Glasgow City Council	Webpage: http://www.glasgow.gov.uk/index.aspx?articleid=14256	01
Smarter Choices – Active Travel Health	2015	Glasgow City Council	Webpage: http://www.glasgow.gov.uk/index.aspx?articleid=5407	02
Smarter Choices - Active Travel Environmental	2015	Glasgow City Council	Webpage: http://www.glasgow.gov.uk/index.aspx?articleid=5001	03
Smarter Choices - Active Travel Convenience	2015	Glasgow City Council	Webpage: http://www.glasgow.gov.uk/index.aspx?articleid=4000	04
Glasgow's Technology Drive for Safer Cycling	2013	Glasgow City Council	Webpage: http://www.glasgow.gov.uk/index.aspx?articleid=10275	05
Smarter Choices – FAQ	2015	Glasgow City Council	Webpage: http://www.glasgow.gov.uk/index.aspx?articleid=4073	06
Active Travel Keeping the City Moving & Getting Glasgow	2015	Innovate UK and TSB Future Cities	Webpage: http://futurecity.glasgow.gov.uk/active-travel/	07

Active				
Feasibility Study	2013	Brown	Report	08
Future City Glasgow – Brief	2013	TSB Future Cities Demonstrator	Report	09
Legacy 2014 Active Travel Programme	2014	Scottish Parliament	Website programme: http://www.gov.scot/Topics/ArtsCultureSport/Sport/MajorEvents/Glasgow-2014/Commonwealth-games/Indicators/Active-Travel	10
£10 million active travel boost	2015	Scotland Transport	Press Release: http://news.scotland.gov.uk/News/-10-million-active-travel-boost-17ba.aspx	11
Help make Glasgow a green city	2014	Open Glasgow	Video: https://www.youtube.com/watch?v=qwcTbvC-5GQ	12
Help make Glasgow a cycling city - GoCycle App	2014	Open Glasgow	Video: https://www.youtube.com/watch?v=NDg5-vHH3es	13

Appendix C

Ideas to analyse

<table>
<tr><th></th><th>WALK</th><th>CYCLING</th><th>TECHNOLOGY</th><th>AUTHOR</th></tr>
<tr><td>HEALTH</td><td colspan="2">We will be working with health providers, students, school pupils, walking group and cycling groups to effectively evaluate the current provision and identify practical steps which could be taken to encourage active travel.</td><td></td><td rowspan="5">Glasgow City Council (01)</td></tr>
<tr><td rowspan="2">TRANSPORT</td><td></td><td>Currently only 2% of journeys made into Glasgow city centre involve cycling.</td><td>People who currently walk and cycle will be encouraged to use a smartphone app to help collect information which will pave the way for infrastructure improvements.</td></tr>
<tr><td colspan="2">Increasing the number of journeys made on foot or by bike would help Glasgow cut carbon emissions, boost air quality, aid health and tackle obesity.</td><td>Data collected by people who currently walk or cycle will identify the routes they use most to travel around the city.</td></tr>
<tr><td>ENVIRONMENT & ENERGY</td><td></td><td>Increasing the number of journeys made by bike would help Glasgow cut carbon emissions, boost air quality, aid health and tackle obesity.</td><td></td></tr>
<tr><td>PUBLIC SAFETY</td><td></td><td></td><td></td></tr>
</table>

