Second Screens for Engagement with Political Discourse

PHD Thesis

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CONTENTS

Abstract

Today elections and referendums are contested across multiple media platforms working in tandem, including traditional media, particularly television, and digital outlets including social media. While in the past citizens had limited opportunities to engage directly with political campaigns, today these new channels offer a wide variety of ways to interact with the public, media and politicians. Televised debates in particular are accompanied by vast amounts of online content, much of it conducted through the use of *second screens*—personal devices, such as smartphones, tablets, and laptops used alongside television broadcasts.

This research has been motivated by the belief that second screens present an invaluable opportunity to engage the public in political discourse. They can give debate viewers a platform to engage with each other, find factual campaign information and facilitate social movements. However, recent research has been critical of the way social media in particular supports political discourse. So-called "fake news" hinders our ability to find factual information, filter bubbles limit the scope of opinions we are exposed to, while fear of trolling creates a barrier to online participation. In order to understand the issues and opportunities for second screens, we need to investigate how and why the public uses them, and where they fit into this wider media landscape.

In this thesis I aim to investigate current second screen practices, and to find design opportunities for tools that support viewers in their engagement with debates and with each other. I utilise a varied methodological approach in order to gather insights from a variety of different stakeholders and from the real-life situational context of debate viewing. I investigate current second screen practices through at-home observations and an analysis of tweets generated live during a debate, which contribute insights into how and why debate viewers use their personal devices. I further explored the role of new technologies in fostering social experiences for debate viewers. Through an in-the-wild deployment of a series of internet-connected research products I

contribute considerations for future solutions and challenge the dominance of traditional screen-based interactions. Through speculative designs, workshops, and interviews, I contribute design directions for future second screen tools. I achieve this by investigating viewer and expert perspectives on the larger issues with political discourse online and how they can be addressed through second screens. The findings from these studies aim to generate considerations for existing social media platforms, politicians, and broadcasters, and inform the development and design of new second screens, which cater to the needs of the debate audience.

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За Краси и Леон.

Declaration

I, Katerina Gorkovenko, hereby declare that I have written this thesis and I have conducted the research presented within. The work is original and has not been previously accepted for a degree. It was conducted as part of my PhD at the University of Dundee between October 2014 and October 2018.
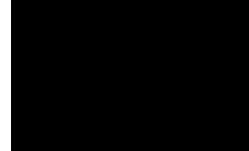
Relevant Publications

The majority of the research within this thesis has been published in several HCI conferences. All of the work presented has been conducted and written by me with supervisory input from Nick Taylor and Jon Rogers.

Katerina Gorkovenko and Nick Taylor (2019). Audience and Expert Perspectives on Second Screen Engagement with Political Debates. Proceedings of ACM International Conference on Interactive Experiences for TV and Online Video (TVX '19). https://doi.org/10.1145/3317697.3323352

Katerina Gorkovenko and Nick Taylor (2017). Understanding how people use Twitter during election debates. Proceedings of British HCI 2017. https://doi.org/10.14236/ewic/HCI2017.88

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Katerina Gorkovenko, Nick Taylor and Jon Rogers (2017). Social Printers: A Physical Social Network for Political Debates. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '17). http://dxdoi.org/10.1145/3025453.3025611

Katerina Gorkovenko and Nick Taylor (2016). Politics at Home: Second Screen Behaviours and Motivations During TV Debates. In Proceedings of the 9th Nordic Conference on Human-Computer Interaction (NordiCHI '16), Article 22, 10 pages. http://dx.doi.org/10.1145/2971485.2971514

1.   Introduction

Since the airing of the first ever TV election debate during the 1960 US presidential election, between John F. Kennedy and Richard Nixon, technology has come to dominate the way politicians engage with the public. Social media in particular plays an increasingly significant role: it is used by politicians as a platform to campaign, inform, and directly engage with the electorate. Televised debates are watched by millions of viewers who are often encouraged to join in on the debate discussions online through the use of a hashtag. As a result, debates are accompanied by vast amounts of online activity on social media platforms, such as Facebook and Twitter (Al-Deen and Hendricks, 2012, Bruns and Burgess, 2011). This audience generated activity is enabled through the use of personal devices, or *second screens*, such as smartphones, tablets and laptops (Gil de Zúñiga et al., 2015).

Technology has much to contribute to the political sphere, with many governments now embracing digital technologies or even redesigning the legislative process with the aid of crowdsourcing and online deliberation tools (Mancini, 2015). In the UK, a 2015 report has committed to use technology to make government *"more transparent, inclusive, and better able to engage the public with democracy"* (Speaker's Commission on Digital Democracy, 2015). There are high hopes for the way technology could impact our political future because it has given the public the ability to discuss, connect, investigate and be informed, but numerous issues are becoming evident with our current use of digital tools. *Fake news* is exacerbating misinformation globally (Fourney et al., 2017, Guess et al., 2018), filter-bubbles may be further limiting the public's exposure to diverse information (Semaan et al., 2015b), and "troll" or "bot" accounts attempt to influence elections internationally (BBC News, 2017b). These issues undermine the value of technology as a tool for political engagement and raise concerns about the way second screens affect debate viewers.

In less politically charged TV viewing contexts, second screens are also commonplace. In 2012 86% of Americans aged 16 to 64 use a mobile device

while watching TV (Proulx and Shepatin, 2012). Viewers use second screens for a variety of related and unrelated activity, such as checking emails, tweeting about the broadcast, or searching for information (Courtois and D'heer, 2012). Viewers who use social media while watching television report a series of benefits, including making them feel part of a community and affirming their opinions (Schirra et al., 2014). However, there are unique effects relating to politically charged content, which indicate that the second screen experiences of viewers watching debates would be different from those watching other types of programmes. Viewers are seen to post different types of commentary on Twitter alongside political debates than while watching reality TV (Doughty et al., 2011, Wohn and Na, 2011). Using Twitter while watching politically charged content may also have different effects on the opinion formation of viewers (Cameron and Geidner, 2014). This indicates a need for debate specific second screen research around political programming.

Much of the existing research into the use of second screens around political debates has focused on Twitter, which has live event appeal due to its short, timely, and tagged content. The existing research includes an analysis of how it used by politicians (Kreiss, 2014, Larsson and Moe, 2011), its deliberation quality (Anstead and O'Loughlin, 2011), its sentiment (Wang et al., 2012, Wang et al., 2011), its networks of users (Ausserhofer and Maireder, 2012, Bruns and Burgess, 2011, Larsson and Moe, 2011, Shamma et al., 2009, Trilling, 2014), and the hindrances of using it for political deliberation (Bakker, 2013, Semaan et al., 2015b). Despite the extensive research into the use of Twitter, the platform only accounts for a fraction of the overall activity online. Facebook is used by a larger share of the population (Thompson and Vogelstein, 2018), but its data privacy and until recently lack of use of hashtags has contributed to the small amount of published research into the way it is used alongside debates. Despite this Facebook has been found to enable everyday politics among its users (Crivellaro et al., 2014) and is widely used by politicians as a means to campaign and self-promote (Al-Deen and Hendricks, 2012). Furthermore, social media still remains a sub-set of the second screen activity in this context where viewers may choose to research information through search engines, access news websites with live commentary, or use

tools such as email for activity unrelated to the broadcast. Previous research lacks a holistic approach to understanding the different activities, actors and technologies at play.

In this thesis I aim to understand current second screen practices around political debates and to investigate design opportunities for tools that would foster engagement and cater to the needs of the audience. I explore the relationship between debate viewers and their personal devices, investigating how current tools support debate viewers and how they do not. I also present research around future directions for second screen tools through two studies. The first investigates the possibilities for connected products as tools for political talk alongside debates, while the second explores viewer and expert perspectives on the issues with political discourse online and how second screens can address them. Through this research I contribute an understanding of current second screen practices, design directions for future tools, and considerations for social media platforms, politicians, and broadcasters.

1.1. Research Questions

This research thesis addresses the following question relating to current second screen practices around political debates:

1. How and why are second screens used currently by the public during political debates?

HCI research must ground the development of tools in the understanding of the practices of the people it designs for. The growing body of research on second screening around political debates often focuses on aspects of the viewer's behaviour that can be observed remotely, for example through the collection of Tweets (Ausserhofer and Maireder, 2012, Bruns and Burgess, 2011, Larsson and Moe, 2011, Shamma et al., 2009, Trilling, 2014). Although this research has helped develop our understanding of the experiences that viewers have online, it has not given us sufficient insight into the experiences

viewers have in their homes: what motivates people to pick up their device, what do they do with their second screens, how do they feel about interacting with others online, how do they behave in this online environment? Insights into the debate viewer's motivations and practices for second screens use during political debates can inform the development of tools that meet the viewer's requirements and identify needs that are not currently being met by existing tools.

2. Can emerging technologies offer new opportunities for engagement in political discourse around televised debates?

As the home environment becomes more populated by connected products, the pre-existing dominance of traditional screen-based experiences may shift in favour of other modes of interaction, such as IoT. By incorporating connected devices into our living environment, we can create new ways of engagement with the outside world. This led me to extend the search for political engagement tools beyond individual personal devices and towards the next major technology developments. Connected products may offer a more immersive and engaging way to interact with others during political debates. By exploring how connected products influence the experience of watching a debate, we can gain an understanding of how to appropriately design for them in the future. Furthermore, displacing the interaction from conventional social media and second screens can challenge the dominance of traditional screen-based interactions. This has the potential to alleviate some of the issues that we observe with current second screen tools, such as managing the visual attention of viewers.

3. What opportunities for second screens to address issues with political discourse can be identified through design-led research combining viewer and expert perspectives?

Previous research has largely examined the visible online behaviours surrounding political debates. While it has effectively mapped out how viewers who actively engage online post content, it doesn't provide all of the information needed to identify design directions for future second screen tools.

The body of research fails to account for second screen users who do not post content and the complicated network of stakeholders that are involved with political debates. Television producers, debate viewers, politicians, social media platforms, journalists and political researchers are all involved in the orchestration and experience of watching a political debate. They are all influenced and interested in the activity surrounding these events but may have different perspectives about the predominant issues and opportunities for online engagement. This creates a strong demand for an inquiry-driven exploration of the opportunities and challenges for future second screens. By involving debate audiences and experts involved with political debates in a research process, this research aims to explore new directions for second screen tools around political debates.

1.2.　　**Research Approach**

Second screens are used by viewers with varying levels of political engagement who may be motivated to use their personal devices for different reasons and in different ways. Where past studies typically present an analysis of the content posted on Twitter, which does not investigate the broader practices, attitudes and context of debate viewers, this research aims to contribute a more nuanced understanding of the audience and its use of technology. Furthermore, a multitude of stakeholders are interested in this activity, including broadcasters, politicians, academics, social media platforms, journalists, and the public. The future of second screen tools for political discourse will likely be shaped by these groups, who may have conflicting needs and desires. In order to investigate current second screen practices and directions for future tools, this research needs to adopt a holistic approach towards understanding the context of debate viewing and those involved and interested in second screening practices. It utilises a design-led research approach with an array of qualitative research methods, including in-situ observations, interviews, research products, workshops and speculative design.

Two studies were used to research current second screen practices. The first study used thematic analysis (Braun and Clarke, 2006) in order to analyse

tweets generated during a debate. Where past research has analysed the discussion topics of Twitter posts (Pedersen et al., 2015, Trilling, 2014), their sentiment (Wang et al., 2011), and volume (Anstead and O'Loughlin, 2011), this thematic analysis of tweets focused on the behavioural themes exhibited within the tweets. This approach allowed me to investigate what types of self-expression are currently supported by Twitter.

The second study investigates how and why viewers use second screens during debates through at-home observations, which were recorded with small wearable cameras. The study was able to capture the second screen activity that emerged within the real-life context of debate watching from the perspective of the viewer. This method allowed the participants to be in the comfort of their own homes, interacting with friends and family. I adopted this in-situ research method because it is difficult to capture the intricacies of the relationships between people and technology outside their real-life context of use (Crabtree et al., 2013). I aimed to capture in-situ second screen activity, which resulted in response to the debate and others in the living room. Together these research studies contribute a more nuanced understanding of the motivations behind this practice. They identify how current social tools support viewers and how they do not.

In addition to studying current practices, I further explored the role of new technologies in creating new second screen experiences alongside political debates. An in-the wild deployment of a series of IoT products in two month-long studies, investigates the possibilities for connected products to be used as active political engagement tools. The project adopted a design-led approach, where *research products* (Odom et al., 2016)—inquiry-driven, finished and independent research artefacts situated in the wild—are used to stimulate reflection, and speculation in participants (Gaver et al., 2006, Helmes et al., 2011). The research products were not designed to address the needs of debate viewers, but instead they pose a new set of questions around the role of physical devices in the home as tools for social communication. The situated nature of the objects reflected the real-life context of watching television, while the long

duration of the study allowed for participants to grow accustomed to the objects and form relationships with the other households.

In order to further explore design directions for tools that support debate viewers, I investigated the perspectives of multiple stakeholders who are interested in this activity. I utilised speculative design to understand the issues with political discourse online and the opportunities for second screens to address them. A series of workshops with debate viewers conducted alongside a televised debate unravelled the most important issues that they see with political discourse online. By framing the workshop activity with the use of a televised debate and questions about the design of second screen tools, the participants were able to identify design opportunities for second screens alongside debates. The ideas generated throughout the workshops were then used to create four speculative designs, where imagined design concepts are used as a tool to enable the formation and analysis of unrealised design ideas (DiSalvo et al., 2016, Dunne and Raby, 2013). They helped visualise future opportunities for second screens and allow the experts to reflect on their implications. By using speculative designs as a means to mediate the issues and opportunities identified by the debate viewers to the experts, I was able to research ideas and futures that I could not build. This multi-layered research project was able to unravel some of the complexities of designing for contexts involving multiple stakeholders, needs, issues, motivations and intentions.

Using varied methodologies has aided the validity of the work and the unravelling of the intricacies of human behaviour within political discourse. A triangulation of methods has been instrumental in revealing insights into both existing practices and speculative futures. The use of design led research methods allowed me to investigate the real-life context of debate viewing, to gather different stakeholder perspectives, and to explore how new technologies would impact the viewing experience. Through a user-centred, design-led research approach this project has been able to map out current audience behaviours, possibilities for connected products, and multiple perspectives on the future of second screen tools for political debates.

1.3.   Contributions

This PhD thesis makes two major contributions to the study of second screen use alongside political debates. The first is a look into the current motivations and practices within second screens use around political debates. The second is an exploration of the future possibilities for second screens alongside political debates. More specifically the thesis contributes:

1.   A minor contribution towards an understanding of the visible online behaviours within Twitter content generated during a 2015 UK General Election debate, which illustrates how current tools support self-expression and social interaction around debates.

2.   An understanding of how and why debate viewers utilise second screens during a debate. This provides insights into the range of activity that takes place in the home and the needs that motivate it.

3.   Insights into how second screens currently support and hinder engagement with political debates, which provides and understanding of the needs that are being supported by current tools and those that are not.

4.   An exploration of how connected products might contribute to the experience of watching and engaging with televised debates. This highlighted considerations for future design solutions, existing social media platforms, and challenged the dominance of screen-based interactions.

5.   A minor contribution is made through an audience perspective on the issues with political engagement online and the opportunities for second screens to address them. In addition to confirming some of the pre-existing issues identified by HCI research, the audience identified a few new issues and mapped out some of the opportunities they saw for technology in this context.

6.   Four speculative design concepts for second screen tools, used to capture possible solutions and prompt discussion. They were instrumental in visualising the audience perspective on the opportunities for second screens and enabled reflection on the part of the media and politics experts.

7.   An expert opinion on the implications of addressing the issues and opportunities for second screens identified by the audience and the speculative

designs presented to them, which point to a disparity between viewer's expectations and complexities of addressing them.

1.4. Thesis Overview

This PhD thesis contains four studies conducted between 2014 and 2018, which were framed by the major political elections and referendums that took place in Scotland and the United Kingdom. These political events aired televised debates, which were accompanied by large quantities of social media content generated live by the viewers, journalists, and politicians. Each of these political events has been discussed at the start of the research chapters in order to contextualise and ground the work.

In Chapter 2 I present the context of political television. I also explore what is meant by political engagement in this thesis, and what role technology plays in enabling it. The chapter further discusses research into the tools used for political engagement by both the public and politicians. The background section also illustrates some of the more notable issues with political discourse online.

Chapter 3 focuses on second screens. It discusses the different contexts of use, their benefits, and how the public utilise pre-existing social media platforms. The related work chapter also looks at second screen use during political debates, including what tools are used, how they are used and the issues with the practice. The section identifies the limitations in the scope of approaches adopted by previous research.

Chapter 4 presents research into the current second screen practices of debate viewers. The chapter consists of two studies conducted during televised debates aired throughout the 2015 UK General Election. Within the first study I collected and analysed tweets generated live during a debate. The second, used at home observations of 18 participants in order to explore the behaviours and motivations that frame second screen use in the home.

Chapter 5 presents research into how new technologies, such as connected products and the Internet of Things, may shape the future of second screens during political debates. The Social Printers study was conducted during the Scottish Parliamentary Election and EU Referendum of 2016. The study explores how physical devices could be used to engage viewers with televised political debates by deploying five internet-connected printers into nine Scottish households. The work indicated that technology has much to offer by enabling new ways of social interaction around debates that foster a strong sense of community, conversation and challenge the dominance of conventional screen-based interactions.

In Chapter 6, I discuss research into the issues with political discourse online and the opportunities that debate viewers see for second screens to address them. Four two-hour design workshops highlighted six key issues, including a lack of fact-based content, tensions between anonymity and identity, and uncivil behaviour. Four speculative design concepts encapsulating possible solutions to these issues were used to prompt further discussion with political and media experts, who were able to identify the implications and challenges of addressing them.

Chapter 7 presents a discussion of my research findings. It begins by discussing current behaviours and practices. Then following the overall narrative on my PhD, it discusses how and why I challenged the notion of the second screen. I then discuss the design directions for second screens that have been identified within my research and discuss their potential implications for political discourse. To conclude my discussion, I present the implications of my research for social media, technology and politics. In Chapter 8 I conclude the thesis by summarising my findings and discuss potential directions for future work.

2. Background

Technology has reshaped the way citizens engage with politics. Television has made elections more accessible to the public by delivering political messages straight to people's homes. Online platforms have also made it easier to take part in campaigns, raise funds, deliberate, discuss, and find information. While technology has made great contributions to political engagement, there are also worrying trends, which may have a negative impact on the electorate. This chapter outlines how political engagement has evolved alongside technology. It accounts some of the most notable historical moments within political television, discusses how digital social tools support political engagement, and what issues arise from its use.

2.1. Political Engagement

Today campaigns are contested across multiple media platforms, including print media, television, and digital platforms, such as social media, news websites and political websites. They are used in order to reach a wide audience and encourage engagement. This drive towards making politics accessible to the public is raising questions about the way we define political engagement and participation.

Where political participation is seen as behaviour linked to measurable political activity, such as voting, attending rallies, and being a party member, political engagement can encompass more subtle behaviours and even attitudes (Gibson and Cantijoch, 2013). Research into engagement has aimed to investigate the relationship between various factors and their effect on these participation indicators (Funk, 2010, Yamamoto and Nah, 2018). For example, a willingness to search for information has been linked to higher political engagement (Yamamoto and Nah, 2018), while social incentives, like being seen as an active community member, can contribute to higher voter turnouts (Funk, 2010).

Research usually utilises self-reported survey results to assess engagement (McKinney and Warner, 2013, Shah et al., 2005). Social and political sciences tend to seek out measurable behaviours to indicate political engagement, which can blur the lines between engagement and participation. Increased engagement is positively associated with voting, attending clubs, volunteering, talking to family about politics, campaigning, and taking part in political and social movements (Funk, 2010, Hargittai and Shaw, 2013). Within social media, Rainie et al. (2012) define political engagement in terms of actions that leave a trace on the network, such as clicking "like" on political material, posting thoughts on issues, and reposting political content, while Verba et al. (1997) define political engagement in two ways, which do not produce such a visible trace. The first is through measuring political knowledge, such as a person knowing who their government representative is. The second is a subjective self-assigned measure of engagement, that often may include a personal account of political interest, taking part in political discussions, and exposure to the media.

Within this thesis I have adopted definition of political engagement described by Verba et al. (1997). Here political engagement is a self-assigned and personal label, a willingness to be actively informed or participate in civil society. It could be something as small as researching information, or as engaged as being a party member.

2.2.   History of Television and Politics

One way that politicians attempt to stimulate political engagement during campaigns is through political debates. The first TV election debate in history took place in the US in 1960 between Kennedy and Nixon (Botelho, 2016). There was a stark difference in the perceived debate winner for those that watched it on screen versus those that listened to it on radio, and it is argued that the TV debate swung the race in favour of Kennedy who looked healthy, young and articulate on screen (Botelho, 2016). At the time some experts thought that the move towards televised debates could help bring about an *informed democracy* (Gardam et al., 2011), while others were concerned that

debates could corrupt the judgement of viewers in favour of looks rather than politics (Botelho, 2016).

Televised debates took longer to be adopted in the United Kingdom. Proposals for televised political debates were repeatedly initiated by the BBC starting from 1960, but Gardam et al. (2011) speculate that the government was reluctant to incorporate them into the election process earlier because the United Kingdom, being a parliamentary democracy, may find it difficult to include smaller parties without overplaying or underplaying their importance and role. Furthermore, political debates may also over-emphasize the role of the party leader (Walker, 2015). The first ever UK election debates were finally aired in in the 2010 General Election and were much anticipated and appreciated by the public (Gardam et al., 2011).

Outwith election debates, various forms of political broadcasts have been aired in the UK, such as Party-Political Broadcasts, Prime Minister's Questions, and BBC's *Question Time*. Party-Political Broadcasts, broadcast material created by a single political party, began being aired around election times in 1951 (Webb, n.d.). Meanwhile, *Question Time*, a debate panel show, provided a televised debating platform for politicians in 1979 (Anstead and O'Loughlin, 2011). Although Prime Minister's Questions had existed since the 1880s, they started to be aired live on BBC Two in 1990 (White, 2011).

Such televised debates play a vital role in the public's perceptions and understanding of current issues. In a study spanning a decade, McKinney and Warner (2013) discovered that televised debates inform the public's understanding of key issues, opinions about the candidates, their voting choices and their political engagement.

2.3.   Political Engagement Through Technology

Citizen's active political engagement is integral to Habermas' notion of the *public sphere*, a space that facilitates critical debate within society and holds the state accountable (Habermas, 1991). Research identifies social networks, such

as Facebook and Twitter, as having the potential to support the formation of a public sphere. Conversely there are vast inequalities between those that participate online (Hindman, 2009), which creates tension with traditional notions of a public sphere grounded in Marx's political theories of equality between citizens (Habermas, 1991). Continued debate into the implications of using online platforms for political discourse indicate that they foreground *everyday socio-political talk* as a means to encourage a *talking electorate* (Brooker et al., 2015, Halpern and Gibbs, 2013). They argue that this engagement plays a key role connecting citizens to democratic processes, making them aware of a variety of issues and opinions (Brooker et al., 2015, Halpern and Gibbs, 2013). Digital technology plays an intricate role within political engagement, with a majority of people in the USA recognising that they have used it for political purposes at least once (Rainie et al., 2012).

The use of social media has been credited with the formation of political movements and activism across the globe, from the election of Barak Obama in 2012 (Kreiss, 2014) to the momentum and spread generated around the Arab Spring (Lotan et al., 2011) and the umbrella movement in Hong Kong (Parker, 2014). However, in his book *The Myth of the Digital Democracy* Hindman (2009) argues that while it is easy to post political opinions online it is difficult to be heard. Furthermore, in a large scale survey into online political engagement with 2,081 Dutch participants, Bakker (2013) found that internet access does not necessarily translate to participation. The majority of the public do not use *participatory media*, media where the public plays an active role in creating and disseminating content (e.g. Twitter, political blogs), and those that do are already highly interested in politics, such as journalists and politicians. Instead they found a connection between personality traits and political participation, where extroversion and online political contributions are correlated. These findings echo research done by David Clarence McClelland, a Harvard psychologist who developed a theory commonly referred to as the *Achievement Motivation Theory* discussed in his book *The achieving society* (McClelland, 1961), which links motivation to the need for achievement, the need for affiliation, and the need for power. In a similar way to Bakker's (2013) research connecting personality traits and engagement, McClelland's

(1961) findings that the need for achievement and power are often observed within individuals in leadership positions, may also be influencing the emergence of inequalities within online political engagement. Due to this tension between consumption of political content and willingness to actively interact or contribute Ward et al. (2003) argue that the internet will make only a *"modest positive contribution to participation and mobilisation"*.

Other research teams draw a stronger link between use of technology and political participation. Through telephone interviews with 2,254 adults, Smith (2009) found that during the US 2008 Presidential Election, 78% of Americans who use the internet reported searching for political information and news online. 58% of those that used online tools for political purposes report sending or receiving campaign information and one in five internet users in the US reported participating in politics online through social media (Smith, 2009). Statistics indicate that those numbers are growing each year as technology becomes more accessible but that television remains the dominant source of political news (Smith, 2009). Hargittai and Shaw (2013) suggest that although using digital tools does not correlate to higher levels of voting, it is connected to other forms of political engagement and social capital, such as volunteering, contacting political officials, and signing petitions.

Political engagement is especially important around elections, when citizens are expected to make informed voting decisions. Current events indicate a shift away from conventional politics. The election of controversial figures into power, such as Donald Trump in the US and Rodrigo Duterte in the Philippines, and the vote of the United Kingdom to leave the European Union, all highlight a perceivable change in public opinion across the globe away from liberal-democratic norms (Foa and Mounk, 2017).

Although we can't draw a connection between the use of technology and these political trends, it is important to note that this shift of public voting choices is happening at a time when people are more connected and informed than ever through the Internet. Despite hopes that technology would enable a more democratic and just social and political environment, there are worrying trends which overwhelm the public's ability to find trustworthy information

and be surrounded by diverse opinion. Technology seen the rise of problematic trends like filter bubbles, where people are exposed to opinions that complement their own, and fake news, where news articles containing false information are distributed as true (Fourney et al., 2017, Guess et al., 2018).

Conversely technology has also brought to light empowering information to the public's attention such as the Panama Papers leak, which revealed the names of prominent figures and politicians who have avoided paying tax through offshore entities. The data leak had a significant impact on the public's perceptions of the politicians and celebrities involved and led to the stepping down of the Icelandic Prime Minister Sigmundur Davíð Gunnlaugsson (Henley, 2016). Although it is difficult to gauge the ways that technology impacts public opinion and engagement it is becoming a vital part of the political campaign toolkit.

2.4.   Politics and Social Media During Elections

The United States were some of the first adopters of technology within an election campaign with the use of candidate websites in 1992 and email in the 1996 presidential campaigns (Gueorguieva, 2008). By the year 2000, US election campaigns adopted online fund-raising, and by 2006 they began using social media platforms and video services, such as MySpace and YouTube (Gueorguieva, 2008). In later years Facebook and Twitter also became adopted in elections across many Western countries for a variety of purposes, the most important of which are to campaign, self-promote and spread information (Al-Deen and Hendricks, 2012, Bruns and Burgess, 2011, Pedersen et al., 2015). This is particularly important since Twitter is widely utilised by journalists from traditional media (Ausserhofer and Maireder, 2012).

Furthermore, the use of social media by politicians increases the public's perceptions of authenticity and trust (Enli and Rosenberg, 2018). The use of social media by the Democratic Party during both of Obama's presidential

campaigns in 2008 and 2012 have been accredited with his success (Kreiss, 2014). In the 2008 election research identified the emergence of "citizen-initiated" campaigning, in which campaign tasks, such as fundraising, are outsourced to ordinary supporters (Gibson, 2013). While the freedom and flexibility afforded to Obama's campaign staff in the 2012 election led them to have *'performative power'* and allowed them to be more responsive to real time political events, which aided his second presidential win (Kreiss, 2014). In the UK political campaigns are recognising and embracing the power of technology to inform and influence the electorate. Gibson (2013) argues that citizen-initiated campaigning, like the one observed in the US, is migrating into the UK. In the 2010 Election the use of social media may have contributed to the popularity of the Liberal Democrat party (Gibson, 2013). As a results of the growing recognition of the value of online campaigning strategies the Conservatives spent ten times more money on digital advertisements than Labour in the 2015 UK General Election (Wong, 2018).

Pre-existing social media platforms host the majority of political discourse around election periods in many western countries, such as the USA, Australia, the UK, Austria, and Germany (Ausserhofer and Maireder, 2012, Bruns and Burgess, 2011, Kreiss, 2014, Pedersen et al., 2015, Trilling, 2014). The expression of political views on social media platforms, like Facebook and Twitter provide social reinforcement, through the networks that form and the likes and retweets users receive on posts, which facilitates further participation (Mutz, 2013).

Much of the research into the use of social media around elections has focused on Twitter, in part due to its openly available, relevant and tagged content. Politicians use it as a platform to campaign and a way to influence public and journalistic perceptions, while the public use Twitter to post and read political commentary (Ausserhofer and Maireder, 2012, Kreiss, 2014, Larsson and Moe, 2011). Research has looked at Twitter's deliberation quality (Anstead and O'Loughlin, 2011), its networks of users (Ausserhofer and Maireder, 2012, Bruns and Burgess, 2011, Larsson and Moe, 2011, Shamma et al., 2009,

Trilling, 2014), and the hindrances of using it for political deliberation (Bakker, 2013, Semaan et al., 2015b).

Twitter is dominated by a small group of very active users. Studies from both Australia and Sweden have identified the majority of election content was generated by a small group of active twitter users, including journalists, politicians, experts, and citizens (Ausserhofer and Maireder, 2012, Larsson and Moe, 2011). Ausserhoffer and Maireder (2012) analysed the network of users by manually identifying 374 individual accounts of politically active users, they discovered that the political discourse was dominated by an elite of political professionals, but that is was also open to outside participation as indicated by the mentions between different groups (Figure 1).
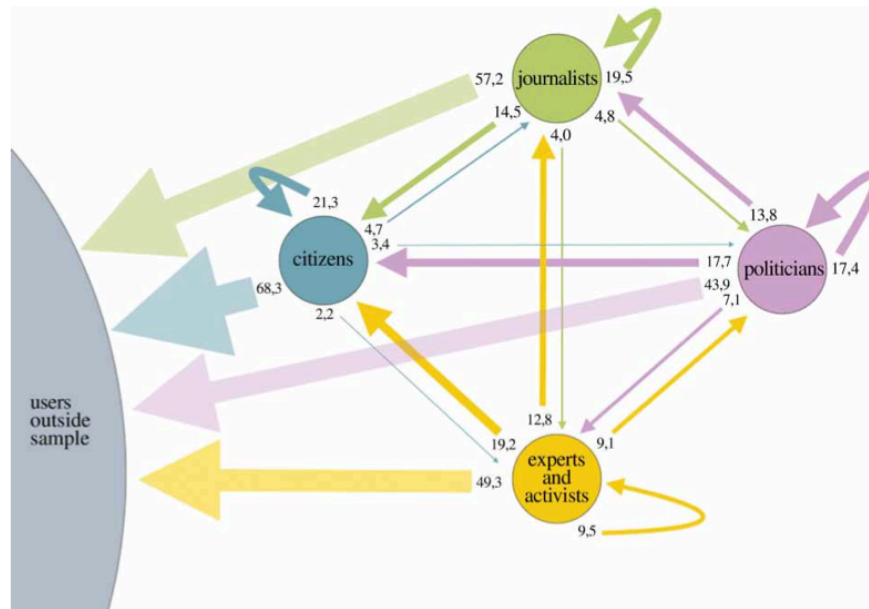
Figure 1 Twitter user groups mentioning themselves and others as a percentage of the overall group mentions in the Austrian Twitter-sphere (Ausserhofer and Maireder, 2012).

Due to this complicated activity by a variety of different groups including the general public, news media often attempt to evaluate public opinion and the success of party candidates based on Twitter content (Anstead and O'Loughlin, 2014, Patterson, 2016). Despite this sentiment analysis does not seem to indicate election success, as was in the case of Hilary Clinton versus Donald Trump in the US presidential campaign of 2016 (Patterson, 2016). Clinton received 46% positive twitter sentiments in comparison to the winner

of the election who received 44% (Patterson, 2016). Despite this lack of correlation between sentiment on Twitter and voting patterns there is a push to create real-time Twitter sentiment analysis tools. These tools have low accuracy rates, due to the demographic unrepresentativeness of those who use Twitter, but are convenient due to the vast quantity and speed of the generated content (Anstead and O'Loughlin, 2014, Wang et al., 2012, Wang et al., 2011).

Meanwhile, Facebook also holds a great political significance because it is used by politicians to self-promote and campaign (Al-Deen and Hendricks, 2012). It has been instrumental in the organisation of protests and revolutions (Lotan et al., 2011). The majority of the research into the use of Facebook for political engagement have adopted a survey or interview approach (Nils, 2012, Wang and Mark, 2017). Unlike Twitter the platform has a different set of privacy settings and until recently a very limited use of hashtags, which made the collection of data difficult. Despite this its use for political purposes is widely researched.

Facebook is a valuable tool for political discourse and is used for both issue specific and everyday politics (Crivellaro et al., 2014, Vraga et al., 2015). Although Facebook can lower the threshold for political participation, it does not increase the likelihood that politically interested users would use it to actively participate. Factors such as not wanting to make your political views known to friends and family and insecurity concerning credibility discouraged participation (Nils, 2012). Instead of a platform for active political participation, Facebook is commonly used as a source of political news. A study with 50 US university students who use Facebook on a regular basis showed that the majority of them used the platform as a primary news source due to its convenience (Wang and Mark, 2017).

In addition to these social media platforms, research suggests that the electorate utilises other social tools, like the image sharing platform Instagram, for political purposes as well. A study conducted by Mahoney et al. (2016) indicates that citizens are adopting Instagram, an image-sharing social network, for political self-expression and every-day political talk. They

collected Instagram posts from the Scottish Independence referendum in 2014 and the UK General Election in 2015, which were tagged with the official campaign hashtags and discovered that the public uses imagery for political self-expression, symbolism, egocentrism, and to document the campaign.

2.5. Issues with Political Engagement Online

Filter bubbles, echo chambers, fake news, trolling, and targeted advertisements are among some of the recently identified issues with the use of online tools for political deliberation and discourse in addition to numerous barriers to participation.

2.5.1. Barriers to Participation

Despite the expectation that social media will foster political engagement, users experience numerous concerns when it comes to contributing online. These include privacy worries, that self-expression is difficult, it costs time and energy, it can be uncivil (Bakker, 2013), that they may receive a negative reaction, that it doesn't suit their online identity, or they fear sounding ignorant (Semaan et al., 2015b). A study by Semaan et al. (2015b) illustrated the challenges that US citizens faced when seeking and posting political information online, such as an inability to find diverse information, negative interactions when they shared information and issues managing their audience. The most difficult aspect of managing online audiences is the unwanted attention of friends, family and co-workers, who may have conflicting political views from the person who posts (Marwick and boyd, 2010, Taber and Whittaker, 2018). On Twitter users tweeted content that they thought would interest a perceived audience (Marwick and boyd, 2010). Whereas on Facebook users avoid sharing opinions on controversial topics altogether because they perceive their friends as judgemental (Taber and Whittaker, 2018). In contrast social media platforms that offer more ephemeral forms of self-expression, like Snapchat, can have a lower perceived

risk of social evaluation, which can encourage more extroverted behaviour and the sharing of content (Taber and Whittaker, 2018).

These perceptions of a judgemental audience and fear of engaging with controversial topics are further reinforced by the existence of racism online. A study looking at the public's reaction to the photo of Alan Kurdi, a young Syrian boy who was photographed dead on a beach after attempting to reach Europe through the Mediterranean found that humour *"cloaks"* racism online (Topinka, 2018). Topinka (2018) reveals how online platforms are used to perpetuate and spread racist and nationalistic views on a subreddit with considerable outreach as indicated by its 516,036 subscribers.

These perceptions around online audiences and the existence of racism and derogatory behaviour on social media may be creating a barrier to participation for the wider public. Instead online political discourse is primarily conducted by journalists, politicians, and experts (Ausserhofer and Maireder, 2012). This makes online political discourse inaccessible and unalluring to citizens.

2.5.2. Fake News

Fake news is news content that is factually incorrect and published for purposes other than satire (Fourney et al., 2017). Controversy around the validity of popular news stories has erupted across the globe in relation to elections and referendums. There exist a range of motivations, such as simply making a revenue or more worryingly to distribute propaganda (Bean, 2017). The potential to monetise on page visits and the low entry barrier for media content into social media platforms have spurred the emergence of fake news (Spohr, 2017). Around elections troll and bot accounts purposefully aim to disseminate untruths and divisive information in order to affect election results internationally (BBC News, 2017b).

Fake news stories increase polarisation on political topics (Spohr, 2017). *Polarisation* is seen as the difference in ideological self-placement between non-

activist Labour and Conservative supporters (Spohr, 2017). Having great political polarisation within society is detrimental to democracy because it leads to greater alienation between social groups and extremism (Oosterwaal and Torenvlied, 2010). Fake news often contains news stories that are very politically divisive (Flintham et al., 2018) but it can be difficult for individuals to recognise if the information it presents is factually incorrect because it appeals to their conformation bias (Spohr, 2017). *Confirmation bias* is a psychological phenomenon where people have a predisposition to interpret information in a way which aligns it with their pre-existing beliefs (Spohr, 2017). This makes fake news challenging to discredit in the eyes of readers whose political beliefs align with those present in the article.

When analysing traffic to fake news websites during the US presidential election of 2016, Fourney et al. (2017) discovered that Facebook was the primary traffic source of 68% of fake news page visits. Furthermore, the majority of fake news pages had a distinctly pro-Trump bias (Fourney et al., 2017, Guess et al., 2018). Some of the top fake news stories during the election included that Hilary Clinton was wearing an earpiece, that she was selling weapons to ISIS, and that Obama banned the pledge of allegiance to the United States (Fourney et al., 2017). A study by Guess, Nyhan and Reifler (2018) discovered that conservative voters were more likely to access fake news articles, and that subsequent fact checks rarely reached those affected. They conclude that it is unlikely that fake news had an effect on the outcome of the vote, but that it deteriorates the quality of public debate.

In Britain a very potent example of fake news was when a troll or bot account used a photograph from the aftermath of a terrorist attack that took place on Westminster Bridge (Figure 2) in March of 2017 and captioned it: *"Muslim woman pays no mind to the terror attack, casually walks by a dying man while checking phone #PrayForLondon #Westminster #BanIslam"*. Although it is clear that the woman in the photograph is distressed, by taking the photo out of context and attaching it to a controversial statement the tweet was widely shared and it received numerous provocative comments (BBC News, 2017b).

Figure 2 An image used by a Russian bot account on Twitter used to spread misinformation and provoke a negative reaction.

2.5.3. Filter Bubbles

The tendency of people to be exposed to and interact with content that complements their pre-existing beliefs has been described by research using many different terms including *filter bubbles*, *echo chambers*, *homophily*, and *selective exposure*. Each term is used within a slightly different context and originates from either social science, psychology, or human computer interaction. The phrases *filter bubbles* and *echo chambers* both refer to online environments where the public are exposed to and interact to a limited scope of opinion and bias that aligns with their own views (Grevet et al., 2014). This tendency for people to group together based on similarities is called *homophily* (Grevet et al., 2014), while *selective exposure,* refers to how the public tends to consume media and sources through selectively choosing content they agree with (Barnidge et al., 2017). The formation of ideological pockets on social media platforms are influenced by people's tendency to seek out and engage with content that reaffirms their pre-existing beliefs (Slater, 2007). This tendency is commonly known as *conformation bias* (Slater, 2007).

Both allowing for the formation of filter bubbles and breaking people away from them can have negative effects. Filter bubbles limit the public's ability to be well informed. Furthermore, those that selectively consume media are also more likely to feel that mass media is biased (Barnidge et al., 2017). Meanwhile, the exposure to diverse political opinions can help engage society in healthy political deliberation (Kriplean et al., 2012a). Although research recognises how filter bubbles and homophily can be detrimental to democracy, breaking away from them may also have negative effects for the public. Mutz (2013) indicates that people are hard-coded to seek out those who are similar to them. Her research showed that cross-cutting exposure to diverse political ideologies may even limit the public's ability to deliberate and participate.

There are signs that the public also recognises the importance of being exposed to diverse political content. Kelly (2009) discovered that when users are presented with news articles they are only slightly less likely to read articles that express a political bias opposing their own. The participants were willing to engage with, but not necessarily be persuaded by, articles that opposed their pre-conceived beliefs, and on average spent more time reading articles that opposed their views (Kelly, 2009), while Kou and Nardi (2018) discovered that people can actively seek out information from beyond their existing filter bubble. In a study that looks at the process mainland Chinese citizens use to seek out information in order to form political opinions, Kou and Nardi (2018) discovered an array of complicated strategies involving the aid of technology and other people, where these citizens were able to retrieve and reflect on news from beyond the Chinese digital firewall.

2.5.4. Trolling

Trolling is aggressive behaviour, whereby an individual or group are attacked online (Cheng et al., 2017). The term is beginning to be associated with an intention to provoke and sway public opinion by external influencers (BBC News, 2017b). But until recently trolling was seen as anti-social behaviour exhibited by a small fraction of users (Cheng et al., 2017). There is a growing

concern that online trolling may lead to emotional distress or harassment and bullying offline. Online politically-charged discussion groups of like-minded individuals, such as feminist forums, are especially susceptible to bullying and abuse (Herring et al., 2002). Within cases where trolling seems to have sexist, heterosexist and racist motivations, anonymity as seen as relieving social inhibitions and fuelling both trolling behaviour and hasty responses by those that are being trolled (Herring et al., 2002).

Work into abusive and anti-social behaviour online has been split in its understanding of how and why individuals choose to exhibit trolling behaviour online. A large scale study into the connection of personality traits and trolling found that individuals with sadist personality traits were positively correlated with trolling (Buckels et al., 2014), while, Cheng et al. (2017) who looked at news comment sections on the CNN website, found that rather than personality traits, trolling can be predicted by discussion context and mood.

Research suggests that the level of uncivil behaviour online may be perceived rather than real (Shephard, 2014). When analysing the tweets generated during the release of the White papers for the Scottish Independence Referendum of 2014, Shephard (2014) discovered very low levels of profanity and high levels of re-tweeting, which indicates favourable climate for deliberation. In contrast the work of Topinka (2018) concludes that social platforms are used in the dissemination of racist views.

2.5.5.   Political Advertisements

Google and Facebook have reported the use of their platforms for targeted political advertisements (Wong, 2018). Political campaigns and fake accounts commission these advertisements in order to push a political agenda (Lapowsky, 2018, Wong, 2018). An investigation into the ties between Facebook and political election meddling revealed that in the 2016 US presidential election a group of fake accounts with foreign ties, bought around 3,000 advertisements for about $100,000, which were shared 350 million times and shown to US Facebook users (Thompson and Vogelstein, 2018).

Legitimate political campaigns also use social media advertisements in worrying ways. Brad Pascale, who led Trump's digital advertisement campaign, claims he ran between 50,000 and 60,000 variations of Facebook advertisements per day, targeting different segments of the population (Wong, 2018). This micro-targeting is deeply problematic because there is no one place where all these variations of advertisements can be found. This raises concerns about the ways in which the political message changes from person to person, leaving room for the campaign to make different promises based on the identity of the user (Wong, 2018). These so called "dark advertisements" can undermine democracy because they impede the public from having a full understanding of the political message of a campaign (Wong, 2018). Finally, questions are being raised about how the data needed in order to tailor advertisements is obtained. The 2018 Cambridge Analytica scandal revealed that the data of millions of users was captured through a personality quiz and used as a campaign tool by the Trump administration and the UK Brexit campaign (Halpern, 2018). The data for 87 million Facebook users was obtained through a personality quiz. It collected data for both the users that did the quiz and all of their friends (Halpern, 2018).

2.6. Platforms for Political Engagement

Despite the issues we are currently experiencing with online political discourse, governments and researchers alike are working towards the development of tools that would support deliberation and discussion (Iandoli et al., 2018, Mancini, 2015). In the United Kingdom the Digital Democracy Report (Speaker's Commission on Digital Democracy, 2015) outlined a government initiative to use technology to improve parliamentary democracy and break down barriers to public participation. In Argentina an ambitious project called DemocracyOS (democracyos.org) aims to redesign political deliberation by enabling people to discuss and vote on upcoming legislation through the online platform. Mancini (2015) who is a political scientist and activist developed DemocracyOS as a way to address the disparity between the workings of our political systems and the times that we live in.

Research into the development of political discourse and deliberation tools, often adopts a strategy whereby they encourage users to be exposed to the opinions of others in supportive environments (Doris-Down et al., 2013, Kriplean et al., 2012a, Kriplean et al., 2011, Kriplean et al., 2012b). This can be achieved though listening interfaces where users are prompted to respond to each other by interpreting and summarising each other's points. These interpretations are a sign of listening, which improves communication satisfaction (Kriplean et al., 2012b). Two examples of online political deliberation tools that support discourse are ConsiderIt (Kriplean et al., 2012a) and Political Blend (Doris-Down et al., 2013). Political Blend (Doris-Down et al., 2013) was developed to break people from their existing echo-chambers by introducing them to people with different political views. The app supports people to meet face-to-face and discuss politics, thus encouraging a more personal and sincere interaction. It was discovered that the Political Blend application was successful at encouraging people to discuss politics with those who have different political ideology than them, thus breaking their social interaction from their pre-existing echo-chambers (Doris-Down et al., 2013). While ConsiderIt, encouraged political deliberation through a pro/con format, where users submitted their opinions on election ballot measures. The tool was tested during a US state election. It encouraged users to consider the points of others. Nearly half of those who used the system contributed both a pro and a con indicating desirable deliberation behaviours. It was discovered that the stronger the stance of a user the less likely they were to include points opposing their own. One of the issues with the system was the user's inability to assess the trustfulness of the points raised by the other participants, the authors speculate that including sources and user identity would increase trust in tool and opinions (Kriplean et al., 2012a, Kriplean et al., 2011). These deliberation platforms indicate that there is an opportunity to address existing issues with political discourse online by creating new tools to support engagement.

2.7.   Summary

Online political discourse is a vital part of modern-day democracy. It gives citizens access to information, a platform for self-expression, and can be instrumental in sustaining and encouraging political engagement. Although we have not yet found solutions to the issues that frame online interactions and influence the electorate, citizens already use digital tools, such as Google, Facebook, Twitter, and Instagram for political purposes. In order to make digital tools that address current issues and empower the public, we need to gain a deeper understanding of the contexts and triggers that frame online political engagement.

3.   Related Work

As I discussed in the previous chapter, technology plays an increasingly important role during political elections but it subject to an array of issues that undermine its value as an engagement tool. A key moment for political engagement is during televised debates. They are accompanied by high quantities of online activity, which is generated through second screens alongside the broadcast (Anstead and O'Loughlin, 2014, Anstead and O'Loughlin, 2011, Ausserhofer and Maireder, 2012, Brooker et al., 2015). These debates play an important role in people's understanding of key issues (McKinney and Warner, 2013), which is why it is vital to examine the effects of second screens on viewers. While literature on the subject of online political engagement frames the narrative of this research, research into second screens delves into the context of watching television. Although the social media platforms viewers use and the issues they encounter may be similar to those of online political discourse at large, reading and posting alongside a debate would pose its own set of challenges, such as greater time-constraints and less visual attention. Within this section I introduce relevant work around *second screens*. It includes second screens from a wider interaction context, how the public adopts pre-existing social media, how second screens are used during political debates, and how new developments in technology may be used in this context.

3.1.   Second Screens

Second screens are personal devices, such as smartphones, tablets and laptops, used to accompany a television broadcast (Gil de Zúñiga et al., 2015). In this context, the 'first' screen is the television, which delivers the main content and drives the contextual use of the device (Doughty et al., 2012). In a survey with 98 participants Nandakumar and Murray (2014) found that 84% of respondents report using their second screen devices while watching television. Viewers use their personal devices for a variety of purposes, such as for social interaction, to complete personal tasks, such as checking emails, and search

for information relating to the program they are watching (Courtois and D'heer, 2012, Nandakumar and Murray, 2014). Wilson (2016) discovered that certain genres of television can be enhanced by second screens, such as reality TV, game and talent shows. These genres can be enhanced because second screen applications are "facilitating a deeper engagement with the program's subject material as well as playfulness" (Wilson, 2016). Second Screens can benefit viewers in a variety of different ways including letting them socialise, immerse them in a storyline, give them additional information, and let them take part in activity relating to the program or event (Nandakumar and Murray, 2014, Schirra et al., 2014).