Appendix B

<table>
<tr><th></th><th>WALK</th><th>CYCLING</th><th>TECHNOLOGY</th><th>AUTHOR</th></tr>
<tr><td rowspan="3">HEALTH</td><td>Being fit and healthy's not difficult, just a little bit of activity each day makes a big difference. 10 minutes' walk to the shops, then back again instead of taking the bus will help reduce weight and decrease your chances of getting ill.</td><td rowspan="3"></td><td rowspan="3">Try using a free East End on the move pedometer to see how many steps you take in a day, you could try setting yourself targets or seeing if you can beat your friend's weekly totals!
3000 steps is roughly the same as 30 minutes walking, but don't worry if this sounds too much at first.</td><td rowspan="5">Glasgow City Council 02</td></tr>
<tr><td>Active travel uses fat as a fuel, so as you travel, you're getting healthier for free.
Adults are recommended to do 30 minutes of moderate activity on most days of the week to stay healthy, this shouldn't be too hard.</td></tr>
<tr><td>The rate walking and jogging burns calories is based on the distance you travel, so although jogging burns calories quicker, you also cover the ground quicker, so at the end of 1 mile, the jogger and walker will have burnt up the same number of calories</td></tr>
<tr><td rowspan="2">TRANSPORT</td><td colspan="2">Walking and cycling are the most common forms of active travel, but there's nothing to stop you rowing along the Clyde or skateboarding into town as well.
There's plenty of other ways you can clock up the minutes with cycling to work or walking to visit friends.</td><td rowspan="2"></td></tr>
<tr><td>As well as saving money on joining a gym, active travel saves more money on transport costs.</td><td></td></tr>
<tr><td>ENVIRONMENT & ENERGY</td><td colspan="2">We want to change the environment of Glasgow's east end to make it easier to walk and cycle and to help you feel better about where you live. These changes will include better signage, wider footways, new cycle routes and improving the landscape.</td><td></td></tr>
</table>

Appendix C

PUBLIC SAFETY				

	WALK	**CYCLING**	**TECHNOLOGY**	**AUTHOR**
HEALTH				Glasgow City Council 03
TRANSPORT	Transport is a major cause of carbon emissions and using active travel to reduce your footprint can really help. Buses and trains emit much less carbon that private cars, so you can combine walking or cycling with public transport to do your bit to help the East End environment. And by walking or cycling for local trips, you still retain control of how long the journey will take, far more so than in a car where traffic jams can cause delays.			
ENVIRONMENT & ENERGY	All motorised transport emits pollutants which harm the environment, even when you sit in a car in traffic, you are exposed to more of these pollutants than if you are on a bike or on foot, damaging your health as well as the environment			
PUBLIC SAFETY				

	WALK	**CYCLING**	**TECHNOLOGY**	**AUTHOR**
HEALTH	Active travel keeps your body and mind healthier, so you'll be ill less often and feel more capable of dealing with life. With every journey you're getting a light workout for free, meaning you can do more with your time.			Glasgow City Council 04
TRANSPORT	It's often quicker to walk or cycle than drive or use public transport, once you include the time it takes to park, wait for the bus, walk to the station and all the other delays that happen. With walking & cycling you travel from door to door and have much more control over the time it will take for your journey.			

Appendix B

	In Scotland, over 75% of journeys are under 5km, or 3 miles, and about 13% of all car journeys are less than 1000 metres. Wouldn't it be easier just to walk or cycle? 1000 metres takes less than 10 minutes for most people to walk, and 5km can easily be cycled in about 15 minutes.			
ENVIRONMENT & ENERGY				
PUBLIC SAFETY				

The AA gives the:
running cost* per mile for a new car worth £12-14,000 as 20.02 pence per mile
cost per mile*1 for a new car worth £12-14,000 covering 10,000 miles a year as 49.34pence per mile
so if you travel 3 miles to work and back, that's £1.21 - £2.96 a day. Not too much perhaps, but that's £302.50 - £740.10 a year. Thinks what else you could spend that money on if you took the 15 minutes to cycle instead

	WALK	**CYCLING**	**TECHNOLOGY**	**AUTHOR**
HEALTH				
TRANSPORT			The Active Travel demonstrator is part of a far reaching £24million programme taking place across the city to show how technology can be used to make life smarter, safer and more sustainable.	Glasgow City Council 05
			A separate Active Travel Journey Planner is also being developed which will enable cyclists and walkers to use their phones to easily and instantly find the most direct, flattest or off road route to their destination within the city before setting off on their journey. This app will integrate with the mapping app to enable people to share their favourite walks / cycle routes.	

ENVIRONMENT & ENERGY			Analysis of the information collected will be used to influence future spending in the city and determine the measures needed to address issues raised such as safety and accessibility.	
PUBLIC SAFETY			Intuitive lighting, phone apps and mapping tools will be piloted in Glasgow in a bid to increase cyclist safety and promote active travel. Many off-road routes are currently unlit but the pilot will see lights installed and fitted with sensors. The lights will dim when there is no activity on the route (to reduce emissions and save energy) then increase in brightness when the sensors detect approaching cyclists or walkers.	