Where new technologies like video streaming have previously encouraged asynchronous media consumption, where viewers watch programs in their own time after it has been broadcast on TV, second screens encourage live viewing by providing timely content and a social experience (Proulx and Shepatin, 2012). This trend has been of interest to content producers and advertisers who see its potential to increase revenues and engage the public further. In order to foster second screen activity we are now frequently encouraged to contribute to online discussion on Twitter through the use of a hashtag (Proulx and Shepatin, 2012). Another way the TV industry tries to encourage live viewing is by creating an array of additional content usually in the form of downloadable applications for smart touchscreen devices. They are designed to add social, informational and advertisement value to the TV experience, while promoting live viewing (Proulx and Shepatin, 2012). However, the majority of second screen activity gravitates towards pre-existing social media platforms, in part due to their ability to foster a community and to affirm viewer's opinions (Maruyama et al., 2017, Schirra et al., 2014). Below, I will highlight several categories of second screens: pre-existing tools, series specific applications, event specific applications, and applications for politically charged content.

3.1.1. Second Screen Use with Pre-Existing Tools

Viewers often utilise their pre-existing social media accounts while watching television. Through a survey exploring viewing habits Courtois and D'heer (2012) found that a portion of the respondents used Facebook and Twitter in order to post opinions relating to the TV content they are seeing. This active social behaviour is especially prominent during the airing of series like *Downton Abbey* and *Glee*, where a large and vocal fanbase of viewers take to Twitter to share their opinions, because it fosters the feeling of a shared community experience (McPherson et al., 2012, Schirra et al., 2014). Plot-twists, sadness, humour and character development moments trigger live tweeting (Schirra et al., 2014). Benefits that viewers experience when using social media to accompany a live broadcast, include helping people not feel alone, being part of a community and affirming their opinions (Schirra et al., 2014). While, the broadcasting of one's thoughts may help viewers feel as part of a community, McPherson et al. (2012) discovered that very few people actually seek out the commentary of others. This indicates that posting opinions does not equate being read by others.

Second screening also takes place in households where not everyone in the living room is interested in the TV content. Through a 14-day field study in seven homes, Holz et al. (2015) observed that participants often watched TV content they were not interested in because they wanted to spend time with their family. In those cases, second screens were used as a primary screen for content unrelated to the programs and to complete chores online, such as banking. When participants were more interested in the content they were watching they used their second screens to search for information relating to the TV content (Holz et al., 2015).

3.1.2. Series Specific Applications

For broadcasters and television producers these social second screen behaviours are beneficial because they have the potential to encourage live viewing thus increasing advertisement revenue (Proulx and Shepatin, 2012).

They foster this activity by creating *series specific applications* also known as *companion applications*, designed to accompany and enrich the TV viewing experience of fans (Proulx and Shepatin, 2012). For example the TV series *The Walking Dead* provided viewers with a second screen application that gave them additional information about on-screen characters and weapons, and social features, like taking part in live polls (Bishop, 2014). While the company Miso created a second screen application for Game of Thrones, which allowed the show's fans to create their own complementary content containing trivia, links, and polls for each episode of the first season (Warren, 2012). An issue with this model of series specific applications, which is identified by broadcasters, is that viewers are unlikely to download many applications (Bulkley, 2013). Instead broadcasters are exploring ways to provide viewers with companion content for all of the programs they air in one aggregated application (Bulkley, 2013).

Series specific companion applications can improve viewer's memory of complicated story lines and engage them with additional show content but require a balance between engagement and distraction (Geerts et al., 2014, Nandakumar and Murray, 2014, Neate et al., 2015). Viewers report that second screens can be distracting during their favourite programs (Neate et al., 2015). Neate et al. (2015) reduced the need for visual attention through auditory stimuli, which can alert the viewer to changes in the companion content without distracting them. In another exploration of delivering companion content in an appropriate way, Nandakuymar and Murray (2014) created a second screen application for the TV drama *Justified*. It was created to support viewers in remembering long arc plots and many characters. Through the testing of their application they found that viewers want to minimise and have control over disruptions during shared TV experiences, they want the app to be synchronised with the present context, to emphasise the characters and their relationships with one-another, to provide concise descriptions of events, and to be sensitive to social contexts. Meanwhile, Geerts et al. (2014) combined at home observations, interviews with producers and series viewers, and Google Analytics data of the use of a companion application for *De Ridder*, a Belgian crime drama, in order to examine both viewer and producer perspectives on the second screen application. They

found that participants and producers value usability, well timed content, social interaction, limited attention demand, and additional content. A common theme across these research projects is that companion content should be well-timed and not distracting.

3.1.3. Event Specific Applications

In addition to TV series, live events, such as sports and political debates, also see the emergence of companion content. *Event specific* applications are created for a single televised event, such as the Olympics or football championships. These applications are usually designed to provide viewers with additional camera streams, provide a platform for social interaction, and give viewers the event schedule (Ansaldo, 2016, Ansaldo, 2017, Anstead et al., 2014). Creating applications for live events is subject to similar issues to those for TV series. Research has emphasised the challenges of creating companion content for fast-paced events, such as limiting visual attention, synchronising content, and supporting multiple viewers (Anstead et al., 2014, Centieiro et al., 2014, Geerts et al., 2014, Proulx and Shepatin, 2012).

Anstead et al. (2014) tested a second screen application for the 2012 Olympics, where the BBC showed up to 26 parallel feeds at the same time. They discovered that within this context supporting parallel viewing, and scheduling and queueing of content were desirable. In order to limit visual attention Centieiro et al. (2014) designed a feature on an application to place bets about potential goals using eyes free interaction. The development of event specific applications that cater to the needs of viewers and provide timely companion content is now a staple of live sport television.

The 2016 Olympics featured several companion applications, provided by TV broadcasters and national sports agencies, including NBS Sports, Rio 2016 Social Hub, Rio 2016, Team USA, and USA Basketball (Ansaldo, 2016). They provided different content, such as the social media feeds of Olympians, the journey of the Olympic torch, and TV and live streaming schedules (Ansaldo, 2016). NFL football is also accompanied by numerous applications,

provided by sports television companies, such as NFL mobile, ESPN fantasy Sports and Fancred (Ansaldo, 2017). These applications allow football viewers to play fantasy football games with each other, give fans a platform for self-expression, and receive updated scores (Ansaldo, 2017). This array of companion applications indicate that live-sporting events can be enhanced through dedicated applications that either provide sport-related information, or help fans express-themselves and socialise. In a similar way, televised political debates can be enhanced by allowing viewers to communicate with each other or find factual information relating to the content that is being discussed.

3.1.4. Politically Charged Content

Although we expect to see similarities between the motivations and behaviours in second screen use during non-political and political programs, previous research indicates unique effects relating to politically charged content. Wohn and Na (2011) compared the live-twitter activity surrounding Obama's acceptance speech of the Nobel Peace Prize and the activity surrounding *So You Think You Can Dance*, an American dance competition. They categorised the content from both programs into attention seeking, emotional, informative, and opinions. They discovered that the majority of the content during both broadcasts was emotional, reactionary and subjective, but that the tweets posted during Obama's speech contained more links to external information, re-tweets, and personal opinions than those for *So You Think You Can Dance* (Wohn and Na, 2011). Doughty et al. (2011) on the other hand, found that tweets alongside *Question Time* were longer, than those posted alongside the reality program *The X Factor*. This indicates that second screen use alongside political programming aims to contribute to the overall political discussion. When comparing the networks that form on Twitter during political broadcasts (*Question Time*) versus a reality TV show (*Strictly Come Dancing*), Doughty et al. (2012) found that the audience of the reality program tend to connect with the celebrities that take part, whereas the *Question Time* audience tends to communicate within smaller networks of friends. These

differences between political and non-political second screen activity indicate a need to better understand the motivations and behaviours of debate viewers.

Furthermore, there are differences in the effects live-tweeting has on second screen users while watching politically charged content. The practice of monitoring the social media activity surrounding a program is called *social watching* (Maruyama et al., 2017). In a study exploring the effect of combining political television with Twitter content, it was discovered that viewers have the tendency to conform to the opinions they see online, but that this effect was less pronounced when the footage was about polarising political issues like gun regulation (Cameron and Geidner, 2014). This effect, whereby people tend to change their actions and behaviours in order to align with a perceived majority social group, is called *normative conformity*. While increasing political polarity may diminish this normative conformity, other factors like receiving positive feedback on posted comments can amplify it (Maruyama et al., 2017).

In a study looking at second screen use alongside the watching of news Gil de Zúñiga et al. (2015) discovered that second screening is linked to greater political participation. Other politically charged content, like reality TV focusing on the United Kingdom's welfare system, are also accompanied by second screen activity. These programs portray people in a negative light resulting in vast amounts of negative live-commentary on Twitter (Brooker et al., 2015, van der Bom et al., 2018). *Benefit Street*, which looks into the lives of British benefits recipients, described as "poverty porn" by critics (van der Bom et al., 2018), has seen the rise of counter-discourse activist campaigns online (Feltwell et al., 2017a). Feltwell et al. (2017b) argue that there is a need to enable critical live viewing of such politically charged programs because poverty porn can marginalise welfare recipients and can reinforce an austerity agenda. In response Feltwell et al. (2017b) designed Spotting Guide and Moral Compass, which use social tagging, a process of attaching tags to content live alongside the program. They discovered that the tagging process enables the critical viewing of reality television. In addition to enabling criticality through social tagging, viewers are naturally more critical in the hours after the program has aired. A study into the use of Twitter around *Benefits Street*,

discovered that during air time the content generated on Twitter tended to be abusive and judgemental, whereas between the programs viewers of the program posted much more appreciating, defending and contesting content (Brooker et al., 2015).

3.2.　Televised Debates and Second Screen Activity

Social media is now a fixture in politics, including during televised debates. Twitter in particular has been thoroughly studied within second screen research. A study into the Australian federal election of 2007 discovered that the days of televised political events mark a significant increase in election tweets (Bruns and Burgess, 2011). The Twitter activity on the days of the broadcasts was seen to be strongly skewed towards the evening hours, when they were aired. Furthermore, those days saw a dramatic decrease in the use of URLs within the twitter content, from an average of 33%, down to 8% and 12% on the days of the debates. Although research has not reached a consensus about the relationship between the debate and the online activity that accompanies it, the Twitter discourse has been found to give insights into the viewers' evaluations of the topics and participants of the debate (Pedersen et al., 2015, Shamma et al., 2009, Trilling, 2014).

A study by Shah et al. (2015), which looked at the Obama and Romney debate of 2008, linked content analysis of the debate with sentiment analysis of tweets, where they found that the candidates physical gestures and facial expressions were better predictors of the volume and valence of Tweets than their arguments. Shamma et al. (2009) who also studied this debate, observed that the tweets generated during the presidential debates were correlated to the topics of discussion and served as a predictor of changes of topics (Shamma et al., 2009). Meanwhile, a study conducted during the Scottish Independence Referendum debates of 2014, Pedersen et al. (2015) also saw that the tweets generated by the Scottish public followed the debate topics of discussion (Figure 3). Whether the tweets are generated in response to the debate topics, or the gestures and expressions of politicians, the tweets indicate an emotional response to what happens on screen (Trilling, 2014, Wohn and Na, 2011).

This emotional commentary lacks conversation and discourse, even when syntactical elements like the @ sign are used, they do not indicate conversation (Mascaro and Goggins, 2015). Instead most people online act as observers learning how others feel about the event they are all witnessing together (Schirra et al., 2014). This creates the feeling of a shared experience.
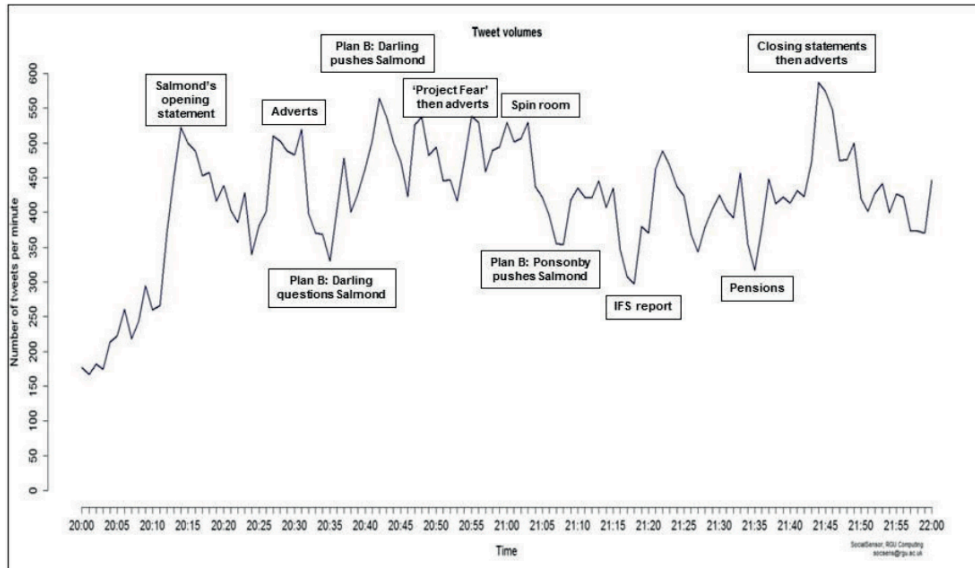
Figure 3 Peaks and Troughs in Twitter Discussion, during a Scottish referendum Debate on the 5ᵗ of August 2014 (Pedersen et al., 2015)

In the UK, *Question Time*, a long-running, weekly debate programme, began broadcasting in 1979 on the BBC. Since its beginning it has been a highly participatory program, which invites questions from its live audience. Even before the advent of social media, viewers could send messages via SMS, some of which were shown on the BBC's teletext service. It started promoting the use of a hashtag to its viewers in 2009, and it is now accompanied by a high volume of tweets every time it airs. Within the first month of the hashtag being launched, a particularly controversial edition featuring a far right party leader saw the hashtag used at a rate of 800 tweets per minute (Anstead and O'Loughlin, 2011). To illustrate the shift in the role of the audience away from passive consumers Anstead and O'Loughlin (2011) coined the term "viewertariat", referring to those who use social tools to interpret, comment and debate a political television broadcast. It has been shown that a large proportion of *Question Time* tweets contain actionable language that indicates

not just how they feel about socio-political issues but also how they would like them to be addressed by society and government (Ferrario et al., 2012).

Although the use of second screens during debates increases engagement, this political communication may be subject to the issues discussed in section 2.5, such as barriers to participation, fake news, filter bubbles, and trolling. Furthermore, for the average citizen, broadcasting their personal views online can be futile due to their limited outreach and influence (Hindman, 2009). In *The Myth of the Digital Democracy,* Hindman (2009) concludes: "If we consider the ability of ordinary citizens to write things that other people will see, the Internet has fallen far short of the claims that continue to be made about it. It may be easy to speak in cyberspace, but it remains difficult to be heard". Instead, influence rests primarily with politicians, journalists and a small group of anonymous users (Ausserhofer and Maireder, 2012, Hindman, 2009, Kreiss, 2014).

Previous research into political second screen use has been able to explore the way Twitter is being used (Anstead and O'Loughlin, 2014, Anstead and O'Loughlin, 2011, Ausserhofer and Maireder, 2012, Brooker et al., 2015), and the effect of social media on opinion formation during debates (Maruyama et al., 2017, Maruyama et al., 2014). Through an analysis of tweets generated during the 2013 German election debates, Trilling (2014) found that, while there is a relationship between the topic of the debate and Twitter, the majority of tweets were sarcastic or humorous. They often drew the attention of the reader away from the debate topic, for example a large quantity of tweets concerned a necklace worn by one of the candidates. The work of Davis et al. (2018) suggests that humour is used by viewers in order to "express opposition, establish political subjectivity, and engage in direct and symbolic civic support". Anstead and O'Loughlin (2011) discovered that although viewers used Twitter to engage further with debates, they were less likely to engage in one-on-one communication during the broadcast, indicating that there was little active debate between viewers during the broadcast.

Although second screen activity can be seen as a form of political engagement around debates, there are worrying trends which hinder the public's ability to

deliberate. In the most extreme examples the content that viewers are exposed to both online and on screen can influence their perceptions of the debate and their vote decision (Doughty et al., 2011, Maruyama et al., 2017, Maruyama et al., 2014). In two separate lab studies exploring the effects of actively tweeting during a political debate on the opinions of viewers, Maruyama et al. (2014, 2017) discovered that those that posted were more likely to conform to the popular opinions expressed by others. This effect became even more prominent when participants received positive feedback on their posts (Maruyama et al., 2017). This effect is not limited to second screens: live on-screen graphics of viewer sentiment informally known as *"the worm chart"*, have also had a strong influence on viewer perceptions. The worm chart is a real-time visual feedback overlaid on a debate, which is generated by a sample of twenty to thirty undecided voters who watch the debate in a controlled setting. They are all given individual dials, which they turn throughout the debate to indicate the extent to which they approve of what is being said on screen (Davis et al., 2011). Worm charts have been used in both US and UK election debates in an effort to give viewers real-time feedback and add drama and interest to the broadcast (Davis et al., 2011). Despite efforts to make the data presented to viewers objective and unbiased, Davis et al. (2011) found that the worm influences viewers even if they had a clear preference towards one of the politicians before the start of the debate. Their work suggests that rather than empowering viewers by providing them with information about the opinions of others, the worm actually makes forming personal opinions more difficult (Davis et al., 2011). This research into conformation effects around the worm and social media use raise serious concerns about the ethics and future of second screen use around debates.

Despite the concerns raised by research, the use of social media during debates brings about benefits to the viewers. Jennings et al. (2017) discovered that tweeting while watching a debate increases learning and the recollection of information from the debate (Jennings et al., 2017). Using second screens can also increase incidental learning, where technology can be used to find new information and become more engaged with the televised content (Nee and Dozier, 2017). Furthermore, watching debates with others either in the same

location or others online is more enjoyable and may lead to a greater incentive to watch more political debates (Thorson et al., 2015). Giving viewers a focused activity during a political debate has the tendency to reduce political cynicism, which is the tendency of citizens to see politicians as corrupt or self-serving (Jomini Stroud et al., 2011).

In second screen for political discourse research, there is a push towards creating new tools that support debate viewers' engagement. Liddo et al. (2017) used a series of physical flash-cards with nuanced responses, which were used by participants to measure real-time audience engagement and feedback. The study illustrated a novel and nuanced method that could be used to gather debate viewer responses. Pluss and Liddo (2015) tackle the issues of trust and public engagement by creating a tool for political debates called Democratic Replay, which supports fact-checking and argument visualisation. Through a review of relevant literature, they identified four requirements for their system: it must be non-intrusive and accessible, increase political engagement, enable participation, and provide complementary information (Pluss and Liddo, 2015).

3.3. Emerging Technology and TV Viewing

This research takes place alongside the developments and commercialisation of a range of internet connected products, otherwise called Internet of Things (IoT) devices. In the home they include a range of home assistants and internet connected household devices. However, although connected products in the home are a relatively recent development, there is already precedent for the use of physical objects alongside TV content. For example, the 1987 TV series *Captain Power and the Soldiers of the Future* used a light gun toy that allowed viewers to shoot at the screen during battle scenes to gain points (Toal, 2012). More recently, the Universal Control Dalek was a prototype toy created by the BBC that would react to episodes of *Doctor Who*, exploring how emerging technologies could be used to offer new viewing experiences in the home (Woolard, 2011). While these examples relate purely to entertainment, the degree to which second screens and social media have become central to

political programming leads us to ask whether such connected products might bring value to political programs as well.

Technology in the home is quickly evolving and branching into a variety of smart products. The phrase Social TV refers to the convergence of social media and television (Proulx and Shepatin, 2012). Until recently it was hoped that Smart TVs would enable this social aspect of watching television without the need for a second screen (Mantzari et al., 2008, Proulx and Shepatin, 2012). Although, Smart TVs did not develop social media platforms of their own, they are becoming ever more responsive and multifunctional. Furthermore, personal assistants like Alexa, Siri, and Google are now transforming the way we interact with our home through the use of home-assistants like the Amazon Echo. These home assistants are currently used for a variety of simple purposes, such as making purchases, playing music and setting timers. As more of the technology we use at home becomes internet connected IoT devices may be adapted for a variety of uses including to support TV viewing.

While IoT and smart devices have potential to be used within a political TV viewing context issues, such as susceptibility to hacking, will have to be acknowledged and addressed. Home assistants like Alexa make it easy for people to place purchase orders on goods through simple voice commands. While they make shopping convenient they also leave room for mistakes: when a Texas news channel reported on the story of a six-year old girl ordering a doll-house accidentally, the reporter said 'Alexa ordered me a dollhouse', triggering the home assistants of viewers to also place orders for doll-houses (Liptak, 2017). Others like Burger King and *South Park* have intentionally exploited the ability to trigger home assistants (Stolworthy, 2017, Titcomb, 2017). Burger King asked viewer's Google Home assistants to list the ingredients in their burger (Titcomb, 2017), while *South Park* intentionally triggered viewers' Amazon or Google home assistants repeatedly throughout one of their programs (Stolworthy, 2017). The current susceptibility of IoT devices to hacking and manipulation illustrate some of the issues that may occur if they are adopted in other more politically charged contexts. Despite

these issues, IoT technology may be able to make second screen experiences more convenient, fast-paced, or immersive.

3.4.   Summary

Second screens are commonly used by television viewers and broadcasters, and television producers cater to this activity by producing series specific and event specific applications that bring companion content to their viewers. Despite this, viewers often utilise pre-existing social tools, such as Facebook and Twitter in order to commentate and feel part of a community.

The second screen activity around televised debates are of particular interest to researchers due to their potential to engage the electorate and give insights into viewer's perceptions of the debate topics and politicians. Current research has largely focused on Twitter due to its live-event appeal and openly available content. It has utilised an array of computation analysis methods, such as sentiment analysis (Shah et al., 2015, Wang et al., 2012, Wang et al., 2011) word frequency counts and analysis of the networks of people (Shamma et al., 2009, Trilling, 2014). Where research into second screens more generally has adopted a design-led research approach that gives us insights into the issues viewers experience, the research surrounding political debates is limited to insights into the online activity of a small portion of active users who are willing to post on Twitter. In order to investigate ways to engage debate viewers through second screens, research needs explore the behaviours and motivations of debate viewers through a user-centred lens.

4. Current Second Screen Practices

4.1. Introduction

Understanding how and why debate audiences make use of their personal devices, can help us identify both their fulfilled and their unfulfilled second screen needs. These can help us design tools that would support increased political engagement and higher quality public discourse around televised debates. I have addressed this through two studies, which ran in parallel, during the 2015 UK General Election. The first is an analysis of the visible content generated on Twitter during a political debate. It gives an overview of how politically active debate viewers utilise social media. The second study uses at home observations and post-interviews to gain an in-depth understanding of the range of second screen activity which takes place in the home during a debate. This study demonstrates that second screens are used in a variety of ways that do not always lead to visible social media outputs. Instead, the study identifies what motivates debate viewers to use their second screens and in what ways current tools do not support their needs. Together these studies helped identify potential future design directions for second screens in order to better support public engagement around political debates. The two studies presented within this chapter are designed to address the following question:

How and why are second screens used currently by the public during political debates?

4.2. Context

The time period covered by this PhD thesis is scattered with various UK political events, they include two major referendums, two General Elections and a Scottish Election. Although I do not present research into the Scottish Referendum of 2014, it revealed how similar political events can increase political engagement and increase voter turnouts. With 84.6% turnout, the

referendum had a significantly higher turnout than previous elections, for example the Holyrood elections of 2011 had 65.1% turnout and the European elections of 2014 had only 35.6% (Research, 2014). The Referendum was accompanied by three heated televised debates, which were accompanied by large quantities of online activity (Pedersen et al., 2015). Despite polls indicating a last-minute shift of opinion in favour of Independence the campaign resulted in a vote to remain in the United Kingdom (BBC News, 2015c). While the referendum resulted in one of the highest voter turnouts in Scottish history and large amounts of online engagement, it also resulted in the widely publicised abuse of both prominent celebrities and citizens in favour of Remaining in the United Kingdom (Whitaker, 2017). The online abuse of author JK Rowling and Sir Chris Hoy for their pro-Union political views was widely publicised (BBC News, 2015c). Furthermore, pro-independence *cybernats* were seen to target individuals who expressed pro-Unionist views online, by personally attacking them using abusive and threatening language (Whitaker, 2017). As a result, the Scottish Referendum made visible some of the negative effects associated with online political talk, which further unravelled throughout the political events that followed.

A year later the UK had a General Election in May 2015. The election had a strong focus on immigration. It was fuelled by the European refugee crisis, which saw an influx of over a million asylum seekers and immigrants from the Middle East and Africa (Lindsay, 2015). The refugee crisis stimulated the increased popularity of far-right parties across the whole of the EU (Lindsay, 2015). For the United Kingdom the crisis highlighted concerns over the meaning of staying in the Single Market, which allows open borders between countries, at a time of uncontrolled immigration from elsewhere (Lindsay, 2015). The recently passed Scottish Independence Referendum and the increased importance of the issue of immigration, resulted in UKIP and the SNP holding an unusually prominent position within the election.

Although televised debates have been a staple of major elections in other countries, this was only the second time they had been used in a UK General Election. The debates themselves had been a source of much controversy after

lengthy negotiations between government and the media over the format of the events, leading to a high degree of public interest and frequent speculation that they would not take place at all (Walker, 2015). The increased prominence of several smaller parties— particularly the SNP (Scottish nationalists) and UKIP (advocating leaving the European Union)—led to further discussion about who should be allowed to participate. Eventually, and at short notice, four separate televised events were agreed upon: two with a typical debate format (one featuring seven major parties and one featuring only smaller parties) and two following a less adversarial Q&A format with individual party leaders (Walker, 2015).

As might be expected, these debates were major social media events (Walker, 2015). Some memorable highlights include Ed Miliband stumbling through his declaration of toughness during his debate with Jeremy Paxman, and Nigel Farage condemning foreign HIV patients in the UK, which resulted in the highest tweeted about moments from the Leaders Debate on April 2nd (@JoannaG, 2015). The Leaders Debate in particular, which featured the Conservative party, Labour, Liberal Democrats, SNP, UKIP, Greens, and Plaid Cymru, was watched by 7.7 million people, some of whom generated more than 1.5 million tweets during the debate (BBC News, 2015b). The entire election period saw vast amounts of online content, with 78 million Facebook interactions across the campaign (Crossley, 2015) and 3.8 million tweets using #GE2015 on election day (Walker, 2015). The election saw high turnouts of 66.1%, with an even higher turnout for Scotland with 71.1% (Knapton, 2015). It has been speculated that this higher Scottish turnout was due to increased political engagement following the Scottish Independence Referendum (Knapton, 2015). The election resulted in a win for the Conservative party who as part of their manifesto promised a referendum on the membership of the United Kingdom in the European Union (BBC News, 2015a).

4.3. Visible Behaviours on Twitter

4.3.1. Introduction and Background

It is now common for debate broadcasters to promote the use of a hashtag alongside a debate (Anstead and O'Loughlin, 2011). For journalists and researchers the increase in publicly available viewer generated data is an opportunity to access and evaluate the opinions of the public (Ausserhofer and Maireder, 2012). This is often done though an array of computation analysis methods, such as sentiment analysis (Shah et al., 2015, Wang et al., 2012, Wang et al., 2011) word frequency counts and analysis of the networks of people (Shamma et al., 2009, Trilling, 2014). Sentiment analysis in particular often appears in the media as a predictor of popularity of the political candidates (Patterson, 2016). Although computer assisted analysis methods are convenient due to the vast quantity and speed of the generated content, the currently utilised political sentiment analysis tools have low accuracy rates, and only explore the broad positive or negative polarity of the text (Wang et al., 2012, Wang et al., 2011). As a result sentiment analysis tells us little about the underlying behaviours within the user-generated content (Wang et al., 2012, Wang et al., 2011).

Another method used for the analysis of Twitter activity was developed by Brooker et al. (2018), where the Twitter timelines of users are analysed, rather than the associated program hashtag. This method of analysis draws on digital ethnography, rather than event-based analysis of content. The benefits of this method are that the analysis of the timeline of users who engage with politically charged content reveals how socio-political issues fit within their every-day lives (Brooker et al., 2018). The study presented below aims to capture some of these rich qualitative insights, while keeping the focus on the duration of the political debate.

This research is motivated by the belief that by exploring what types of tweets emerge regardless of their political affiliation, we will gain a deeper understanding of citizen's behaviours online during live debates. This in turn

can help us find ways to cater and enable citizens engage further with politics in order to empower people to take an active role in political deliberation. The existing research into the use of Twitter in this context, includes analysis of who takes part in this discussion (Shamma et al., 2009, Trilling, 2014), how it is used by politicians (Kreiss, 2014) and what sentiment characterises the Tweets (Patterson, 2016). What is not well defined and understood is the array of behaviours and motivations visible in the tweets.

4.3.2. Study Design

To understand why Twitter is used during televised political debates, I collected and analysed tweets generated during the 2015 UK General Election. The analysis of Twitter use focuses on a single two-hour debate, held on April 2nd 2015 on ITV. This was the only debate that featured all major parties and had a typical debate format in which all the leaders are on stage at the same time. In addition to the three main parties, it also included four of the UK's smaller political parties. I have focused on Twitter due to its live event appeal and the ability to easily acquire tweets through a Twitter search API. Although it is far from being the only social media outlet utilised during televised debates, content is openly visible and broadcasters actively promote its use.

The use of social media as a resource for research data is still an emerging area of exploration. There is no consensus on the ethical considerations that should be addressed especially when the data is considered openly available (Townsend and Wallace, 2015). An approach adopted by academics in the United Kingdom and Australia is to consider social media posts as public if the social media users expect their data to be public (Townsend and Wallace, 2015, Wolfinger, 2016). If the data is viewed as public it can then be understood that the user consented to the data they publish to be used by others (Townsend and Wallace, 2015, Wolfinger, 2016). Twitter is a predominantly public platform, which uses hashtags to concentrate posts based on topics. Furthermore, the public generated content on the platform is now often used in news and media coverage (BBC News, 2015b, Patterson,

2016). Based on these considerations I have used the openly available public tweets generated during the debate containing the official debate hashtag. Although, the data I have used is publicly available on a data repository (Taylor and Gorkovenko, 2015) and on Twitter itself, I have deleted usernames and links that lead to Twitter accounts from the provided examples of Tweets in the result section.

During the debate, a PHP script was used to access the Twitter search API every 30 seconds to request the 100 most recent tweets using #leadersdebate, beginning at the start of the debate and continuing for approximately 90 minutes afterwards. This was the official hashtag for the debate and was actively promoted throughout the event. Retweets were excluded from the search in order to focus on original authored content. 38,569 tweets were gathered and 2% of these tweets (every 50th tweet captured see Appendix A.1) were used for an inductive thematic analysis (Braun and Clarke, 2006). Thematic analysis was used throughout my research because it is suitable for the analysis of a range of different types of qualitative data, including images and video. Other analysis methods, such as grounded theory, discourse analysis, and sentiment analysis result in the development of findings that are not in line with the goals of this research, which is to generate a comprehensive understanding of the thematic variety and content within the data. Throughout my research I have adopted a more explorative approach that has not required the development of a philosophical position before conducting the research as is required by grounded theory (Birks and Mills, 2011). Sentiment analysis has already been used for the analysis of tweets generated during televised debates, and results in the development of an understanding of the positive and negative sentiment of posts, rather than the underlying behaviours that they represent (Wang et al., 2012, Wang et al., 2011). Finally, since understanding the linguistic properties of the content was not a primary goal of the research I did not use discourse analysis (Drud, 2010).

The tweets were aggregated in an Excel sheet, which is available on an open data repository (Taylor and Gorkovenko, 2015). I manually coded each tweet in an additional column that I added to the dataset. Each full tweet was

assigned one or more codes. The analysis included all text and images within the tweets and considered the content of web-pages attached. I searched for the individual tweets on Twitter if they contained and image or a link in order to gain a full understanding of the content. Once I coded through the full dataset myself and another researcher agreed upon a set of codes to use throughout the whole dataset. The tweets often contained multiple codes, which could not always be resolved and is further discussed in the findings and discussion of the study. Tweets that were representative of multiple codes retained all of the coded information until the themes were refined. The tweets were then clustered together into the final themes.

4.3.3. Results

The analysis resulted in three major themes and another four large sub-themes. The theme of commentating, which included the sub-themes of sharing evaluations, experiences, humour and provoking; and the themes of interacting and informing. Described below, these themes cover a range of behaviours and give insight into the motivations that led the viewers to post.

4.3.3.1. Commentating

Commentary was the most prominent behaviour throughout the dataset. The majority of the content within this theme seems reactionary and emotional. This content uses Twitter as a platform to broadcast a response to the debate, its participants, and the user's immediate surroundings. The content is diverse in nature, often quite humorous and juxtaposes the serious tone of the political debate. It is composed of four large sub themes: sharing evaluations, experiences, humour and provocation. Although I identified these sub-themes, the tweets themselves could often be interpreted as belonging to more than one of them, which made it difficult to assess the prominence of each distinct category. Instead of a rigid structure of different types of commentary that can be observed on Twitter alongside a political broadcast, these subthemes exist

within a gradient of emotional and contextual insight into the viewer's reactions.

Evaluations

Although many tweets from the data set contained opinions, the tweets within *Evaluations* were overtly focused on a personal analysis of the debate and candidates. Twitter provides readers with evaluations of every aspect of the debate: the politicians' performance, the poll results, the debate structure, the audience, even the Twitter content itself. Most tweets guide the attention of the reader towards the negatives and positives of the debate *("brilliant entertainment so far - not sure it will change any voting choice. Pleased @natalieben has held her own this time"; "My #leadersdebate scorecard at the three quarter mark: 1. Sturgeon 2. Wood 3. Clegg 4. Miliband 5. Cameron 6. Bennett 7. Farage"; "SNP impressive, UKIP bonkers, Conservatives don't represent us, Labour good sounbites, Liberals desperate, Greens progressive").*

Many ideas presented to the Twitter observer go beyond the events of the debate itself and consider broader knowledge of politics and news *("Everything about treatment of Farage/ Bennett/ Sturgeon/ Wood would've been different if they had central [government] record to defend").* This evaluative process often merges with the endorsement and promotion of certain political leaders. Some simply show their support for politicians and quote statements they agree with *("The women won hands down"; "@NicolaSturgeon 'there isn't anything that @Nigel_Farage won't blame on immigrants'),* while others give detail about their position possibly in the hope to persuade others to vote in a similar way *("As a dad of 1 child with liver disease and 1 in [hospital] after huge spinal surgery there is only 1 party I trust for NHS #labour").*

Experiences

Where *Evaluations* focused on a personal analysis of the debate, sharing experiences gives a more personal and reactionary annotation of the debate. Different aspects of the experience are addressed throughout the data set, including observations of the debate and the viewer's surroundings, and

emotional reactions. Viewers illustrated both the physical context in which they are watching (*"THIS IS HOW #leadersdebate night has gone* [Figure 4]*"*) and the emotional state of themselves and others around them *("My mum got so tired of Nigel Farage's bullshit, she fell asleep halfway through the debate")*. This subtheme is also rich in personal emotional commentary, including a reaction to the debate (*"OH FFS CLEGG, STAND FOR SOMETHING ALREADY. Always on the pissing fence."*) and other's tweets (*"'Wish England could vote for @NicolaSturgeon' ^^^Just one of thousands I've seen tonight, wow, just wow!"*). The emotional connotation of the content is extremely varied and included agitation, bewilderment, excitement, disappointment, frustration and relief.

Figure 4 An image shared on Twitter by a Leader's Debate viewer depicting him and his family watching the debate together.

There were also careful observations that guide the attention of the reader to intricate details of the content and narrative of the debate (*"Ed has gone from 'when' to 'if'. Clearly he feels he had a bad one"; "Land law fans will appreciate Nick's recent suggestion about renters acquiring a share of ownership in their homes."*). A portion of these observations highlight aspects of the character, appearance, and speech of the politicians (*"They definatly just want to swear and go at each other's throats, think Ed might crack first"; "Miliband sharp on detail. He can think on his feet. Cameron struggling. Oh gawd he is using his son again. He has no shame"*). Others made observations on the Twitter activity and the audience of the debate (*"Love the @KTHopkins debate commentary! It makes delightful evening reading."; "Splendid tash on*

the gent behind Rebecca Creamer"). Sharing personal experiences like the ones seen in this theme may help the social network mimic a physical community.

Humour

Humour manifests itself in a very complicated manner within the data. Although some of the tweets are jokes, it is difficult to separate them from other forms of commentary, as humour is usually combined with a political statement or opinion. For example, the tweet *"So Conservative MPs all think Cameron won. Labour MPs all think Miliband won. Liberal Democrat MPs all went to bed early"* gives an evaluation of the performance of the party leaders but conveys this in a humorous way. Although, many tweets are just playful *("If you want a fun drinking game than do a shot every time ed millaband says 'and im sure people at home...'"; "Next one to say 'long term economic solution' gets a slap."; "Like the Bank of England, the lad who asked the 1st question seemed to have 0% rate of interest once the bickering started")*, sarcasm and satire are the predominant way that people express a humorous opinion *("Oh God it is immigration next. Farage is already salivating").* There seems to be an obvious desire to break up the seriousness of the debate—exemplified in the widespread use of memes (e.g. Figure 5). The images found throughout the data are characterised by their mocking and abusive nature. In addition to sharing the opinion of the author, this type of content had a secondary aspiration to either entertain, mock, or make opinions less antagonistic. This behaviour is grounded in a history of televised political satire, irony and parody that is broadcast on television (Young, 2014).

Figure 5 A mocking meme, depicting Nigel Farage in the debate.

Provocation

Provocative tweets throughout the dataset have been written with a variety of intentions: some target at specific people or groups in an aggressive manner *("WANKER #wallace #EdMiliband"; "Sorry who thinks farage won?!? Who are these fools?"; "You'd think if you were asking a question on national tv, Rebecca would make sure she had a better haircut")*, while others try to provoke thoughts and reflections in the hopes of persuading others to vote for their choice of party *("So Cameron wants to take an already under performing NHS and improve it by stretching it over an extra 2 days"; "Vote Labour and get more borrowing, higher taxes and a greater financial burden on future generations. #VoteConservative")*.

Most importantly, this theme shows how delicate and personal the topics in the debate can be. One of the most tweeted about moments from the debate was when a party leader with an anti-immigration stance condemned foreign HIV patients receiving free treatment in the UK (Dathan, 2015): this resulted in a large quantity of provocative commentary *("How can @Nigel_Farage @nigelmake such a statement about HIV very shameful"; "Shame on you #Farage - we should be proud we diagnose and treat 60% of non-UK nationals with HIV - not deriding it!")*. Most tweets within this sub-theme were a strong negative reaction to the statement and are provocative and emotional.

4.3.3.2. Interacting

Direct interactions between Twitter users were prominent during and after the end of the debate. This happened in two ways: the first was through direct replies to other users *("@[username]: 'Rent to own scheme'. Isn't that a mortgage? this is what my 12 year old said!"; "@[username] Couple of these lot need the half time oranges asap"; "@[username]: Piss off she's not even english? Talking about 'our NHS' please leave #leadersdebate…")*. These tweets, although conversational, we often reactionary and emotional reflecting the characteristics of the commentary sub-themes.

The second type of interactive tweets attempt to directly engage with a large segment of Twitter users rather than specific individuals *("Number geeks... If Plaid and SNP win every seat they stand in is it numerically possible for them to hold balance*

of power?"; "If your tweeting about #leadersdebate what are you tweeting about?"). Due to the way the data was collected, only the individual tweets containing the debate hashtag were visible to the research team rather than the threads they formed part of. The lack of access to the conversation threads limited data analysis and resulted in a lack of contextual information about the dialog that took place.

4.3.3.3. Informing

Finally, users added additional layers of factual information to the broadcast through the use of links, images and text. During the debate this behaviour was characterised by its strong link to the current topic of conversation. However, while the content was factual, there was often a clear desire to sway the thinking of viewers in a particular direction *("In 2013 397,160 migrants were claiming benefits (5.3% of the migrant population & 7% of all benefit claimants)"; "Nicola Sturgeon wrong on affordable homes. They are dropping http://t.co/Efew4TBpvM").*

Figure 6 An informative tweet depicting the sentiment of debate topics.

Near and after the end of the debate the informative tweets changed their purpose and were used to inform of news and analysis relating to the debate itself (*"Positive sentiment associated with Immigration and Borders with debate on policy*

and diversity [link to image in Figure 6*]”; “poll results - Guardian/ICM #leadersdebate poll: 25% Miliband 24% Cameron 19% Farage 17% Sturgeon 9% Clegg 3% Bennett 2% Wood”*), or as a way to promote tools *(“Feel more #confused after #leadersdebate? Here's some plain-English info on the issues that matter: http://t.co/s3ww2rM3og”).* Unlike the theme of commentary, the informative content was not reactionary and emotional, but rather deliberative and backed by visuals, facts or links. Within this theme we see the prominent participation of political and media experts and even official news pages.

4.3.4.   Discussion

This first study contributes a view of Twitter usage through a thematic analysis of tweets generated during a UK General Election debate. Debate viewers used Twitter to commentate along by sharing their evaluations, experiences, post humorous and provocative tweets and interact with and inform others. The tweets were often rich in contextual information about the location and mood of the twitter user and at times provided supporting images and links. The tweets gave readers evaluations of and reactions to every aspect of the debate, such as the politician's behaviour, speech, performance, key points, and appearance. This indicates that during a debate Twitter is used as a broadcasting tool. An array of underlying motivations is evident within the themes, such as wanting to share an experience, feel part of a community, sway other's opinions, and engage with others. This diversity of behaviours indicates that debate viewers can be exposed to a wide range of political views online that may be absent from their other social media platforms. Furthermore, these views are expressed in a variety of different ways, some emotionally, others more informatively.

Research shows that 40% of Twitter users do not actively share their thoughts on the platform (Holt, 2013), while those who do report concerns about uncivil reactions (Bakker, 2013) and sounding ignorant (Semaan et al., 2015a). Thus, the provocative tweets visible online may be deterring some users from contributing during debates. Since more politically engaged individuals tend to have a curated experience on Twitter, due to the pre-formed network of

users they follow (Ausserhofer and Maireder, 2012), the provocative behaviour seen in the data may be a greater concern for less politically engaged viewers. These users may instead be drawn to Twitter due to its abundance of humorous content.

Although social media platforms provide the public with a platform to voice political views, the enormity and density of content online leads people to cluster around very popular and prominent sources of political opinion (Hindman, 2009). This effect can drown out content posted by users with a small following. This raises the question of why people choose to express their views through public forums where it is easy to post but difficult to be heard. Furthermore, it is vital to investigate what motivates the use of second screen devices around debates more broadly, are people interested in each other's views, and do second screens enable meaningful engagement around political events?

This work builds upon previous analysis of twitter content generated live alongside a debate, where researchers either looked at the sentiments of the posts (Wang et al., 2012, Wang et al., 2011), or have organised the content in pre-determined themes, including emotion, attention seeking, informative, and opinion (Wohn and Na, 2011). Although sentiment analysis of Twitter has been the dominant method for studying discussion around political debates, I believe that the categorising of content based on token words may be an oversimplification of the posts. As seen throughout the themes, the opinions and language used by the viewers is extremely subtle. Humour can often disguise negative attitudes, such as in the case of the tweet: *"Lol Clegg talking about breaking promises"*, which alludes to the negatively perceived political track record of the leader of the Liberal Democrat Party. Such a statement may easily be misinterpreted using sentiment analysis tools.

Throughout the theme of commentating we saw that viewers shared not just their political views, but also their experiences and observations relating to the debate. This indicates that Twitter can be used as more than just a tool to evaluate the mood of the public, but also gain insights into the most noteworthy aspects of the debates. Furthermore, thematic analysis could be

used to analyse in detail the views of the public regarding a political debate after it is aired, including the perceptions about the audience, participants, and questions asked by the host. While this analysis captured the visible behaviours debate viewers exhibit on Twitter, it did not provide insights into the personal motivations and social contexts that formed this activity.

4.4. Motivations for Second Screen Use

As seen in the Twitter content analysis study, the debate audience used the platform to broadcast their reactions and thoughts on social media. The tweets themselves can give us an indication of a diverse set of underlying motivations that trigger this behaviour. While collecting content generated live can illustrate the posting behaviours supported by Twitter, many debate viewers use their personal devices for other activities and in less visible ways.

In order to be able to address the research question in this chapter, I needed to be able to gain insights into the real-life context of debate viewing. An observational study allowed me to both observe second screen activity as it emerges live in the living room and communicate with the debate viewers about details of the experience.

4.4.1. Background

Research in the area has also focused on the use of Twitter during political debates, it includes an analysis of its main users (Ausserhofer and Maireder, 2012), how it is used by politicians (Ausserhofer and Maireder, 2012, Kreiss, 2014, Larsson and Moe, 2011), the language characteristics of the tweets (Anstead and O'Loughlin, 2011, Bruns and Burgess, 2011, Trilling, 2014) and the hindrances of using it for political deliberation (Bakker, 2013, Hindman, 2009, Semaan et al., 2015b). There is a large gap in our knowledge and understanding of second screen use beyond Twitter. This visible and openly available behaviour online is only a small subset of the activities that take place in the home. Although the analysis of Twitter content from the previous

section identified some insights into user motivations, past research does not capture the reasons for participating, or for not participating on Twitter. Furthermore, even less apparent is the range of behaviours and motivations that incentivise second screen use. It is important to capture these less visible experiences. By doing so, this study aims to identify new design opportunities for second screen applications to support political discourse and engagement with debates. The study presented here was designed to investigate the motivations and behaviours that frame second screen use in the home.

The study was conducted around three of the four official televised debates aired in the month leading to the UK General Election of May 2015. Through at home observations and semi-structured interviews of 18 participants, I explore attitudes and practices around second screen use. In doing so, I was able to identify not just how second screens are supporting engagement with debates, but also how they are not. This research contributes a more nuanced understanding of the range of behaviours and motivations around second screen use.

4.4.2. Study Design

To capture the behaviours and motivations that shape the use of peripheral devices during a televised political debate I recruited 18 participants and asked them to record themselves, watching a debate of their choosing. By situating the observations in the homes of participants I aimed to capture a range of real-life contexts in which people watch debates. Furthermore, by having the participants film the experience I was able to capture the debate from their perspective, seeing the triggers that stimulate second screen activity, the digital tools they used, and the social interactions they had with others in the living room. The video footage was collected after the debate, it was then condensed into a 10-minute segment and used as a memory prompt during a semi-structured interview. By prompting the participant with the aid of the recording, the participants were able to reflect on the motivations and issues with the use of their personal devices.

4.4.2.1. Recruitment

I aimed to recruit participants with varied political interests, social media usage and viewing arrangements. Thirteen participants were recruited through advertisements placed on social media, university mailing lists, newsletters and posters. A website containing information about the project, a way to contact me, and an invitation to an induction event was circulated as part of the recruitment process. The material generated in order to advertise the event was branded as Gogglebox for Research, which aimed to help potential participants understand that they would be filmed at home watching a program before signing up, much like the popular television program Gogglebox on Channel 4.

Two induction events were held, where I presented a short formal recruitment presentation to explain the process of the research project to the event attendees. Those that wished to participate were invited to sign up to a single debate through a sign-up sheet. Everyone who signed up was asked to fill out a study pre-questionnaire, which gathered demographic data and explored how they engage with politics and social media (see Appendix B.3).

A further five participants were jointly recruited with another study through a collaboration with the University of Dundee's Politics Department. The study, led by Dr Edzia Carvalho and Dr Kristi Winters, is a longitudinal qualitative study into how and why people vote the way they do, their perceptions of British party leaders, and opinions on British politics. Within their study they recruited participants who watched a debate in a room together and took part in a pre and post-debate focus group, which recorded their views of the performance of the politicians and the debate. The study took place in England, Wales and Scotland.

I elected for a relatively small cohort of 18 to capture rich user experiences not possible with a large group. Eligibility was determined by the use of typical second screen apps (e.g. social media), ownership of a smartphone, tablet or laptop and the desire to watch the debates.