Councillor Gordon Matheson, Leader of Glasgow City Council, said: "The Future Cities Demonstrator is an extremely exciting programme which will realise real benefits for the city. The council aims to transform Glasgow into a city of active living by encouraging walking and cycling. The Demonstrator's Active Travel project will contribute to that goal through the clever use of technology and by empowering cyclists to contribute their views on the improvements needed to make cycling and walking safer and easier in the city.

"The city's new Connect2 cycle route will also provide a link from Kelvingrove through Anderston to the city centre and the introduction of an automated cycle hire scheme will also encourage people to travel around the city by bike. I'm looking forward to the launch of Glasgow's Future City cycling apps and hope people will seize this opportunity to participate in the project and be part of the solution to problems like traffic congestion, obesity and poor health."

	WALK	**CYCLING**	**AUTHOR**
HEALTH	The rate walking and jogging burns calories is based on the distance you travel, so although jogging burns calories quicker, you also cover the ground quicker, so at the end of 1 mile, the jogger and walker will have burnt up the same number of calories (although the jogger will have more time to go for food afterwards)		Glasgow City Council 06

TRANSPORT		A bike is the main thing you will need. Glasgow East End on the move will be helping to set up a number of community run bike recycling programmes. These will help refurbish used bikes to make them run like new, and will be sold on for much much less than a new bike. If you are cycling at night, you will also need lights for your bike to make you visible to other road users. You can use the free East End on the move lights to augment these and make you even more visible, as do the free reflective bands, which can also be used to keep your trousers away from the bike chain.	
ENVIRONMENT & ENERGY			
PUBLIC SAFETY		No, not really. Figures for Great Britain as a whole from 2000 show that, once motorway miles are removed from the data (as cyclists cannot use the motorway) cyclists are involved in 21accidents per million kilometres cycled, compared to motorists who are involved in 20.8 per million km driven.	

Appendix C

<table>
<tr><th></th><th>WALK</th><th>CYCLING</th><th>TECHNOLOGY</th><th>AUTHOR</th></tr>
<tr><td>HEALTH</td><td colspan="2">Encouraging active travel uptake among citizens addresses the dual aims of improvement to congestion & environment and the all-important issue of improving public health.</td><td>Glasgow's Active Travel Demonstrator aims to show how technology can help make the city friendlier to cyclists and pedestrians - encouraging people to get active as they go about their daily lives.</td><td rowspan="3">Glasgow City Council 07</td></tr>
<tr><td>TRANSPORT</td><td>The Walking app took many of the heritage walks in the city and ported them into an app, that would encourage residents and visitors to explore the city’s neighbourhoods and parks on foot. The most innovative aspect of this project is the back end, where the simple to use admin portal allows users to upload new attractions, walks and apps. This allows a wide variety of groups (community councils, Friends Of groups) to take control of writing content and sharing their knowledge.</td><td colspan="2">The Glasgow Cycling App provides a platform for cyclists to map how they move around the city. Using the app, cyclists can record their routes - capturing and publishing their journeys. Using the data collected, other users can access information on the best routes around the city allowing them to better plan journeys and encouraging more uptake of cycling. The project part funded two posts to promote the app, and this approach to crowd sourcing data.</td></tr>
<tr><td>ENVIRONMENT & ENERGY</td><td></td><td></td><td></td></tr>
</table>

Appendix B

PUBLIC SAFETY	The project is working on developing an online Travel Plan portal for schools. This should help our young people engage more fully in planning their travel choices for getting to school, and to look at some of the travel issues that affect their school on a daily basis.	

Walkanomics

Future City Glasgow has funded a Sustrans project to develop a cycle route auditing tool for smartphones. The project has allowed Sustrans staff working within the council to work with developers to deliver a product that allows them to track, assess and rate cycle routes all from their phone. Initially an IOS app, the project is now developing an android version that will allow Sustrans to trial the app across the UK.