4.4.2.2. Participant Information

Through a combination of the pre-questionnaires and interview data I established that all but one of the 18 participants were within the 18 to 29 age bracket, with eleven males and seven females. The homogenous age of the participants can be explained by the recruitment methods used and by the technological focus of the study. The participants had varying levels of political engagement: seven of them were very politically engaged (four of which were politics students), eight moderately engaged and three slightly. Participants were recruited in Scotland (N=15), England (N=2) and Wales (N=1). They had a wide range of political party preferences such as Labour (N=4), SNP (N=8), Green (N=3), Conservative (N=1) and undecided (N=2), which roughly corresponds to general trends in Scotland during that year. They indicated that they all used their devices to access either Facebook (N=7), Twitter (N=6) or both (N=5) during the debate, as well as varied other new sources, messenger services and websites. They mainly used their smartphones (N=10), but there were also tablet users (N=5) and laptop users (N=3).

The pre-questionnaire, filled out by those who watched the debates at home provided further details about the participant's political interests and social media use (See Table 1).

Table 1 Answers from the Observations Study Pre-questionnaire.

Pre-questionnaire questions/ statements		*Positive responses out of 13*	
Do you watch political programmes such as Question Time?			
Always - 1	*Sometimes - 10*	*Rarely - 1*	*Never - 1*
Have you ever used social media during televised political debates for political discourse?			
Always - 1	*Sometimes - 9*	*Rarely - 3*	*Never - 0*
Do you use peripheral devices such as your laptop, phone or tablet while watching television?			
Always - 5	*Sometimes - 8*	*Rarely - 0*	*Never - 0*
Which of the following social media platforms do you use on a regular basis?			
Facebook - 13	*Twitter - 6*	*Google+ - 2*	*Tumbler - 0*
LinkedIn - 0	*Reddit - 1*	*Other – Instagram (1)*	
Do you use social media on a daily basis?		*13*	
How do you use your device while watching television?			
To look up information related to the TV content.		*11*	
To socialise with others and discuss the TV content.		*10*	
Look at unrelated content.		*10*	
What would you like to gain from the debate?			
Help me decide whom to vote for.		*2*	
Knowledge about party policies.		*10*	
Knowledge about public opinion.		*7*	
Other – The spectacle		*1*	

4.4.2.3. **Watching the Debates**

Three debates were included in the study. The first was the Leader's debate hosted by ITV on April 2nd 2015, which included the Conservative, Labour, Green, Liberal Democrat, Plaid Cymru, Scottish National Party and UK Independence Party. The second debate aired on April 16th, it was hosted by the BBC and included only the "challenger" parties: Labour, Green, Plaid Cymru, Scottish National Party and UK Independence Party. Finally, the last debate covered by the study was aired on April 30th as a special edition of *Question Time* and followed a Q&A format with each of the leaders of the three main UK parties, the Conservative, Labour, and Liberal Democrat parties.

Figure 7 Left: An image captured in the home of one of the participants showing him watching a debate with his personal device. Right: An image from one of the focus groups.

All of the participants recruited through this process were given a box containing a wearable camera (Figure 8), a clip for the camera, a charging cable, popcorn, a cereal bar and instructions on how to charge and operate the camera (see Appendix B.4). The package was designed to make the observation process easy and comfortable, while through the use of the popcorn and snack, create a sense of excitement about the experience of watching the debate. The 13 participants who were recruited solely by myself watched a debate of their choosing at home (Figure 7, left). They watched the debate either alone (N=2) or with a friend or family member (N=11). The 5 participants who were jointly recruited with the university Politics Department used the wearable cameras to record themselves watching the televised debate in the same way as those who watched the debates at home, but in a group setting (Figure 7, right). In this case, the use of the cameras was facilitated and instructed by the Politics Department research team. They did not receive the camera and instructions box and did not fill out the pre-questionnaire because

I did not personally communicate with them ahead of the debate. Instead, they were asked demographic and political interest questions during the interview.

Figure 8 The box containing the wearable camera and instructions given to the participants.

Each participant was provided with a small wearable camera (a Veho MUVI Micro) and asked to leave the device recording while watching a debate. This approach was utilised in order to capture behaviour in the home where participants would act most naturally, without being distracted by the presence of a researcher. For their privacy, participants were allowed to pick the position of the camera but were encouraged to either attach it to their lapel (to capture their view of the television and personal device) or place it directly in front of themselves (to capture their face). Only three participants opted for the latter placement. All participants were instructed on how to use the camera ahead of the debates and expressed confidence about the recording process. Example footage is shown in Figure 9.
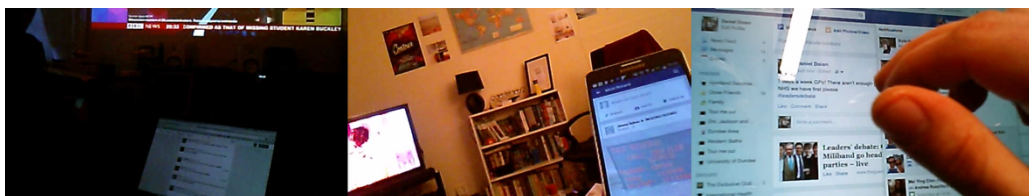
Figure 9 Example footage from collected during the observational study.

This footage was not intended to be analysed directly, due to the difficulty of meaningfully capturing the nuances of people's interaction. Instead, it was condensed in order to be used as a memory prompt alongside interviews. Each recording was reviewed and condensed by the lead researcher into a 10-minute segment, including moments of high activity and all instances where participants interacted with their personal device. We also collected all tweets and retweets made by the participants on Twitter and asked that they take screenshots from their personal posts on Facebook. In total we recorded 15 Facebook posts, 49 tweets and 48 re-tweets.

4.4.2.4. Interviews and Analysis

Within a week of the debate the participants took part in a semi-structured interview about their experience and motivations, lasting between 30 and 80 minutes. In the first half, participants were asked why they used their peripheral devices, what for, what they liked and didn't like about it, and how it augmented the televised event. In the second part they watched the condensed video and were prompted to reflect on the footage. The interviews were then transcribed and underwent a thematic analysis, during which two researchers, including myself, independently coded a set of interviews and agreed upon the codes used. The process was done by hand with codes written alongside printed copies of the interviews. Once all of the interviews were analysed the emerging themes were refined and agreed upon by the research team.

I created a set of standard questions for everyone (Appendix B.5), but based on the video footage I generated additional questions that catered to each participant. The questions were designed to explore the range of different second screen activity that took place, including social media, searching for information, communication and unrelated activity. The questions further examined in depth how and why the seconds screens were used. The anonymised interview transcripts and the Social Printer conversations between the households are available on an open data repository from the University of Dundee (Gorkovenko and Taylor, 2016).

4.4.3. Results

The findings exposed a number of motivations for utilising second screens alongside the debate, but also concerns that participants had about contributing content. Below, I describe the three major themes that emerged from the thematic analysis: gauging opinion, enriching the debate and sharing opinion, further broken down into a number of sub-themes. It is notable that the second screen activity captured by the participants almost entirely represents social media usage and many of the behaviours mirror those that have been identified from examining social media content alone. However, by observing and interviewing participants directly, the findings expose wide range motivations for utilising second screens and concerns about posting content online.

4.4.3.1. Gauge Opinion

All 18 participants in the study described the ability to gauge public opinion through the use of social media apps as the most valuable aspect of using a second screen device. As the interview responses suggest, Twitter and Facebook are used in a process of learning what others think, reflecting upon that and in most cases reaffirming their own opinion rather than changing it.

Learn

The participants learned what others thought about the debate via social media apps, although a few also accessed online broadcasters who provided a live stream of commentary such as the Guardian and BBC News. When reading information and opinions online the participants recognised variety and relevance as the most important aspects of online content. Social media content was perceived as relevant if it reflected events from the debate instantaneously.

Variety of opinion was vital for the process of learning. For example, the participants wanted to see people with opposing views to their own (P1: *"You*

can obviously see people endorsing something that you totally don't think, so it's interesting to see that opinion"), people from different locations around the UK (P13: *"It was quite interesting to see especially being [an SNP supporter], what people from England and Wales and Northern Ireland thought of them"*), and their friends (P14: *"It's interesting to see people who are not usually interested in it and who don't talk about it. Like people who I was in school with"*).

Although everyone valued variety, it is interesting to note that there was a difference in the sourcing of this diverse opinion between participants who perceived themselves as very politically engaged and those who did not. The four politics students expressed a preference for their personal Twitter stream where they follow a curated group of political commentators, journalists, satirical profiles and academics (P17: *"I have built up the people that I follow and who follow me, sort of got a rapport and sort of share the same sort of attitude rather than views"*, P4: *"I usually keep to my feed because it's always got good stuff"*). The main reason that they identified for not being interested in the opinions of the general public and their friends who they could find on Facebook was that they questioned the quality of their views (P5: *"I don't care what any of my friends think really. I mean I care less about what they think than other people who are more interested"*). In contrast the rest of the participants who perceived themselves as less politically involved showed more interest in what friends and family think about politics and identified Facebook as a primary source of such opinion (P15: *"Facebook is more about interacting with people I know"*). This behaviour can be attributed to the fact that the politics students had an already established political community commenting along the broadcast, whereas less politically engaged participants lacked a politically-focused network and instead turned to friends and family.

The most prominent type of content that the participants were interested in was what others thought were the highlights of the debate, which had the effect of guiding their attention to aspects of the event that they might have not noticed (P1: *"It is definitely beneficial because you get highlighted things that maybe you did not think of before"*). Often these highlights would include humorous remarks about the politician's behaviour, clothing, mannerisms and speech. The

participants were also interested in the tools and experiences of others on the internet. On one occasion two of the participants noticed that Twitter users were commenting about the live opinion tracker (or 'worm') shown alongside the broadcast (P6: *"We switched to the worm actually because we saw tweets about it"*). The 'Top Tweets' section (a slightly filtered stream of more popular Tweets) was a primary way to see what drew the public's attention (P6: *"I was on #GE2015 and #BBCdebate. I just search them occasionally and see what rises to the surface"*). The very politically engaged participants also emphasised the value of evaluations of what is said and how the politicians were performing (P17: *"In an event like that you are interested in when someone says something and someone points out that it is false. Correcting them and fact checking"*).

The relevance of content depended on the speed at which it was posted. Immediacy was the key factor that made gauging public opinion possible, with participants describing it as *"instant feedback"* (P7). Those that used both Facebook and Twitter regularly expressed a preference to Twitter solely for its instantaneity (P17: *"With Twitter you have got things coming through and it's easier to actually see what is happening. Whereas Facebook feels slower"*).

Reflect

Knowing how others perceived the politicians and their arguments was then used to reflect upon the participant's political position and the performance of the politicians. However, all of the participants felt the online content they saw either reaffirmed or did not change their view of the politicians (P18: *"From reading the comments I saw that most people agreed with me"*). One participant explained that re-tweeting served as a way of bookmarking interesting tweets in order to return to them at a later time (P4: *"I would just retweet it so I can go back to it [...] so it's like a diary almost"*). Although during the programme everyone found that others have a similar opinion to them, in one case the person reconsidered their initial impressions based on online content he read in the days that followed (P7: *"I thought [the Green Party leader] did quite well during the debate but then after getting people's views after it [...] you are putting things together and you are like 'Ahh!'"*). It is apparent through the interviews that the participants

acknowledged the importance that the second screen had in the process of reflecting upon the debate. An understanding of the opinion of others is valued and viewed as vital for the understanding of the impact their vote may have (P8: *"I would rather just feed on everyone's opinion and get an understanding of what other people are thinking other than myself because I want to make the best decision"*). The lack of structure and enormous amounts of content that they were exposed to online was at times detrimental to reflection.

Reaffirm

Despite the minor changes of view described above, none of the participants reported their political opinion changing dramatically based on what they saw online or on TV. No matter how politically engaged a participant was the content that they read during the debate had the effect of reaffirming their opinion. This was based on three major factors. First, all of the participants had a pre-conceived idea of whom they would like to vote for (P3: *"I was not expecting to go into the debate and change my mind based on social media or the debate itself. But I think it could do for someone else"*). The second reason is that many of the participants experienced an echo chamber effect, where they are mainly exposed to views similar to their own (P7: *"People wall themselves into echo chambers, they surround themselves with the opinions that they want to see or hear"*). The third reason is that the most participants were dismissive of opposing opinions (P4: *"When you see something you don't like [...] I just go 'you are an idiot' to myself"*).

4.4.3.2. Enrich Debate

In the second theme, the personal devices that participants used throughout the debate also had the effect of enriching the experience. Many expressed a need for this use due to their perception of the debate as *"boring"* (P4) and *"shallow"* (P5), but also as a *"spectacle"* (P7) by those with a more positive outlook on the debates. The shallowness of the event meant that there was room to add value through the use of their devices for entertainment, empowerment and as a talking point with the people in their surroundings.

Entertainment

Humour had a positive effect on participants who felt disengaged with the broadcast. The participants expressed the opinion that the juxtaposition of the seriousness of the political debate with humorous content made politics accessible for more people (P5: *"Politics is quite dry and boring for most people and anything that lightens it up is a good thing"*). Humour also served an important role in creating a social online atmosphere. Facebook and Twitter were identified as a way to feel as if you are in the company of others. This content was especially valued by individuals who watched the debate alone (P17: *"I think a lot of it is just a public way of chatting at the TV screen. It makes it actually feel much more of a collective event"*). Furthermore, some participants used their devices for personal communication and unrelated content in an effort to distract themselves from the debate (P3: *"A lot of the time I am willingly getting distracted because I don't want to listen to them all that much"*, P4: *"[Using WhatsApp] was not really about the debate it was just general chit chat"*). It may seem counterproductive that one of the most valued aspects of second screens in the context of a political debate is distraction from the debate itself, but since many of the participants did not feel very politically engaged it was a way to sustain a level of interest in the event.

Empowerment

Second screens provided a valuable tool that empowered the participants, bridging the public with the politicians themselves. For some, it was a source of information about candidates with the aid of search tools like Google (P11: *"I looked up who was the Green [Party] candidate for [my area]. Because I had not looked at that before"*), while for others a way to gauge their opinions (P4: *"There is a few times where I am like 'Oh I really want to know what [a candidate has] to say'. If they are not in my feed immediately then I will look"*). The most valuable aspect of being able to connect to politicians was that it gave them a sense of authenticity. It was not enough for political leaders to have a social media presence: they need to be actively engaging with the public, which gave viewers a sense of their personality (P17: *"It is engaging with them as an individual rather than 'thank you for*

your comment' you are actually engaging in conversation with people. It's a good way for them to be able to show their human side") and accountability (P6: *"I feel that it is a platform to represent yourself and if you are not on there then there shouldn't be a front for your name"*). This had the effect of generating trust and reinforcing the participants' desire to vote for those individuals (P7: *"[The SNP leader] would talk to the other politicians, she would tweet journalists [...] the idea that she may tweet you back [...] fosters the creation of a sense of trust"*).

In this theme, we also see instances where the television screen took on a secondary role. Rather than dictating the online behaviour of the participants, it was a catalyst for political activism. For example, one participant was the face of a campaign meant to foster empathy towards immigrants who used the increased social media attention around the debate to increase the campaign's exposure, much in the way advertisers might (Figure 10). A tweet posted through his personal device received many comments, 142 retweets and 88 favourites (a far greater number than anyone else from the participant group). Other participants used less involved tools like change.org to actively engage with a cause (P11: *"I follow quite a lot of change.org petitions [...] It has had an effect in the past"*).

Figure 10 An example of a participant using Twitter as a platform for political activism.

Use as Talking Point

This theme was evident in all eleven individuals that watched the debates at home with their friends and family. When interesting pieces of information emerged from their second screen usage, they shared it with the people around them for the purpose of entertainment, education and to socialise. Google and Twitter were the main online tools that sparked discussion.

In one instance, we saw online content being used as an educational talking point amongst a family. P4 watched the debate with her father and used Twitter at the same time. When she read a tweet by a celebrity regarding the debate she shared it and used it as the basis of a discussion about the political views of people that may be of interest to her father. This example was especially interesting as it involved someone who did not use technology being included in the online discourse by proxy. P4 explained that she felt that she acts as a bridge between the digital world and her father (P4: *"Sometimes he would be reading about the debate in newspapers and I would say that I have read on Twitter about Russell Brand that he would have not had access to. I think it's just to... to educate him a little bit"*).

All eleven participants who watched the debate with a friend or family member discussed the online content they came across with the person because face-to-face discourse had greater value to them (P5: *"Having a conversation with a real person is inherently better"*). The conversations that were created broadened the experience of the participants: some benefited from the contacts and work that was done by the other person (P8: *"I was watching the debate I was feeding off of what [P7] was looking up and sort of mainly to gain information about the parties"*), while for others it was another way to make the debate more entertaining (P15: *"The funny [posts] are the ones you would always show each other"*). The conversations that they had with each other reinforced learning, reflecting and entertainment. The fact that everyone took part in conversing about the online content that they found points to the great value that technology may have within the living room family dynamic.

4.4.3.3. Share Opinion

The final theme was apparent throughout the interviews, although the ways participants shared their opinion varied. While seven of the 18 participants did not contribute content online themselves, they still felt that the action would be beneficial for others but expressed personal fears, a preference for person to person interaction or lack of motivation (P14: *"I prefer reading. I talk about politics in person but I am too scared of people on the internet"*).

Figure 11 An example of a Facebook post made by P13 and comments by the participant's friends underneath.

Influencing Factors

The decision to share or not share opinions online was influenced by a number of factors. These included the particular properties of the platform being used in terms of audience, behavioural norms and effort. Participants often had to decide about whom the recipient of the opinion would be (P13: *"A lot of my friends that I have on Facebook I don't have on Twitter [...] so it was just a case of trying to share my view as much as possible"*) (Figure 11). Furthermore, they were aware of unwritten etiquette and behavioural norms on social media, especially on Facebook. These included frequency of posts and responses, homogeneity of attitudes and the probability of a reaction by an unwanted audience member. This led to some participants feeling reluctant to post their thoughts (P17: *"I comment a lot more on Twitter than I do on Facebook. So it would just end up flooding my*

Facebook timeline with silly comments", P7: *"People's Facebook timeline they are precious about. If you dare talk about politics on their Facebook they are like 'It's not like you have a politics degree man!'"*).

The two social media platforms also required different amounts of effort to post: for example, Twitter's 140-character limit was perceived as an obstacle to self-expression by a few of the participants (P3: *"Sometimes when I have Tweeted in the past I have had to rewrite it like 4 times. It's all abbreviated and looks a mess. It looks like you can't spell"*). Six of the participants felt it was best to use a platform they felt comfortable with in order to post (P3: *"I feel I can express myself more openly [on Facebook]. I would only get abuse from friends and that is not a problem"*), while five curated their online activity and used the strengths of multiple social media platforms to create a new type of experience (P15: *"I just read what other people try to say on Twitter and try to gauge people's opinion. Whereas Facebook is more about interacting with people I know and commenting myself"*). Small interactions such as liking or re-tweeting, usually as an indication of agreement, caused much less anxiety (P1: *"It's a good opportunity to try and re-tweet something that someone has thought but has maybe articulated it better"*).

Although the perceived audience, effort and etiquette influenced the way the participants expressed themselves, the biggest factor that deterred self-expression was the fear of provoking someone. A large proportion of the participants avoided making statements that could lead to disputes or hurt people's feelings (P8: *"I don't even look at an argument, a discussion or a debate I am not one to get into it [...] because I don't want to sound like an arsehole"*, P1: *"If you say something negative it can go badly"*). Others found that debating helped them solidify their own arguments (P15: *"It's good to hunt out an argument sometimes because you learn from arguing with people"*).

Reasons for Sharing

Only the participants with strong political engagement were able to explicitly articulate the value of posting content, other than as a way to react to the debate and interact with others. Posting thoughts about the debate had a few beneficial outcomes for the participants, such as providing an ego boost (P17:

"In a way I am a bit shameless and looking for a bit of attention. Trying to get a joke that people will like"), allowing them to light-heartedly commentate (P7: "My Twitter is effectively where I vomit up the contents of my mind"), and as an opportunity to help their future career (P1: *"I probably started tweeting about this sort of thing to do it for my career or to have more of an online presence"*).

· Apr 30

'Mr Cameron, will you give me a direct answer to this question?' 'Look, things are tough, so let me answer by waving paper at you.' #bbcqt

↩ ⟲ 5   ★ 2   •••
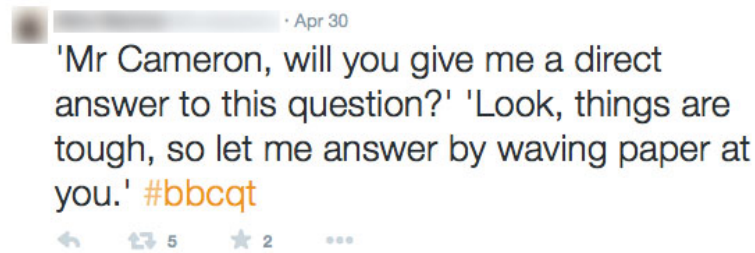
Figure 12 Humorous but mocking tweet from P17

· Apr 30

PM policies praying on most vulnerable in our society: making us choose between a good economy & reducing poverty in the UK #bbcqt

↩ ⟲ ★ +👤 •••
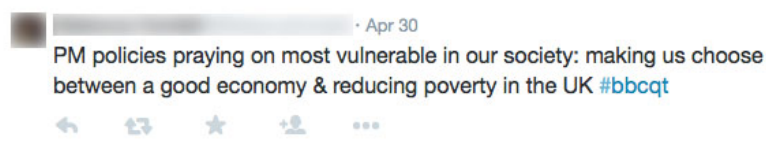
Figure 13 A considered political statement tweeted by P1

These motivations were clearly reflected in the content posted by participants. To get the attention P17 wanted, he humorously mocked the conservative party leader's way of avoiding to answer questions directly and his persistent use of 'sound-bites' (Figure 12). P1, who saw Twitter as a way to further her career, disputed the claims made by politicians by carefully paraphrasing the points she disagreed with and expressing her own opinion on them (Figure 13). P7, who used Twitter to unload his thoughts, tweeted his opinion on the clothes of the politicians, their behaviour and his own excitement about the debate (Figure 14).

Figure 14 A series of tweets generated by P7.

Desirable Qualities

When sharing their opinion online, participants mentioned that humour, immediacy and integrity are essential. One participant justified his need to make a tweet funny in order to not seem antagonistic, while others simply enjoyed being funny (P17: *"I come up with humorous comments. To mock him and make a bit of a joke out of it. Those are the sort of things that people pick up and re-tweet around"*). Content posted by the participants included 15 tweets and two Facebook posts with humorous content. The majority of those posts use sarcasm, satire and irony to mock aspects of the debate. For example, P13 commented on the behaviour of the Labour leader on Facebook: *"#leadersdebate Milliband loves talking to us people at home, that makes me trust him more..."*.

The instantaneous nature of the debate meant that content needed to be generated quickly and be posted while it was still relevant (P15: *"It's generally immediately afterwards because generally by the end of the debate you are angry about something else"*). Statements needed to have sufficient backing otherwise they compromised the integrity of the online discussion (P6: *"I would not post it if I don't look it up. If I can't be bothered looking up I will not post it"*). However, while the

participants spoke about the importance of humour, relevance and integrity, the vast majority their own posts focused on aspects of the debate or the participants that they disliked. This resulted it overwhelmingly negative commentary that was sometimes conveyed humorously.

The most dramatic difference between the use of the two platforms was that Twitter was used to broadcast opinion and Facebook was used for discussions. P7, who used Twitter to commentate also used Facebook but in a much more interactive way. His post read *"So who do you think won?"* and underneath he took part in a discussion with his friends. This tendency to want to discuss on Facebook because of the friend circle that exists there, was evident in those other participants that used the platform (P15: *"Contribute on Facebook. Read on Twitter. Strangers versus friends"*).

4.4.4. Discussion

Through this study I explored the experiences of second screen users during the 2015 UK General Election debates. These findings expose the value that viewers see in second screens, but also the concerns they have that prevent them from participating further, making it clear that existing desires are not being fully met by current second screen applications—which ultimately consisted almost entirely of mainstream social media applications. Here I discuss a number of possible ways in which online discourse might be better supported, largely through more scaffolded or curated experiences. Furthermore, I challenge current perceptions of second screens and imagine new possibilities for technology to make the experience more inclusive.

4.4.4.1. Participation

It was clear from the interviews that the mechanics of the social media applications being used played a large part in determining how likely participants were to contribute. Factors at play included the perceived audience, impact, effort and normative rules governing the network. These considerations could at times be crippling, leading participants to agonise over

draft messages, or more often simply withdraw from the conversation. However, these opinions varied dramatically: some of the participants were apprehensive about taking part in an online discussion, while others saw it as an opportunity to develop their ideas.

As we saw in the study, participants' Facebook accounts were connected with their friends and family, which had the effect of discouraging some of the participants from posting their opinions knowing that they may be perceived negatively. Twitter posed a different set of challenges, such as the perception that *"it can go badly"* (P1) if you post controversial views or get into an argument with strangers. As previous research has observed, there is no coherent notion of the audience an individual thinks they are communicating with online (Marwick and boyd, 2010), leading to a variety of behaviours based on the individual perceptions of the individual. Platforms like Facebook where the full network of 'friends' a user has can comment on their posts result in less open and agreeable online behaviour where users avoid controversial topics due to fears of being judged (Taber and Whittaker, 2018). These issues form part of a much greater problem concerning abusive behaviour online that defies any straightforward design solution, requiring further research on behavioural norms online.

4.4.4.2. Conflicting and Reaffirming Opinions

The very politically engaged participants, such as the politics students, used Twitter as their primary second screen application. They had different intents behind the use of their device, for example one participant said they used it like a diary to log in their thoughts and another to maintain social media presence to aid their future political career. Despite the varied incentives identified by the politically engaged participants, they were mostly interested in content uploaded by specific individuals whom they were following. They all looked at the hashtag but preferred the filtered, refined content provided by their personal page. In contrast, less politically engaged participants used a larger variety of applications, such as Facebook and Google. They favoured talking to others about politics in person, on through more intimate Facebook

groups and chats. Furthermore, when they used Twitter they were much more interested in the hashtag itself where they could scope the public's opinion as a whole.

There is an interesting tension between the participants' desire to curate their online experience and their desire to gauge the public's opinion. Although the content on social media needed to be diverse, provocative content was disliked. Participants with existing high levels of political engagement eliminated this factor by creating a highly curated online experience for themselves and selecting specific circles of people to interact with and learn from. Although this had the effect of exposing them to more informed commentary, it decreased access to broader public opinion. This created the so-called "echo chamber" effect, where people gravitate towards those with similar views (Doris-Down et al., 2013). As previous research suggests, this serves to narrow the scope of the information that can be accessed and reflected upon by an individual, reinforcing existing beliefs (Doris-Down et al., 2013).

4.4.4.3. Curating Quality Content

Across the participant group, humour, integrity and immediacy were essential qualities for the content that participants wanted to read and post. Some felt that content given by politicians and online commentators had to be verified before being accepted as true or distributed further. Researching points of interest during the political broadcast posed difficulties due to the fast-paced nature of the event. The content needed to be relevant to the topics discussed on screen at the time, which helped create a sense of a shared experience with viewers across the country.

As previous research indicates, humour is an important part of online political engagement around debates (Davis et al., 2018, Young, 2014). The participants valued humour as a way to express themselves without being antagonistic and as welcomed distraction online. Humour may be useful when designing for groups with low political engagement by adding entertainment

value to the debate. For example, applications that allow the easy generation of 'memes' could act as a simple way of creating discussion within the social group of a politically disengaged viewer. Past research has noted playful aspects of online political discourse (Shamma et al., 2009) but it has overlooked its potential to make politics feel more accessible by the wider public. Conversely research also indicates that political satire, parody and irony, can reduce argument scrutiny and counter argumentation.

4.4.4.4. Contrasting Home Observations and Twitter Analysis

The participants valued social media as a way to gauge public opinion. It provided an opportunity to learn, reflect and reaffirm their own opinions. As could be seen in the Twitter analysis, the platform was rich in diverse commentary that could give viewers insight into the reactions and evaluations of the public. Furthermore, the participants expressed a desire for humorous content as a way to lighten the mood and make the debates more entertaining and Twitter was rich in such humorous commentary.

Although, through the process of thematically analysing the tweets from the first study and the data from the observations study the need to inform or educate others appeared in both sets of data what is interesting is that it appeared in a very different context. When this theme was found within the Tweets it had the role of educating the public through fact checking, giving addition information through links, promote online tools, fact check the politicians, etc. In contrast, when this same theme of informing and educating others was found in the observation study it was in relation to the people around them in the setting in which they were watching the debate. The participants in the observation study who watched the debate with a friend, partner and those in the group setting used the online content they found in order to start discussions. This action had the effect of creating new conversations around the debate and enrich it through humour, exchange of ideas, clarification of information, the sharing of an experience and to broaden the conversation. As the participants stated the "real life" conversations are inherently better than socialising online.

As seen in the observation study only 6 of the 18 participants used Twitter as part of their second screen activity around the debates. Those that did use Twitter considered themselves very politically engaged. This points to how important it is to consider and understand the use of second screens beyond Twitter, especially as a way to understand the value of social screens for less politically engaged viewers. Furthermore, studying the visible behaviours online gives little indication of other active forms of political engagement that can be observed in the home, such as discussions in the living room, or use of private political Facebook groups.

4.4.4.5. Challenging the Notion of the Second Screen

Although within this thesis I have adopted the term 'second screens', the theme of *Share Opinion* demonstrated that as online discourse increases in importance, the television itself becomes secondary, acting as a metronome that brings people together and sets the topic, but that is ultimately secondary to the online discussion. In the context of political debates, the viewers can take on a multitude of new roles with the use of their phones and tablets, such as fact-checkers, content contributors, activists and spectators. Furthermore, these online activities were able to spark discussion in the living room, which encourages political engagement. This indicates that "second screen" activity should not be restricted and framed by the hierarchy and device implied within the phrase.

I see opportunities to re-think not only the terminology of what I call a second screen but also re-envision what form it can take and how it can be used. This may open up new possibilities for involving the public in a national conversation. Whereas most second screen applications assume a solitary user, the second screens within the observation study were conduits through which a group of collocated viewers can engage in online discourse. In particular, it is worth remembering that political debates are not just watched by young, tech-savvy people, but are potentially of interest to any citizen. This creates an opportunity to explore innovative connected devices for use within this context. Much like one participant included her father in her second screen

experiences by reading out Tweets for him, there seems to be an opportunity to use technology not just on an individual level but to encourage its use within a group or family dynamic. Placing a further emphasis on group discussions could add greater importance to both the broadcasted event and the online content.

4.4.4.6. Limitations

Nearly all the participants were young, active social media users in the UK, particularly Scotland. However, research has shown similar trends in political engagement across Western Europe and North America, e.g. in the growth of web-based campaigning (Gibson et al., 2003) and decline in youth engagement (Esser and Vreese, 2007). That is why I have reason to believe that the findings from the observational study may have broader applicability across this region, although further research would be needed to verify this.

Although the sample size is relatively small, this was necessary to capture in-depth experiences as opposed to more shallow observations, and this qualitative approach is modelled on other similar work into second screens (Nandakumar and Murray, 2014) and social media in political deliberation (Semaan et al., 2015b). I approach this work not with the intention of contributing a definitive picture of second screen behaviours, but rather to develop insights into current usage that can be used to design new applications and interfaces for engagement with debates.

Finally, the use of the Veho MUVI Micro camera proved challenging within the home context. There are always risks when handing over control of the recording process to participants, but it was difficult to anticipate the extent to which this would affect the quality of recordings. In addition to awkward camera angles and compromised audio, the camera's low resolution and quality in dimply lit environments meant that large portions of the footage were not usable for analysis purposes. As a result participants who used the cameras in low lighting produced video where all of the screens can be seen as white rectangles with no distinguishing visible content. This made analysing

the footage impossible despite my hopes to analyse it in addition to the interviews.

4.4.5. Summary

While the increasing role of social media allows more people than ever to share opinions, many challenges remain in making these opinions heard. It is important therefore, to understand how existing technologies can evolve to support improved discourse.

The two studies presented within this chapter contribute an understanding of how and why debate viewers utilise second screens during a debate. They provide insights into the range of activity that takes place in the home and the needs that motivate them. The Twitter study revealed that viewers like to interact and inform others and commentate along by sharing their evaluations, experiences, humour and provocations, while the observation study revealed that second screens are being used for a range of activities, many of which do not result in any visible online activity. In particular the observation study gathered insights into why second screens are used alongside debates, the digital tools used, and the strategies for online engagement. Sharing opinions online was done by only half the participants, those that did not post online expressed worries about who might see and interact with their content and how that might affect them negatively. Instead second screens were a valuable way to gauge the opinions of others, reflect and reaffirm your own views. Finally, the observations study revealed that second screens can enrich the debate. They can empower very politically active viewers to engage with others or allow less engaged viewers to find a source of entertainment or provide a talking point within the living room. By examining motivations and frustrations around second screen usage during political debates, this research has contributed a more nuanced understanding of these behaviours than can be seen from examining social media content alone.

Observations and interviews with participants revealed a wide range of motivations, including gauging the public's opinion, enriching the debate and

sharing one's own opinion. These in turn point to future directions for research, such as the potential for humour to make political discourse more inclusive and the need to re-evaluate the implied hierarchy between devices in the phrase *second screens*.

5. Connected Products as Second Screens

5.1. Introduction

My research into current second screen practices around debates revealed how personal devices could take on a more primary role than the televised debate itself. The observation study, which utilised at home observations, saw that for many politically engaged debate viewers the debate was at times predictable and using a personal device to access the news or other's opinions could make the debate more entertaining and informative. The debate audience adopted their personal devices to gauge the public's opinion, enrich the experience and to share their thoughts. Such use was primarily supported through social networking platforms like Twitter and Facebook. The broadcast acted as a metronome of discussion topics on social media, changing the topics and mood of content and social interactions as the debate progressed. Understanding that the personal device can hold a more primary position during televised debates led me to question the assumptions encapsulated by the phrase "second screens". The phrase depicts the personal device as secondary to the TV. It also describes the personal device as a screen, which severely limits its scope and form. Defining the act of using a personal device alongside watching television in such narrow terms could in turn limit our search for engagement solutions with debates. This led me to consider how smart devices in the home, like IoT products and smart TVs, can facilitate new experiences that go beyond screen based interactions.

Technology does not exist in isolation but is part of an evolving ecosystem. The television viewer's attention is now split between traditional broadcast media and other devices used to access other streams of content for a variety of related and non-related purposes (Proulx and Shepatin, 2012). As technology continues to shift in the home environment, new developments in the coming years will likely include connected products and the Internet of

Things. This leads me to question: what might it mean to engage with television and politics in a world of connected objects?

Connected products have the potential to shift the experience of watching televised debates away from conventional screen-based devices. This study aims to understand the possibilities of a physical device alongside political debates, and in the process challenge the assumed nature of the second screen. To explore this I developed the Social Printers: connected objects designed to support engagement with political television, aiming to extend the search for political engagement tools beyond individual personal devices and towards the next major technology developments. The Social Printers act as research products (Odom et al., 2016), designed to address the following question:

Can emerging technologies offer new opportunities for engagement in political discourse around televised debates?

Social Printers are physical devices that create a pseudonymous social network between households during televised political debates. The network of devices allows users to communicate with each other through printed messages. I aimed to investigate how connected products could be used to engage viewers with debates. By displacing the interaction from conventional social media and second screens I observed that the printers were successful in encouraging the participants to share their thoughts and create a personal social experience. I primarily contribute to the study of second screens for political discourse by exploring how connected products might contribute to the experience of watching and engaging with televised debates and by challenging the dominance of conventional screen-based interactions. Based on the results I discuss potential implications for conventional social media and second screens in the context of political television programs.

5.2.   Context

Two major political events took place in the United Kingdom during 2016. The first, was the Scottish Election, which took place on the 5th of May and

saw the third consecutive win of the SNP party. The second, was the EU referendum, which took place on the 23rd of June and resulted in the United Kingdom voting to leave the European Union.

The Scottish election had two debates early in the campaign, one at the end of March, and another, which aired on BBC Scotland on the first of May. The second debate focused on the possibility of a second Independence referendum in the event of a "substantial change in circumstances', such as Scotland being taken out of the EU without the support of the public (Hastie, 2016). The election resulted in a victory of the SNP but fell two seats short of winning a majority in the parliament.

The EU referendum saw a heated campaign between the 'Brexit' and 'Remain' sides. The campaign was closely followed by the media and involved eleven televised and online debates (Elgot, 2016). The debate on immigration played a key role throughout the campaign and was embodied in the most popular slogan of the campaign: "take back control" (Clarke et al., 2017, Rentoul and Johnston, 2016). The refugee crisis, which continued throughout 2016 highlighted fears that if the United Kingdom remained in the single market it would have little choice but accept refugees like all other EU member states (Dearden, 2016). Furthermore, the lifting of free movement restrictions on new EU member states at the end of 2014, further exacerbated the public's worries over the immigration issue (BBC News, 2014). The EU's agriculture and fishing regulations also reinforced the Leave argument against allowing the EU to dictate laws that affect British businesses. These issues highlighted some of the ways in which the United Kingdom had handed over power and control to a seemingly anonymous group of unelected 'Brussels bureaucrats' (BBC News, 2016a). In contrast the Remain campaign lacked a coherent message and a positive framing of an argument for remaining in the European Union (Behr, 2016). Instead, the Remain campaign was often criticized for scaremongering rather than giving viable examples of the ways the EU benefits the United Kingdom (Clarke et al., 2017, Rentoul and Johnston, 2016). The campaign resulted in a victory for the Leave campaign with a 51.89% share of the public vote. The public voted in favour of leaving the EU

based on benefit-cost considerations, risk assessment and an emotional reaction to the EU (Clarke et al., 2017).

5.3. Study Design

To understand the possibilities of a physical device alongside political debates, I created the Social Printers: a network of physical devices that allow users to communicate with each other through printed messages. By displacing the social interaction from the screen, I could explore how alternative interfaces might affect social interactions around political broadcasts. Five printers were deployed in two month-long studies, the first during the 2016's Scottish Parliamentary election, and the second during the EU Referendum. Each of the political campaigns were accompanied by various televised events and broadcasts in the month leading up to the vote, including debates, special *Question Time* episodes that focused on the campaign, and other political broadcasts. They were deployed into a total of nine households over the two studies. The small number of households allowed the participants to communicate within a small closed network.

In each study, five households were asked to take a printer into their home for 25 to 35 days. The long duration of the study was necessary in order to allow participants to get used to the products and form relationships with each other. Each study had a pre-arranged schedule of eight TV programs, which the participants were asked to watch with the printer. They were informed that they were not required to interact with the other participants if they did not wish to do so. I explained that they had to watch the schedule of programs I had provided for them and that the other households would watch them as well. I also explained that they could use the printers to communicate with each other but that they were not obliged to do so. The explanation of what was expected of them was purposefully ambiguous in order to see what activity emerged naturally. In addition to the printer, each participant was given a small instruction booklet, which contained information on how to connect the printer to their Wi-Fi network and some general information about the study (see Appendix C.3), and a scrapbook, in which they could collect and annotate

prints if they wished, which were used as prompts in interviews. For all of the households, except Blue who did it himself, I personally went to install the printer and connect it to the local Wi-Fi network.

5.3.1. Approach

Research into connected products from the past ten years has already developed a rich understanding of the relationships between people, their home environment and technology (Baillie and Benyon, 2008, Gaver et al., 2016, Gaver et al., 2006, Lindley et al., 2010, Odom et al., 2016). Baillie and Benyon (2008) explored how technology in the home is part of contextually grounded activities, where its location could influence its relationship with different household members. Within Lindley et al.'s (2010) work we see how household-messaging systems placed in the homes of different families showed the emergence of playful behaviour, while William Gaver often explores the ways in which technology can stimulate ludic engagement, which is motivated by curiosity reflection and exploration (Gaver et al., 2016, Gaver et al., 2006, Gaver et al., 2015, Gaver et al., 2004). Gaver's Interactive Tablecloth, which illuminated patterns on a dining room table based on the activity that has taken place on it, served as an object for reflection, interpretation, social interaction and aesthetic appreciation (Gaver et al., 2006). The Drift Table, a coffee table that lets people explore aerial photography of the United Kingdom through a weight sensitive interface, was deployed into a London home for a six week period of time and demonstrated how, when using technology without instruction, people are motivated to explore its functionality through their curiosity (Gaver et al., 2004). Perhaps most relevant to this work, physical devices, such as an automated radio called the Energy Babble, have the potential to construct publics around issues, by forming a concentrated account of current discourse around a topic (Gaver et al., 2015).

My approach has been influenced by existing design-led work including *technology probes* (Hutchinson et al., 2003) and *research products* (Odom et al., 2016): inquiry-driven, in-situ, finished and independent research artefacts.

The use of such research tools has been shown to stimulate reflection, and speculation in participants (Gaver et al., 2006, Helmes et al., 2011). The Social Printers were designed to provide a new way for viewers to engage with each other and the debates, while prompting reflection on the role of a physical device in the home. To achieve this, we adopted one of the most common tropes in IoT product design: The Internet-connected printer. I was inspired by projects like the Little Printer (Bandziulis, 2014), which delivered a personalised news feed and the Reflexive Printer, which stimulated reminiscence (Tsai et al., 2014). In taking this common IoT form, we intended to capture some of the enchantment of connected products without becoming too engrossed in specific aspects of the design.

5.3.2.   Deployment

The first study took place in the run-up to the Scottish Parliament elections in May 2016. There was little expectation of a surprising result in the election, due to the widespread popularity of the current governing party. There was only a single televised debate four days before polling day. The study instead focused on two weekly political shows: *Question Time* (a debate programme) and *Sunday Politics* (a discussion programme), which the participants watched for four weeks (Table 2). The study ended with the Leaders' Debate. During this study, a tweet from the Top Tweets feed for each programme's Twitter hashtag was selected and forwarded to the printers every five minutes. To provide some variation, I cycled through tweets representative of an opinion, personal experience, humour, provocation, or a question. These categories were based on my findings from the first study presented in section 4.3. In order to select a tweet, I refreshed the top tweets feed and forwarded the first one that matched the theme that I wanted to send to the participants.

Table 2 The schedule of programs during the first study around the Scottish Parliamentary election of 2016.

Date	Program	Households Present
07 April 2016	Question Time	3
10 April 2016	Sunday Politics	4
14 April 2016	Question Time	2
17 April 2016	Sunday Politics	2
21 April 2016	Question Time	3
24 April 2016	Sunday Politics	1
28 April 2016	Question Time	3
01 May 2016	Leader's Debate	4

The second study took place around the June 2016 referendum to decide whether the UK should remain in the European Union. This was a strongly contested and exceptionally close vote, with five televised debates. The participants watched a total of eight programs over a three-week period, which included the five debates, two political panel shows, and live coverage of the counting of the votes (Table 3). During this study, I only sent prompts to the printers if there was a lull in the conversation of five minutes. Instead of forwarded tweets, these were broad discussion topics, e.g. what do you imagine may happen in the case of leaving the EU?

Table 3 The schedule of programs during the second study around the EU referendum of 2016.

Date	Program	Households Present
02 June 2016	Scotland 2016 Newsnight	4
05 June 2016	Sunday Politics	2
07 June 2016	Cameron and Farage Live: The EU Referendum	3
09 June 2016	The ITV Referendum Debate	4
15 June 2016	Question Time EU Referendum Special with Michael Gove	5
21 June 2016	EU Referendum: The Great Debate at Wembley Arena	4
22 June 2016	Europe: The Final Debate with Jeremy Paxman	4
23 June 2016	Exit Poll Results	4

5.3.3. Social Printers

The Social Printers are connected devices intended to be situated alongside the television in the participant's living rooms for the duration of each study. Each object housed a thermal printer and Electric Imp, an IoT connectivity platform, in a simple case made from laser-cut MDF and an acrylic top (Figure 15).The Electric Imp controller connected the devices to the internet and allowed for the messages to travel between the households. The messages were printed on long strips of paper, using the same technology as common till receipts. The object was relatively small in size 120mm wide, by 120mm deep, by 95mm high. The printer had to be connected to an electrical socket using a two-meter-long charger and could not operate with a battery pack due to its long stay in the participants households.

Each household had a unique URL printed on the front of the object leading to a simple text entry form, which they used to write their messages. Messages could be submitted through any device with a web browser. Messages submitted through the web interface were broadcast to the entire network and printed in every other household (Figure 16). Each household was identified

by a colour to make the network pseudonymous. The colour of the household corresponded to the colour of paper that they received with their printer. Coupled with the small number of participants, this meant they would be able to build relationships amongst themselves but did not have to worry about being identified.

Figure 15 The Social Printer was essentially a small laser-cut box containing an Electric Imp and a thermal printer.

Figure 16 The simple text-entry form could be accessed through any personal device and printer messages onto the whole network of households.

5.3.4.   Participants

In line with my research approach, the Social Printers were deployed with a relatively small cohort in order to gain in-depth insights into their individual experiences. There were 14 participants in total from nine different households, who were recruited through social media, university mailing lists and posters. Each household was given a £10 Amazon gift-card for their participation. I aimed to recruit participants with varied political interests, ages, and household dynamics (Table 4). Through a pre-interview we established that throughout both studies there were households with participants in their 20s (N=8), 30s (N=3), and 50s (N=3). There were 7 males and 7 females. They rated their political engagement level on a rating scale from 1 (low) to 7 (high). Although all of the participants in both studies expressed fairly liberal political views, their voting patterns varied across different political parties, including SNP, Labour, Green, and Lib Dems. Everyone except the Pink household were used to using second screen devices while watching TV. All of the participants used a smartphone to send messages to the printers, except Yellow who also used her laptop. The conversations started up to 10 minutes before the scheduled programs and ended up to 5 minutes after it had finished.

The participants had varying occupations. Blue is an academic and computing lecturer. The White household contained a political researcher for a Labour MP and a zoology student. The Green household contained a man who works in a factory constructing routers and a female who works in retail. The Pink household had an art teacher and a health and wellbeing consultant. Yellow is a Product Design student. The Violet household contained a female web developer and a male dentist. Red is an SNP party member. The Lime household contained a man who works in retail and a jewellery designer. Finally, the Mint household contained a PhD student in neuroscience and a support worker.

Table 4 Pre-interview data for participants in the Social Printers study - gender, age, number of prints and political engagement level.

Study	Pseudonym of Household	Number of Participants	Gender	Engagement Level	Age	Number of Prints Sent
Study 1	Blue	1	Male	6	50s	54
	White	2	Male	7	20s	39
			Female	4	20s	
	Green	2	Male	5	20s	34
			Female	1	20s	
Both Studies	Pink	2	Female	4	50s	51/ 107
			Male	4	50s	
	Yellow	1	Female	5	30s	18/ 82
Study 2	Violet	2	Female	6	20s	188
			Male	5	30s	
	Red	1	Female	6	30s	337
	Lime	1	Male	5	20s	17
	Mint	2	Male	5	20s	103
			Female	4	20s	

All but one of the households from the first study volunteered to take part in the second study as well. In order to include more participants but still enable the reflections of continuing individuals I chose two households to continue. I chose Yellow and Pink, as Yellow was the only participant who was very much undecided about their future vote on the EU, and Pink, due to their limited social media use. Lime dropped out of the study after the first program due to personal circumstances and was replaced by Mint.

5.3.5.   Interviews and Analysis

The participants were interviewed twice, once before the study and then again within two weeks of the end. The post-interviews explored a variety of questions about having the Social Printers for the duration of a month, such as the positives and negatives of the experience, how did all household members react to having the device, how it affected watching the debates, how it affected the participants self-expression, and in what ways it stimulated and

impeded discussion with the other households (See Appendix C.4). The post-interviews were supported by the complementary prints collected by the participants in the scrapbooks, and the full print conversations, which I brought along. Most of the interviews were conducted in the living-rooms of the participants where the printers were situated, but a small number preferred to be interviewed elsewhere. All of the interviews were semi-structured. The pre-interviews lasted between 10 and 80 minutes and the post interviews between 30 and 80 minutes. The interviews, prints and scrapbooks (See Appendix A.2) were thematically analysed by hand (Braun and Clarke, 2006). A section of the codes that were generated through the analysis were verified by a second researcher. Once all the data was analysed the emerging themes were refined and agreed upon by the team.

5.4. Results

While the households had the Social Printers, they were able to adopt them into their viewing of the scheduled programs. Below we outline the themes that emerged from the interviews and other collected data. Within we see the behaviours and attitudes that shaped the experience.