Appendix C

<table>
<tr><th></th><th>WALK</th><th>CYCLING</th><th>TECHNOLOGY</th><th>AUTHOR</th></tr>
<tr><td>HEALTH</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="3">TRANSPORT</td><td colspan="2">The transport challenge for Glasgow relates to the need to manage the volume of traffic and traffic-related pollution throughout the city together with the need for the integrated facilitation and promotion of active travel opportunities for citizens of Glasgow.</td><td rowspan="2">This work would coincide with additional infrastructure developments that are already taking place to develop the network of walking and cycling routes across Glasgow – for example, completion of the ‘Bridge to Nowhere’ project in Spring 2013 will provide a key link to Central Station for commuters.</td><td rowspan="3">Brown 09</td></tr>
<tr><td colspan="2">There is a strong desire within Glasgow for a properly integrated, safe, accessible and attractive infrastructure for active and sustainable modes of travel to increase the number of everyday journeys made by walking and cycling, reduce traffic congestion and pollution, achieve greater social interaction and improve fitness and physical health.</td></tr>
<tr><td colspan="2">There could also be boosts for tourism if Glasgow was seen as a city where it was easy to walk, cycle and access the range of public transport options available.</td><td>Mapping how the active travel infrastructure co-exists with public transport infrastructure and services would be a further extension of this innovative approach.</td></tr>
<tr><td>ENVIRONMENT & ENERGY</td><td></td><td></td><td>Asset management could include: road infrastructure, public lighting, sensor assets, parking spaces, benches, bins, railings, cycle tracks, walking routes, carriageways, bus lanes, waste</td><td></td></tr>
</table>

			water system pipe layouts, watercourses, river systems, sewers, British Geological Survey (BGS) sub-surface knowledge data in addition to soft landscaping features such as trees, flowerbeds, lawns or also people as the human assets of Glasgow.	
PUBLIC SAFETY	During the Feasibility Study, it was identified that further research in this area would be beneficial to understand the integration of the impact that dimmed street lighting may have with crime activity, community safety and the perception of crime, and levels of social inclusion, physical activity or active travel within an area.			

Active Travel is an integration of city systems in itself demonstrating economic, health and quality of life benefits while contributing to environmental sustainability and encouraging use of alternative modes of transport.

'Glasgow is aiming to make cycling the biggest participatory activity in the city by 2020 as part of an ambitious bid to capitalise on the sport's surge in popularity'

Appendix C

	WALK	CYCLING	TECHNOLOGY	AUTHOR
HEALTH				TSB Future Cities Brief 09
TRANSPORT		Data collected by people who currently cycle will identify the routes they use to travel around the city.		
ENVIRONMENT & ENERGY	A walking app for the city will provide smartphone users access to a variety of walks focusing on heritage, events, biodiversity etc.		The aim is to encourage people to map their city and share the information through the Map Glasgow website being also developed as part of the Demonstrator.	
PUBLIC SAFETY		People will be urged to report barriers to cycling and share positive routes.	The aim is to show how technology can help make the city more cyclist and pedestrian friendly.	

The app will let communities share their knowledge through access to an admin portal that will allow them to upload data, images and geolocation points, which will then be uploaded to the app.

Appendix B

	WALK	CYCLING	AUTHOR
HEALTH	National Walking Strategy Action Plan (to be published early summer 2015) Central Scotland Green Networks - A Place to Feel Good Living Streets' Street Audit training Living Streets' Walk once a Week Campaign Paths for All's Local People Local Paths Paths for All's workplace Step Count Challenge Paths for All's Big Fit Walk Paths for All's Health Walk Training Ramblers' Scotland Medal Routes	Cycling Scotland's Bikeability Scotland Cycle Training Cycling Scotland Cycle Friendly Employers Cycling Scotland's Cycle Friendly Schools Cycling Scotland's Give Me Cycle Space Campaign CTC / Youth Scotland Bike Club Sustrans' iBike projects Sustrans' Community Links projects Sustrans' and Cycling Scotland's Cycle Parking in Glasgow project	Scottish Parliament 10
	The programme aims to help Scots of all ages become more active. It seeks to provide the first steps towards an active, healthier lifestyle for all of Scotland, and also aims to reduce travel costs and harmful carbon emissions. The objective of the programme is to promote healthier alternatives to vehicular transport, by way of increasing the number of journeys taken through walking and cycling.		
	It aims to embed the choice of these alternative methods of transport in people's day-to-day living in order to encourage healthier lifestyles.		
TRANSPORT	Our vision for walking is to create a Scotland where everyone walks as part of their everyday journeys, places are well-designed for walking and everyone enjoys walking in the outdoors.	In addition to this we have a shared vision for cycling between partners that by 2020, 10% of everyday journeys will be by bike, and we will continue to measure indicators until then.	