5.4.1. Roles and Responsibilities

The object naturally demanded a lot from the participants. It required them to multitask and concentrate, splitting their attention between the program, printer and the personal device where they were entering messages. They had to choose what they prioritised: the debate or the printer, which largely depended on the quality of the debate. Mint recalled that *"when the debate was better we actually [...] messaged slightly less"*. The experience was described as overwhelming and Pink reported feeling *"quite exhausted afterwards"*. Due to my ambiguous explanation of the printer's purpose, participants were at times *"not sure what* [they] *were supposed to be doing"*. Regardless, they all established a set of behaviours by the end of the study. Despite the effort involved, participants were not put off by this:

> *Pink: "We made an effort to watch these programs and concentrate on them rather than just letting them go over the top of your head"*

Many of the participants were used to using second screens on a regular basis, so by the end of the study, in addition to interacting with the object, they often returned to their usual TV viewing habits. Yellow was texting friends, and Violet and Red were scrolling through Twitter.

In five of the households, both individuals living in the home wanted to take part in the study. Nonetheless, there was always one participant that took a lead role. We call the participant that took ownership of the Social Printer *primary* and the other, who participated less in the study, *secondary.* In all those households, the secondary participant was less politically engaged than the primary. The primary participant in the Mint household pointed out that his partner *"doesn't have confidence in her political opinions even though they are valid and good, I think she thinks that everyone is this mad political genius"*. This led him to take up responsibility for interacting with the printer. They watched the programs together and often discussed the debates. She read the prints, sometimes even typed out the messages he wanted to send but refrained from sending a message herself. Although she did not want to send messages to the others, she felt that *"it was quite nice hearing other people's views and not getting involved in it. I quite like being a spectator"*.

In the Violet household, the secondary participant helped during the debates. Violet recounted that her partner *"would read the printer while I watched* [the programs], *he was filtering out the chatter to pick up the main points so that I could reply to them"*. Unlike the secondary participant in the Mint household, he was not shy about sharing his opinions with the others in the study and even sent out a few prints himself, but said he preferred to focus on the debates instead. In the White household, the secondary participant also helped by filling the scrapbook.

> *White: "Usually I would watch [the programs] myself. [My partner] stuck them all down and she would read them afterwards and just laugh."*

In the Pink household, the primary participant involved her partner by testing her messages on him and seeing his response, which was *"just a way to test whether I was saying something really stupid"*. Although her husband did not engage with the printer, their 12-year-old son typed in some messages for his mother. Her slow typing speed led her to the idea: *"Because I thought if I get him to do the typing, I can focus on the debate and I can read what is being said."*

In the households where not all household members were taking part, there was a level of suspicion and unease towards the object and the study's intentions. Red's husband *"would say: 'there is more to this'"*, when questioning her behaviour and the activity on the Social Printers. Yellow's flat-mate called it a *"listening box"*, alluding to potential dystopian intentions. Although Yellow's flatmate had doubts about the purpose of the object, she was also *"quite interested in reading all of the responses"*.

Lime and Red observed reluctance from their partners to get involved with the study. Red lives with her husband and two children, and although she watched some of the debates with her husband they refrained from talking about the debate, which they would usually do. This may be due to the perception that *"it was a thing that I had been asked to do"*, which distanced him from the social aspects of watching together. The children expressed more curiosity towards it: although Red had forbidden them to touch it, they would often go and sniff the object, which had a peculiar odour due to the laser-cut MDF.

> *Red: "the wee one in particular loved the smell [...] Burnt macaroni cheese. And quite often 'What are you doing?', 'I am just sniffing the printer', 'Right okay'."*

5.4.2. Physicality and Presence

As well as anticipating the start of the political programs, Violet recalled *"sitting and waiting for the first print to come through"*. The use of the printers was tightly bound to the debates and *"came to life"* when a scheduled program started. There was a positive response to the Social Printer itself: Red reported she *"quite liked having the wee thing"*. For some it was *"quite a natural object to have"*, while others became accustomed to it over the duration of the study. The Mint household detailed their positive impressions of the smell, size and aesthetics of the object, which contributed to it fitting in with their home. They perceived using an object as the basis for a social interaction as novel and engaging.

> *Mint: "I found it quite novel that you had to look to a specific object to see what someone else had to say [...] That it is actually a physical object rather than a screen."*

> *Yellow: "It's nice the way you are getting data coming out of just the printer. And you don't have any sort of extraneous things around, you don't have personal profiles like you do on social media."*

Although the object itself was perceived positively, it was at times restricting having to be in a specific place at a specific time to interact with the others.

> *Yellow: "It is quite awkward. Because you need to get everybody there and available to work, otherwise you get into a situation where you only have one or two people, and it just doesn't."*

Blue moved the printer between two rooms, dependent on where he was watching TV. Nevertheless, he felt the object locked him in one place. Red on the other hand was not as confident when it came to unplugging and moving the printer. In the interview she mentioned she did not want to unplug it, meaning she was *"sitting squished over on one side of the room"*. This caused some frustration in her household when she missed one of the debates. When she came home late after work she found her husband irritated by the noise and paper coming out of the printer: *"I should have switched it off, but because there wasn't*

a sort of clear, sort of on/off I didn't want to mess it up". Although some of the other households were also uncertain about moving and turning off the printer, they were often better able to adapt it to their needs.

> Mint: *"It was good that the wire was long enough so we could move it from where it was plugged in to closer to where we were sitting."*

Violet and Red also missed some of the features of the conventional social media chats they were used to, such as the ability to send images and links. Violet had wanted to send a web link before realising the others would not be able to follow it. But despite the shortcomings of the Social Printers, they often became a conversation piece. The participants reported sharing information about the object with others.

> Red: *"People that I got round the house: 'This is my wee friend', because it was sitting beside the wee WALL-E model 'Yeah, this is WALL-E's wee buddy'"* (Figure 17).

Figure 17 The Social Printer situated near a Wall-E model in the Red household.

The physical nature of the data output as opposed to a screen became a point of reflection and speculation. The paper became an unchangeable artefact and *"an actual piece of history that people can look back on"* (Mint). The long, thin strips of paper made it difficult to read through the conversation, but also sparked

the participants' curiosity and wonder every time the printer started *"spewing"* out notes. The paper served as a reminder of what had happened throughout the program and as a physical representation of the amount of conversation that took place.

> Violet: *"You never thought that we were talking that much and then you looked at what you had been printing and it's like 'Oh, ok we did'"*

> Yellow: *"I wonder what this is going to be about? I wonder who has said it? I wonder if this is a response to something I have said?"*

The participants liked the sounds made by the printer because it served as a reminder of activity and an indication of a reply. Due to the noise Red knew when someone is replying (*"I suppose is kind of like the Facebook app I use, it starts putting the dots when someone is writing"*), while Yellow found that it demanded attention. Yellow reflected that there is a pre-existing relationship between people and printers that may have affected the way she responded to it.

> Yellow: *"If you are in a room with a normal printer and its starts printing something, the response is to go and have a look."*

In addition to the scrapbook being helpful for us as a conversation piece during the interviews, the five households that filed and annotated prints also found it beneficial as a way to reflect. Pink observed emerging themes in their conversations, such as *"someone coming up with solid arguments on either one side or the other"* and how they tended to bring the discussion *"back to Scotland"*. Yellow's scrapbook was much more focused on the characteristics of the other participants (e.g. Figure 18).

> Yellow: *"'I'm voting [to stay] too but I have some reservations'. This is about the bureaucracy of the EU [...] that kind of reinforced my view of Mint as someone that really thought things through."*

Blue: the one good thing that
could come from brexit would be
the tory party tearing itself
apart into two parties

Blue: although that would
hopefully happen anyway

Mint: Yeah I suppose

Yellow: Blue- I think that has
pretty much already happened!

White: Come on! Bumps?

Pink: its already torn itself
to bits

Blue: Did he learn nothing form
being education sec? You need
to explain your answer to get
full marks

White: Haha!

Blue: drink every time he says
"generosity of spirit"?

White: Jeez oh. He's more or
less saying "Blitz Spirit", eh?

White: Yuck

Blue: Stiff upper lip chaps,
can't let the foreigners tell
us what to do

White: I am proper scared this
week. Really worried about it
all of a sudden :/

White: They're not "putting up"
trade barriers. The trade
barriers would.be.there.

Pink: audience guy so right
about trade, would everyone
suddenly turn to us? Don't
think so..

Figure 18 Page from Yellow's scrapbook, which notes comments made by other participants as anti-Tory, fear, and optimistic about Brexit.

5.4.3.   Creating a Community

The Social Printers were designed to create a tiny social network for the live discussion of politics. The participants naturally gravitated toward fostering a communal and friendly social environment. To do that, they had to build relationships and learn enough about each other to feel comfortable in sharing their experiences despite the veil of pseudonymity guaranteed by the platform.

The pseudonymous nature of the study made it challenging to get to know the others. Some participants, such as Blue and White, found *"it was difficult to then remember who* [the others] *were and remember and ascribe a set of opinions from previous*

shows onto them" (White). Red perceived the naming convention like a game of Cluedo/Clue, and White liked imagining characters in a book. In addition, it encouraged a few subconscious biases, such as association with certain parties, or genders. Violet, for example, assumed that Mint was male based on subconscious colour-gender association.

Although pseudonymity proved to be somewhat challenging, the households reported that they also saw it as one of the greatest benefits of the project. It was the most striking difference between it and conventional social media. It gave them freedom to share their views with complete strangers.

> *Green: "There are not going to be any repercussions from this, I am not going to get into an argument with somebody about it. It's just a debate. It' s just a conversation."*

But the most important positive effect it had, in light of the fractious issues that were discussed, was that it limited any possible pre-formed judgments about the other participants, such as their social background or age. Pseudonymity helped the participants keep an open mind about each other.

> *Yellow: "Instead of having a pre-made image or model of who they are, the model gets built up through time, through their actual comments."*

Pseudonymity on the Internet, especially in the context of political discourse, is often associated with abusive behaviour (Lee and Kim, 2015), but here such behaviour was not present. Green recalled that even when he disagreed with points made by the other participants, that it did not lead to rude language. The small size of the group and the desire to be friendly were some of the contributing factors to the overwhelmingly polite discourse that took place. They reported the desire to like the others and be liked by them, which increased throughout the duration of the study, as the community atmosphere strengthened. *"You still want people to like you even though you are anonymous […] You thought you were spending your evening with some nice people who were helping you out"* (Pink). But in addition to a genuinely friendly attitude, there was a rather ominous undertone of feeling stuck with those people and worry of offending

them. The printer *"will always be there printing, and if they don't like you it will be printing all the time that you suck"* (Violet).

As part of the participant's desire to form a community, they were open to learn about each other's views and beliefs: *"we didn't go in fighting we went in thinking 'oh this is really nice to get to know these people'"* (Pink). One of the first things the participants explored were the boundaries of the group, for example, *"trying to work out if it was possible to offend anybody" (Pink)*, or *"to feel out what jokes you can make"* (Violet). Throughout both studies humour played an important role in establishing relationships within the group.

> Violet: *"It was a little tricky at the start. You don't know sense of humours. Can you make a joke? If there had been a leave person, I didn't want to insult them. So it took a while. But once you sort of have figured out, that OK most people on it are either Remain or quiet, and with sort of similar sense of humour, so you could sort of make jokes about it, and 'as a mother drinking game', which is lethal don't do that."*

In both studies the participants were all fairly liberal, which meant that although they usually voted for a variety of different parties, they agreed on general issues. Within the first few programs they watched together they knew that the group was fairly homogenous and realized they *"are in a bubble"*, which may have contributed to a level of *"conformation bias"* (Red). Although they were similar, *"it was quite nice to have people agreeing for different reasons"* (Violet).

> *Mint: "We both voted to Remain. I think it just backed up and it made me feel better about my choice in it, knowing the other people who have watched as much as I have, and maybe researched as much as I had, came to the same conclusion as me. It just kind of reaffirmed my … because it's one of the ones that you worry, like is your choice going to be good either way, just because it is so unknown. It was good, it reaffirmed my choice."*

Within the interviews every participant was asked to talk about what they learned about the other participants. Some like Green managed to *"build a*

profile of their agendas", while others like Yellow got *"a sense of their personality, even more so than the views".* This difference in what they learned about each other may have stemmed from the range of ways they used the Social Printers. As Mint observed, some used it to share their political opinion, while others used it as a conversational tool:

> Mint: *"Some people used it as a conversational tool, and some people used it for kind of like political, just writing points."*

In the first study, where there was significantly less conversation, Blue and White did not feel that a community developed, and Blue in particular didn't feel that he engaged with people, despite contributing the highest number of messages himself: *"it was like a reticence for people to engage I think".* The rest of the households felt a sense of community flourish throughout. This was accompanied by the feeling of shared space:

> Pink: *"You kind of felt that they were coming into your living room. You are sharing this kind of experience of sitting around the telly, probably cups of tea, commenting."*

The Social Printers fostered a personal experience. A sense of teamwork and trust emerged as the study progressed. Some like Pink, Violet and Mint even described the others as friends. For example, Mint said that *"you felt like they were your friends, like you got to know them, but you didn't know anything about them"* and Pink expressed missing their new friends after the study had concluded.

> Yellow: *"It had a very community feel rather than something that would happen on the Internet [...] it felt a lot more personal a lot more like a conversation."*

5.4.4.   Self-Expression

Levels of participation with the printers varied a lot between households, ranging from just 17 messages (Lime) to 337 (Red). The participants reported a part of the reason why they sent a lot of messages was to not lose the

connection with the others: *"Because it is a team effort [...] you are kind of still wanting to keep the chat going"* (Mint). When asked whether their comments were truthful and honest, participants responded positively, but they also outlined instances where they moderated themselves in order to not offend and be polite. For example, Yellow felt she was *"truthful in what I said but I did not necessarily reveal my intentions"*; Blue was cautious with *"the types of humour that I may have used or I didn't use, because you don't know whether people are going to take offence"*; and Violet was especially aware of avoiding the use of profanity because they knew other participants had children. It was a natural moderation that would occur when speaking to new people in any situation.

> *Yellow: "I was moderating myself but not as a result of the platform, because if I was with somebody in the same room I would still moderate what I said."*

Red at times used self-moderation to actively avoid conflict. She described a particularly troubling moment for her in the discussion when the topic of spoiled ballots arose. She had been working as a counting agent and had a fair amount of insider information about the issue, but instead of arguing her point by sharing her knowledge, she remained silent in order to not be antagonistic.

> *Red: "I remember thinking that what I actually wanted to say here is that there is never a high number of spoiled ballot papers, there just isn't. I didn't want to look like I was showing off [...] I really really disagreed with that statement and then I remember kind of going quiet about it here [...] Grr I will just be polite"*

There were a variety of issues when it came to self- expression in the context of the Social Printers. Most importantly the participants had to be quick and focused, otherwise their comments could fall behind the frame of speech. Slow typing speeds meant that Pink wrote short messages, whereas Mint sometimes didn't send a comment because he felt it was too late. As described previously, their household members sometimes helped in the process of writing their commentary. Yellow on the other hand found it difficult to research the points given by the other participants and keep up with the flow of conversation.

Although message immediacy could be an issue it was also *"exciting to have that quick conversation"* (Yellow).

> *Yellow: "Blue said that [the EU] makes trade easier because it removes paperwork. So I decided to go and look that up [...] But by the time I had looked it up [...] it had gone into a discussion about imported granite."*

A lack of confidence could also be detrimental to the discourse. Mint felt that points he wanted to send were at times obvious, whereas Violet didn't want to be the first to send a print. Green's experience of sharing his thoughts was *"a case of shouting at the telly* [...] *and then trying to articulate that into the printer"*. He was not as worried about speed and would happily spend longer periods of time articulating his point.

Another factor that affected self-expression was the familiar feel of the social network. Red noted that she usually has more in-depth conversations on Facebook, but there is no second screen culture around it, whereas Twitter is used for such a purpose, but is not as good for immediate responses and conversations. She concluded that *"it was somewhere in between Facebook and Twitter"*.

Yellow, who was the only one undecided about their vote in the EU Referendum, adopted a strategy about the way she expressed herself: *"I would probably find out what the other person's views are first and see how widely they differ from me, that may influence how I phrase my views"*. Until the end of the study she did not disclose that she had not made up her mind. When Mint asked if anyone was still undecided in the sixth program of the schedule, Yellow waited to see what everyone said, but took too long and the conversation moved on. *"I was going to say 'Well I am undecided I am undecided for those reasons'. I got kind of half way but I just didn't send"*. The other participants saw this as reluctance to offend and provoke, since Yellow had the most different political views from the group. Violet thought that *"they weren't looking to provoke people, they were not looking to change people's opinion"*.

> Mint: *"I was surprised that even if Yellow had opposing views or was even undecided, I was surprised they felt shy to speak about them, but I did have some points where I could have been more extreme in my viewpoint but didn't because you are still in a community of people that have to read it."*

5.4.5. Discourse

Overall issues around self-expression, such as typing speed, research, and distributed attention across multiple devices resulted in a chaotic and disjointed discussion.

> *Violet: "It was quite tricky sometimes to keep up with the conversations, because it took slightly longer to type it all out, for it to send for it to print, so you end up reading one, then you start replying to it, because it was being printed you tended to type more than I think if it was just instant message style. So, it ended up being that you are replying to one that is actually three messages behind, and it was a bit difficult to sometimes keep track."*

Although the experience was often overwhelming, the object encouraged discourse. Mint reported that, although he sometimes watched TV accompanied by his phone, he did not usually post content on social media. He observed that the Social Printers made the experience of watching the programs more interactive and involved. At the start of the study it was sometimes difficult to begin conversations and participants described feeling nervous to do so. But the dialog tended to increase in quality by the final debates, when the majority of participants were present and a community had been established.

> *Mint: "I think we had better quality conversation on [the sixth program] even though we had more conversation on [the fourth]."*

> *Pink: "The last debate was good because I think everyone was involved in it."*

The conversations they had were often serious, about big political issues, but the participants were also easily distracted by topics unrelated to either the debates or current affairs in general. Violet recounted: *"we would go down a rabbit hole [...] but then something big would happen and we would come back"*. The commentary helped Pink *"feel more informed about what other people are saying and doing"*, and Yellow to *"experience this range of views"*. For Yellow, who had not made up her mind on the EU Referendum, the Social Printer was an opportunity to see how others felt about their future vote. It was beneficial in showing her *"that there were so many unknowns for both sides"*. This led to extensive research on her part, which ultimately helped her decide on the night before the vote.

> *Yellow: "Once I was using my laptop I did look up a lot of information that was being discussed more on the printer, than whatever the original point was on TV […] they gave an answer about trade and the reduction of paperwork and the ease of travel between different countries in the EU and that made me think 'Maybe, does the EU make trade easier', it revealed ignorance on my part so I decided to go and find out for myself."*

As previously mentioned the group in both studies had uniformly liberal attitudes. This homogeneity stimulated a supportive discussion, where no heated emotional arguments occurred. *"Everyone was really supportive and obviously paying attention to what you had said"* (Pink). But a supportive discussion also meant that they often reinforced their beliefs, which could be both negative because *"it is like giving people encouragement rather than actually giving a reason why they agree"* (Yellow) and positive because *"it made me feel better about my choice"* (Mint). The participants did disagree with each other but tended to stay quiet until the conversation had moved on, rather than be provocative.

The first study had a lot less conversation and activity on the part of the participants with 315 prints, 96 of which were prompts in the form of Twitter messages. Tweets forwarded to the printers, were collected from the top of the "top tweets" page of the relevant hashtag. They included opinions and statements, such as: *"Seriously stop focussing on the referendum! Too much time taken up*

discussing it! Move onto current issues!!" and *"Remember that time @theSNP ignored calls from @ScotTories to inspect school building standards?"*. There was overall agreement that the tweets forwarded to the printers did not work in terms of stimulating conversation. Some of the households, such as Yellow, Pink, and Blue found the tweets distracting. Yellow found that *"the tweets that were coming in were in some respects like background noise"*. While the White household felt that they were *"the most interesting parts of it"*, *"They were good just to read just to sample what people thought in the wider social media environment, but they weren't necessarily a good thing to start a conversation"*. The topics that the participants spoke about were mainly connected to morality and fairness, such as the Panama papers scandal, which was *"going to stir people up more [...] these things of social injustice and the human condition"* (Pink). When discussing the discourse that took place, the households focused on humorous commentary and the points of agreement and disagreement. A topic that all of the participants agreed upon was the importance of sustainability and positive environmental impact depicted in the following conversation the participants had in the study:

> *"Green: Even being anti-trident, that is a very good point. However, progression and expansion in other industries should create more than enough jobs to counterbalance the loss of jobs*
>
> *Pink: Go Patrick, sustainable energy is the only way forward*
>
> *Blue: We can't rely on North Sea oil any more, lets make high skilled jobs in wind, solar and tidal*
>
> *Pink: Absolutely!"*

What ultimately defined the discourse in the first study was its lack of conversation. The commentary was *"like a series of statements"* (Pink) with very short insubstantial discussions.

> White: *"There were a few occasions where you would start a conversation, as such that lasted maybe two or three messages, I think it's the same as Twitter and anything, I think trying to have a serious conversation in 140 characters or on the little till receipts*

> *it difficult. So, it is difficult to have a substantial conversation, it is more sort of small observations."*

The seriousness of the EU Referendum and the exciting debates led to a difference in the amount of activity I observed in the second study. Although there were only 17 prompts in the form of general questions, the participants sent a total of 888 messages. Pink reported that the second study *"allowed for more free-flowing conversation"* but that it also allowed for participants to become easily distracted. Examples of the questions sent to the households include: *"We are pretty close to the end of the referendum campaign, so do you still have a question you would like to be clarified tonight?"* and *"How does everyone feel about the amount of money sent from the UK to the EU and the way it is spent?".* Households Pink and Yellow agreed that they preferred the second iteration of the study because it had more humour, excitement, and it was focused. *"Having it around an issue like this was a more effective purpose for it"* (Yellow). The use of questions after a five-minute lull helped stimulate conversation. Pink reflected that it gave them an opportunity for *"everybody to give their opinion [...] this was a chance for all of* [them] *to confess".*

> *Yellow: "I think it was better to have those prompts. Especially when there was very little happening on TV and to then have something to have a conversation around, particularly early on and when it was kind of only me and Red and on one of the discussions, it was just helpful to have another person prompting the discussion."*
>
> *Violet: "And there were a couple where you asked "Do you think this is a problem?" and most assumed "Well no because we are Remain voters" nothing is a problem for us we are awesome, but it just made us think a little bit more and say well why isn't it a problem."*

Some of the themes that emerged within the printed discourse were the lack of solid political arguments, making the discussion relevant to Scotland, issues with the Remain campaign, and predicted turnouts. An example of these themes, was the inability of the group to align with the Remain campaign. The

pro-European views of the group meant that taking the side of Remain would also align them with David Cameron who initiated the referendum. Pink felt that it was especially problematic in Scotland because *"we didn't want to be Conservative"*. The Remain campaign was strongly criticized by everyone throughout the second study due to its weak arguments and the politicians that were a part of it:

> *"Violet: It's going to be a nightmare. Remain need to pull their finger out and make solid arguments in terms people can understand*
>
> *Lime: From an objective perspective, so do Leave…*
>
> *Lime: So far, all I've heard from leave is "omg we can't fish wtf" and "plz stop immigrants taking your jobs and benefits"*
>
> *Red: Remain up here have a very hard job. Put forward positive case, on the same side as Cameron, but don't align themselves with Project Fear and/or Cameron."*

Although the topics that arose were very serious in nature, the discourse overall was much more playful and humorous. Violet initiated a drinking game, in which every time a politician said *"as a mother"* they had to take a drink, and Red and Yellow incorporated 37 smiley and sad faces into their commentary. Red recalled that she used them out of habit and to make the discourse *"a bit more personal* [and] *a bit friendlier"*.

5.5. Discussion

The Social Printers were successful in encouraging the households to take part in a political discourse about the programs they watched together. In households with multiple participants, one took on a primary role whereby they took ownership of the printer and interacting with others. These primary participants often involved other household members in the writing and reading of prints, or in the process of putting them away in the scrapbook. Although the participants used the printers, they highlighted how the objects

were at times awkward due to their situated nature and long thin physical scroll of paper, which contained the conversation. Despite this, the paper could also be seen as a physical artefact and a record of history. Other aspects of the physicality of the printers also made the participants reflect on the experience of using the Social Printers, such as the form, aesthetic and even sounds of the object, which created a novel and engaging experience. The object and paper became talking points within the households.

Although the physicality of the printers influenced how they were used and perceived, the communication between the households was central to the experience of the study. One of the biggest challenges for the participants was the establishment of a community between the households. For some, the pseudonymous nature of the physical social network could at times hinder the establishment of a community due to pre-conceived associations between colours and gender or political affiliations. Pseudonimity also enabled other participants to keep an open mind and not have pre-conceived judgements about the other households. With the help of continued conversation and humour, many felt a sense of community, which was characterised by polite messages and the experience of a shared space. The need for immediacy, typing speed, confidence, and articulation could all hinder discourse and self-expression. The participants dealt well with these limitations of the Social Printers and adopted an array of strategies to aid the experience.