ENVIRONMENT & ENERGY			
PUBLIC SAFETY			

	WALK	**CYCLING**	**AUTHOR**
HEALTH		Keith Irving, Cycling Scotland Chief Executive, added: "Today's announcement will help get the nation on its bike, improving health, cutting pollution and tackling inequalities. Cycling Scotland believes every child should have the opportunity to learn to ride a bike safely, confidently and happily through Bikeability Scotland cycle training.	Scotland Transport 11
TRANSPORT		This Scottish Government is firmly committed to supporting active and sustainable travel. This latest funding shows our determination to achieve our shared vision of 10% of everyday journeys being undertaken by bike by 2020, as set out in the Cycling Action Plan for Scotland. Minister of Transport, Derek Mackay: My officials at Transport Scotland will be writing out shortly to Sustrans, Cycling Scotland and other organisations receiving funding in 2015-16 to confirm budget allocations but suffice to say that I am very excited about what we collectively can achieve in the coming year and beyond.	
ENVIRONMENT & ENERGY			

PUBLIC SAFETY	£8 million funding through the ring-fenced Cycling, Walking and Safer Streets line in the Local Government Settlement	

	WALKING	**CYCLING**	**TECHNOLOGY**	**AUTHOR**
HEALTH				
TRANSPORT				
ENVIRONMENT & ENERGY	61% of people in Glasgow live within 500m of vacant land. Glasgow helps communities to use these spaces. Together we can let Glasgow Flourish. Time: 0:05-0:31		Having a resource such as the mapping system can enable us and them to identify suitable lands that isn't to go up for development in the future and community garden should be integral to future planning into town. Time 0:54-1:12 Mordin. Technologies such as open source mapping, datasets, Sustrans or can help communities to identify different areas in the city and maximise local community to present projects to build it together Time: 2:55 – 3:53	Open Glasgow 12

Appendix C

PUBLIC SAFETY				

This is a 3:53 minutes video in Youtube platform.

	WALKING	**CYCLING**	**TECHNOLOGY**	**AUTHOR**
HEALTH	Currently worth £4 million a year in health savings. 0:27			Open Glasgow 13
TRANSPORT		2% of all journeys to the city centre are by bike. That's 5,600 bike journeys each day. Bike use is on the increase (Graph displayed) Time: 0:05-0:24 LB: I think infrastructure allow cyclist to coexist on-roads users and therefore make more people to cycle. This make me feel safer, make me have more travel just around the city and therefore benefit Glasgow. Time 1:38 – 1:54 CL: I think what the main challenge is try to keep the city accessible to everyone. Cities are usually based on commerce, and so for that it work. People need to be able to	CL: The cycling app can allow you to find your journey to A to B. You can flag up any incidence on the area, and you can also see where you can secure park your bike at the end of that. If you're have a preferred route to use, you can submit it, and we can collect that data, which is completely anonymous, and then we can see when and where is the demand for cycling along these routes. Time 2:54 – 3:22	

		shop, to get into the shop, and it is really having a balance between in, and around the city and its functions. Time 2:07- 2:34		
ENVIRONMENT & ENERGY		LB: I think some of the biggest challenges of cycling in Glasgow is people's attitudes towards cycling and the awareness of cycling. Sometimes people see me as a cyclist rather than a person and they get angry. 0:46-1:00	LB: Open Glasgow is about empowering citizens to get involved and enabling them to make changes by knowing how the city works, by having things like the cycling app it will allow cyclist as myself to contribute information, and data to help city planners develop the city to really have y needs. Time 1:16 – 1:34	
PUBLIC SAFETY		LB: What is needed is a fundamental change of how cycling is seen within the cities. 1:08-1:11		

Lizzie Brotherston: LB

Collin Little: CL

Video uploaded by Youtube with a 3:53 minutes' duration

Appendix C

City Centre Cordon - Cycling Results Summary Plan 2014