The majority of the participants felt that communicating with the other households was beneficial and engaging, because they were exposed to different viewpoints. The Social Printers created more conversation around the EU referendum, which indicates that more divisive and exciting elections or referendums may produce more engagement within political debate second screen applications. Below, I discuss the implications of my findings in two main areas: first, in embracing the situated nature of television; and second, in exploring the benefits of physical technologies in the context of second screens.

5.5.1.　Engaging the Living Room

When we think about second screens, we typically think about people using personal devices alone, possibly to interact with people who are far away. However, this is not how television is consumed: it is a communal object, very much situated within the home and capable of engaging the entire household. The Social Printers captured more of this spirit than traditional second screen applications, encouraging the participants to make time and focus on the televised political activity, share their thoughts, gain new perspectives, be more informed and encouraged conversation without judgement. A big factor, which contributed to these emerging assets of the research products, was that the printers fostered a more personal experience from conventional social media. As Yellow recounted: *"it felt a lot more personal a lot more like a conversation"*. Participants like Mint and Pink, who have limited use of social media while watching TV, were able to effectively join into the discourse. Many of the participants reported that they felt they benefited from the experience because they watched and contemplated the election campaign material and televised debates, which helped them feel more informed. As reflected in the Home Observation study, the participants valued knowing how others feel about the main political issues. Gauging the views of others can in tern reinforce your views or enable you to question them.

> *Yellow: "I think that the positives are that you can experience this range of views coming into your house [...] I think it would certainly lead me to question more issues if I was having regular discussion with people about them. Obviously I would be exposed to a lot more, wider range of views and stances on things. I think I would be spending a lot more time on Google, and I think over time it would, not necessarily change what my views are, but give me a better understanding of what all the party's views are."*

By displacing the social experience from the personal device, the Social Printers encouraged an intimate experience with high levels of direct engagement. There are grounds to suggest that situating the object within the

living environment of the participants may have aided the perception of a personal experience to occur. For example, Baillie and Benyon (2008) showed that the location and control of an object in the home plays a vital role in the way it is perceived by the inhabitants. The perception of intimacy is especially highlighted by the experience of a shared space. As Green recalled: *"it felt like you were in a room having a debate"*. The small group size may have further contributed to an overly polite atmosphere, which although deterring from a heated debate, contributed to fostering a sense of community. Over time, the printers became more effective as tools for good quality discourse, as the community strengthened and the debates became more heated. By the end, some of the participants even referred to each other as friends. Violet, who easily conversed with Red, told us that she missed her and their conversations. This suggest that this research naturally builds upon similar research into the use of research products. Whereas Lindley et al.'s messaging system was able to maintain a relationship between family members (2010) and Gaver et al.'s Energy Babble was able to create a public around a topic (Gaver et al., 2015), the Social Printers created a community between strangers that went beyond the topic of the debates.

5.5.2. Challenging the Dominance of the Screen

Despite the main interaction between participants taking place on paper rather than a screen, behaviour across the Social Printers mirrored conventional second screen usage during debates. There was an overlap in the motivations and behaviours that stimulated the use of the printers with the research I presented in Chapter 4. In a similar fashion the participants used the printers to scope out each other's views, share their thoughts and make the debates more entertaining. This suggests that physical devices are quite capable of mimicking the existing uses of second screens, but this research also suggests they may have other advantages.

In the same way that physical devices have been used to engage people in political issues in public spaces (Taylor et al., 2012), we saw how the object was able to engage the entire household rather than just a single viewer using

a personal device. Although one participant in each household took ownership of the device, the other household members were often involved in discussions around the printer and debate. In part this was enabled by the tactile nature of the paper, which became an artefact that could be shared and revisited after the broadcast. But it was also enabled by the physicality of the Social Printers themselves, which stimulated the imagination and creativity of the participants. They personified the object, seeing it come *"to life"*. Red called it WALL-E's *"little buddy"* and her children were enchanted by the object and inspected it whenever they thought they were not being observed. The participants also adapted it to their home by finding the most suitable position for it in the living room. Such rich interaction may not be as prominent if the network was solely screen based.

The Social Printers fostered discussions, speculation, reflection, and social interaction, which overlap with previous research into the deployment of an interactive artefact in the home (Gaver et al., 2006). Having this dedicated physical stream of chat during the debates was beneficial to the emergence of these behaviours. Although the participants still used their personal devices to write and send the messages, the paper was the only data output and hosted all of the discourse. The physicality of the paper and the printer stimulated a novel and engaging experience. This research indicates that physical devices, such as Internet of Things products, have the potential to engage citizens further with the discourse around political debates. This indicates there is potential that future political discourse may benefit from further exploring new interaction modalities.

5.5.3. Limitations

Although, the participants in both studies varied in their party allegiance, including SNP, Labour, Green, and Lib Dems, they were primarily liberal and the majority of them had similar views on the EU Referendum. Although these views largely coincide with opinion and voting trends from the public in Scotland across Dundee, Glasgow and Fife (BBC News, 2016b), where the households were located, the prominence of liberal views on the discussion

may have contributed to the emergence of polite commentary and the willingness of some participants to not voice their opinions when they disagreed with others.

5.6. Summary

Throughout this study, we have seen how nine households adopted the Social Printers into the way they watched political television programmes. They shared their views, personal space and time with the other households and scoped each other's characters and political ideologies. What emerged was a primarily civilised and supportive discussion in a network of people who wanted to like each other. The qualities of the physicality of the object were often intertwined with their perception of the experience, creating an experience that captured many of the behaviours of second screen use but also exceeded it. The ability of the Social Printers to stimulate a personal experience and discourse highlights the potential that future IoT solutions may have for television viewing and political engagement. By challenging the dominance of the screen, we may be able to find new forms that future social media platforms can take. The Social Printers study also illustrated that by changing the functions and constraints of a network we can also influence what issues affect the discourse. For example, they demonstrated that anonymity online may not necessarily encourage trolling and abusive behaviour within a small social network.

The Social Printers exemplified recurring issues such as conformation bias and filter bubbles, which have been observed within political discourse at large. However, they did illustrate that anonymity does not always correlate to abusive behaviour. While this research project enabled the exploration of the ways in which IoT can challenge current notions around "second screens", they also highlighted the need for an in-depth exploration of how particular online political discourse issues, such as filter bubbles may be more suitably addressed through design.

6.   Exploring Future Directions with Stakeholders

6.1.   Introduction

As we saw in Chapter 5, the constraints and functions of digital social tools affect the second screen experiences of viewers. The limited group size, situated experiences, and the pseudonymous nature of the communication helped foster a friendly interaction. While, some issues with political discourse, like trolling did not occur, others such as the echo chamber effect may have been amplified due to the way the Social Printers facilitated discussion. Furthermore, Chapter 4 revealed some of the perceived issues that viewers experience using their second screens, such as worries around posting opinions online due to fear of provoking others and reaching an unwanted audience. The participants that took part in the observations study often reported experiencing conformation bias. This effect may have been further amplified by the Social Printers, which created an echo chamber where the households either agreed with each other or remained silent. The households reported that the conversations they had with each other rarely led them to question their own opinions. These results indicate that the prominent issues with broader online political engagement, such as filter bubbles, echo chambers, abusive behaviour, and conformation bias, are also applicable to the second screen use of social tools around political debates.

Political engagement online is subject to an array of deep-rooted problems, including fake news, filter bubbles and personal abuse. These issues can undermine the value of online tools for the public and may also affect second screen use around televised debates, where viewers utilise their second screens to gauge the opinions of the public, share their own views, or as a form of entertainment. Previous research into political second screen use has been able to explore the way Twitter is being used (Anstead and O'Loughlin, 2014, Anstead and O'Loughlin, 2011, Ausserhofer and Maireder, 2012, Brooker et

al., 2015), and the effect of social media on opinion formation during debates (Maruyama et al., 2017, Maruyama et al., 2014) but it has not yet identified the issues with political discourse that affect the practice.

What remains is to identify directions for the development of appropriate second screen tools that cater to viewer's needs and address the current issues with political discourse online more broadly. However, I argue that in order to do this we need to account for the numerous stakeholders who shape this online activity. Politicians, broadcasters, journalists and social media platforms all take part in the second screen activity surrounding debates. They all aim to either foster further political engagement, inform the public, or persuade them of certain views. Due to their strong interest and deep understanding of political engagement these stakeholders would likely play a key role in the development of second screen tools in the future. By involving them in a design research process I can identify the implications of proposed design directions.

The aim of this research is to identify the opportunities and challenges for second screens alongside political debates from multiple perspectives, which could then be used to develop ways to improve the experience of interacting with others. I achieve this by involving both viewers and experts, such as politicians, academics, debate producers, and social media representatives. The research question addressed is:

What opportunities for second screens to address issues with political discourse can be identified through design-led research combining viewer and expert perspectives?

This study makes three contributions to the study of second screens alongside political debates. Through a series of workshops with political debate viewers, I contribute an audience perspective on the issues with political discourse online and opportunities for second screens alongside debates to address them. Based on these, I contribute four design concepts for second screen tools, used to capture possible solutions and prompt discussion. Finally, I contribute an expert opinion on the implications of addressing the issues through the identified opportunities encapsulated within the designs presented to them.

The feedback generated by the experts points to a disparity between viewer's expectations and complexities of addressing them. These findings can inform the way future tools are developed for a more engaging and informative viewer experience.

6.2.   Context

This research took place in 2016 and 2017, which were filled with political activity. In Europe the rise of right populist views, which leverage anti-immigration policies was felt across all major elections. France elected Emmanuel Macron who won against his opponent Marine Le Pen, the leader of the Nationalist Front Party, in the second round of the election. Germany elected Christian Democratic Union/Christian Social Union (CDU/CSU), led by Chancellor Angela Merkel but also voted the AfD, a populist radical right party, into the Bundestag (Mudde, 2017). In the United States, Donald Trump, a businessman and television personality, won the presidential election using an anti-immigration platform campaign. Trump is a prolific Twitter user and the messages he writes are often reported on the news. Although other political figures in the US including Obama, have personally used Twitter, Trump uses the platform in a new, more prolific way. He popularised the phrase fake news by tweeting about news stories published by CNN, ABC, CBS, NBCNews and the New York Times. He also often comments personal opinions on matters such as international affairs, such as Germany's contributions to NATO, or calling the leader of North Korea Kim Jong-un 'rocket man' (Sampathkumar, 2018).

The United Kingdom voted to leave the EU, which resulted in a snap General Election the following year. In the aftermath of the vote, David Cameron resigned as Prime Minister succeeded by Theresa May who won the Conservative Party leadership election of 2016 despite her initial support for the Remain campaign. In March of 2017 May triggered Article 50, a section of the Lisbon Treaty outlining a two-year negotiation period for the voluntary withdrawal of a country from the European Union. A month later she announced a snap General Election in order to strengthen her position within

the House of Commons when negotiating the Brexit deal with the EU. The snap election featured 14 different debates, the majority of which were regional and did not feature neither Labour nor the Conservative Party. The highlight of the election was an hour and a half long debate, which took place on the 31st of May aired on the BBC and featured all major parties including the Conservatives, Labour, Lib Dems, Greens, UKIP, SNP, and Plaid Cymru (BBC News, 2017a). Theresa May was widely criticised for not taking part in any televised events with a conventional debate format. The election resulted in a hung parliament where a Conservatives minority government needed the support of the DUP.

As in previous campaigns, this one was accompanied by a lot of online activity. The hashtag #GE2017 was constantly in Twitter's top hashtags throughout the last month of the campaign (Figure 19) (Cram et al., 2017). The Twitter activity closely followed and increased alongside events like the release of party manifestoes and televised debates (Cram et al., 2017). Labour and in particular the presence of Jeremy Corbyn dominated Twitter during the snap election (Cram et al., 2017). The election used Facebook as a platform for targeted advertising, whereby political parties attempted to reach a specific audience with a messaged designed especially for them (Dommett and Temple, 2018). The use of digital technology enabled the emergence of satellite campaigns, whereby non-party organisations raised funds and campaigned in favour of their preferred political parties (Dommett and Temple, 2018).
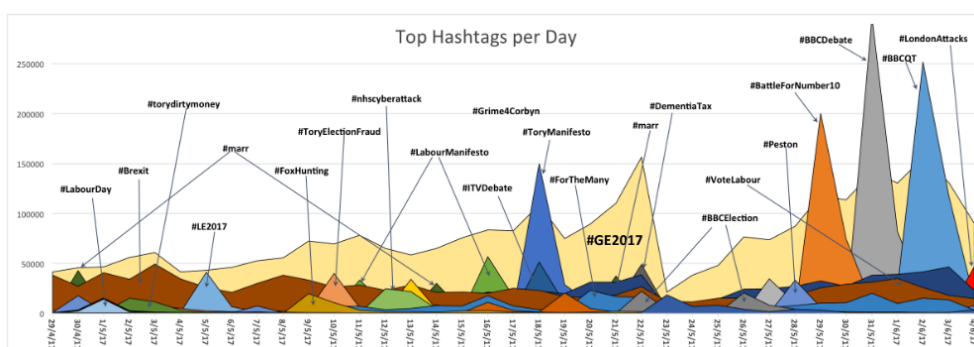
Figure 19 Hashtags that peaked on a given day on Twitter during the 2017 Snap election (Cram et al., 2017).

6.3.   Study Design

To understand the opportunities for second screens alongside political debates I adopted a design led approach that investigated the views of multiple stakeholders. The research was composed of three distinct parts including workshops with debate viewers, speculative designs, and interviews with experts. This approach allowed me to juxtapose the opportunities for second screens identified by politically active members of the public, with those of experts involved in politics, social media, and broadcasting. I conducted four design workshops around recent political events with politically engaged participants. The workshop results were then used to identify six key issues with political discourse online and their complementary opportunities to be addressed through second screen tools. The second screen opportunities were then encapsulated in four speculative design concepts, which were used to mediate the ideas of the viewers and prompt discussion with political and media experts. The experts took part in one-on-one interviews where they were able to highlight the wider context around political engagement online, and the implications and difficulties of addressing them.

I adopted this design led approach in order to facilitate creativity, insight, and focus the discussion with a variety of stakeholders. Previous research into online political discourse has largely focused on collecting and analysing openly available Twitter data (Ausserhofer and Maireder, 2012, Bruns and Burgess, 2011, Shephard, 2014), this trend is also visible within the research into political second screen use (Anstead and O'Loughlin, 2011, Brooker et al., 2015). Although analysing visible behaviour online provides a good understanding of the practice, it is not sensitive to the different perspectives of the stakeholders involved in televised debates. By comparison, design research is well-equipped to explore this type of complex, multifaceted problem that cannot be captured or understood using traditional approaches (Zimmerman et al., 2007). Design interventions are a good example of how this approach can tackle complicated problems, but the few projects within second screens for political discourse do not account for the stakeholders that exist in this space (Pluss and Liddo, 2015).

In particular, speculative design approaches can create space for discussion around different possibilities (Dunne and Raby, 2013), aiming not to solve the problem, but to produce a range of possible solutions that can be used to explore the problem space and identify potential benefits and challenges. In the context of politics, speculative approaches have been used to enable the formation and analysis of unrealised design and civic ideas, these include *speculative civics* (DiSalvo et al., 2016) and *design fiction* (Bleecker, 2009). DiSalvo (2016) coined the term speculative civic to refer to the use of speculative technology as part of public life (DiSalvo et al., 2016), whereas design fiction can adopt a broader speculative goal (Bleecker, 2009). Within design fiction imagined design concepts are used to explore alternative futures (Bleecker, 2009). A design fiction research project, which adopted design concepts from science fiction novel *The Circle,* found that the concepts were successful in highlighting their implications for privacy and surveillance. They further speculated that design fictions could be used as interview probes to enable greater reflectivity (Wong et al., 2017). In order to develop speculative second screen tools that explore the future possibilities for second screens and enable discussions with media and politics experts I conducted a series of workshops with debate viewers.

6.4. Workshops with Debate Viewers

To begin the study I conducted a series of four, two-hour workshops with 18 participants in total, where they discussed the issues with political discourse at large and the opportunities they see for second screens to address them.

6.4.1. Method

In an attempt to ground the conversation within the context of watching a political debate at home, I tried to create a comfortable homely environment. Although the workshops were hosted within the university, which uses relatively uncomfortable seating and harsh lighting, I chose the smallest available room fitted with a large TV that only seats 10 people (Figure 20). I

also brought along tea, coffee, muffins, water, and juice in an effort to create a comfortable informal atmosphere. Creating this atmosphere also helped the participants to get to know each other and facilitated a productive and constructive debate.

Figure 20 An Image from the first debate viewer workshop.

I began each workshop by explaining the purpose of the event, gaining informed consent to take part in the study, and asking participants to fill out a questionnaire (see Appendix D.5) containing questions about their age, education level, occupation, nationality, self-assigned political interest level, and optional questions relating to their recent UK political voting history.

In order to facilitate social interaction between the workshop participants who primarily did not know each other, I began each workshop with a game of political Taboo, a guessing game where the player explains a phrase or name without using a list of relevant words. I had created cards with a political word, phrase, or name, such as Article 50, Brexit, and Nicola Sturgeon. Underneath the phrase there was a list of words that the participants could not use. For example, one taboo card contained the name of the current prime minister Theresa May and the words and phrases the participant could not use while describing her were: leader, conservative party, Prime Minister, Brexit, article 50, politician, and government. The goal of the game was to make the other participants guess the phrase at the top of the card as quickly as possible. Overall the game was successful at relieving tension and initiating conversation.

After the game of political Taboo I started the political program using iPlayer. To prompt a focused discussion, the workshops were conducted alongside the most recent televised debate from national broadcasters: the first two workshops watched a *Question Time* debate focused on the UK's EU referendum, while the second two watched a Scottish party leaders' debate from the UK 2017 General Election. We watched the first 10 minutes of the program in silence and then began a series of discussions. The discussions were structured around four topics inspired by Kietzmann et al.'s (2011) parts of a social network:

1. **Content**, where the participants discussed the value of the content they were given, what made content appropriate, and how can a tool encourage the sharing of trustworthy information.
2. **Identity**, where the participants were asked what information they would like to share and see about others, how an online profile can enable trust and respect, and how anonymity affects the discourse.
3. **Communication**, including how a tool could support meaningful political discussion during debates, what would its purpose be, and what form would it take.
4. **Relationships**, which asked what the relationships between users should be, how we could increase empathy, and whether a debate tool should force diversity into the communication.

During the discussion around online political content, the participants were given printed tweets and Reddit threads generated by the public throughout the debate they were viewing. I selected the top 30 most popular tweets visible within the 'top' tweets page of the relevant hashtag, and three most highly voted comment threads from discussion topics about the debates on the "ukpolitics" subreddit (Figure 21). For example, some of the tweets and one of the reddit threads presented around the first and second workshop were generated live during the Question Time Special and included:

#bbcqt Nick Clegg alongside Alex Salmond tower above the others in their grasp of this pressing issue. Davis is a shambolic figure.

Why the hell is another UKIP person on #bbcqt? They don't have any MPs. Why not put the Green Party on instead?

I know UKIP have no MPs, but they do have 10-15% of the vote, and nobody complains about Lib Dems (8%) or SNP (5%) being on #bbcqt

"No deal is about the worst possible deal you can imagine" warns @nick_clegg #bbcqt

44% of UK exports go to the EU 8% of EU exports go to UK That's the killer equation Reality is gonna hit the Brexit dreamers very hard #bbcqt

It's handy that the #bbcqt panel has no-one from Northern Ireland. I mean nothing is happening there today & Brexit won't really affect it.

The only good thing about #bbcqt tonight was Dimbleby's confession that he thought the red button was literally on the TV.

Figure 21 A Reddit thread that was shown to participants during the Content discussion at the start of the workshop, which was generated during the Scottish Party Leaders Debate.

The topics and questions that accompanied them were laser-cut into four acrylic boards as well as large printed boards containing the topics and questions, which were mounted on the wall for clarity and reference (see

Appendix D.6). The participants were prompted to first discuss each question and then write an answer on a sticky note and place it in the board under the relevant question (Figure 22). The discussion on each board always started with a look at the current issues with political discourse online that the participants had personal experience with, and then I focused the conversation on potential solutions and opportunities for second screens to address them.

Figure 22 The Communication Board containing participant responses from the first workshop.

Participants were recruited through university mailing lists, posters, flyers, Facebook groups, Twitter, and snowball sampling at the end of each workshop. The participants that took part in the workshops were demographically diverse. They ranged in age from 21 to 56 (M=30; SD=9), nine were female and nine male. There were nine different nationalities (Brazil, Bulgaria, Ghana, Ireland, Kenyan, Mozambique, Peru, USA), with the majority being British (N=9). The British segment of the participants reported voting for a variety of different parties. They self-reported their political engagement as low (N=2), medium (N=4) and high (N=12). However, as participants were all regular debate viewers or otherwise interested in politics, they were therefore more engaged than the general public. Within this chapter the participants are referred to as V1 through to V18. Participation was voluntary and without a reward.

Table 5 Data for participants from the Exploring Future Directions with Stakeholders study - gender, age, number of prints and political engagement level.

Workshop	Participant	Occupation	Sex	Nationality	Age	GE 2015 Vote
1	V1	International Management Masters	Male	Mozambique	30s	N/A
	V2	International Law Masters	Male	Brazil	30s	N/A
	V3	Oil and Gas Law - Student	Female	Kenya	20s	N/A
	V4	Student	Male	UK	20s	N/A
	V5	Art Masters	Female	USA	50s	N/A
	V6	Energy Law Student	Male	Ghana	20s	N/A
	V7	Unemployed	Male	Ireland	40s	N/A
2	V8	Neuro-science and Psychology PhD	Male	UK	20s	Green party
	V9	Politics and Literature Student	Female	UK	20s	SNP
	V10	Politics Student	Male	UK	20s	Labour
	V11	Politics Student	Male	UK	20s	Green
3	V12	Support Worker	Female	UK	20s	Green
	V13	Product Design Student	Female	UK	30s	Lib Dem
	V14	Retail	Male	UK	20s	SNP
	V15	Law and Policy Masters	Female	Peru	20s	N/A
4	V16	Politics Student	Female	UK	20s	Labour
	V17	Politics and International Relations Masters	Female	Bulgaria	30s	N/A
	V18	Educational Research	Female	USA	30s	N/A

6.4.2.   Data Collection and Analysis

The workshops were audio recorded then transcribed. An anonymised version of the transcripts is available on an open data repository (Gorkovenko and Taylor, 2019). The transcripts and sticky notes generated throughout the workshops by the participants were then thematically analysed (Braun and Clarke, 2006) in relation to the workshop topics and synthesised into six emerging issues and six corresponding opportunities for second screens. These issues were used to develop a number of design concepts, which were iterated until the research team was satisfied that they encapsulated the issues raised without offering solutions that were too concrete.

6.4.3.   Results

Below I describe the findings from the workshops. For each theme, I derive the relevant issues with political discourse and the opportunities to address them through second screens.

6.4.3.1.   Content

Issue 1. Lack of fact-based, informed content. The participants acknowledged that social media, televised debates and the news have a lasting effect on people's understanding of key issues. As a result, participants showed a strong desire for extremely factual information, which they felt was not present on social media. Fake news—which participants used to describe both intentionally misleading and satirical content—was used as an example of this lack of factual content online. In addition to fake news, the participants felt that social media is dominated by opinions rather than reputable sources. Furthermore, political discourse online was also seen as "*propagating untruths*". V3, who is from Kenya, spoke about a group of influential Kenyans with thousands of followers, who at times spread information without verifying it, which is then accepted by the public as fact.

Televised debates were perceived to lack a fact-based discussion and instead repeat the party rhetoric without delving deeper into its justifications. This confused viewers who can feel that they are being exposed to conflicting views. For example, V12 recalled how one candidate said *"that pensioners are actually £1000 better off because of their policies. But everything else I have read says the total opposite"*. Thus, social media became a useful information source alongside debates (V3: *"I feel like if mainstream media was doing its job properly people wouldn't need Twitter"*). The participants felt that despite social media's potential to be used as a collective fact-checker or a way to find more resources, the content they had observed on Facebook and Twitter alongside debates was like *"noise"*, lacked *"substance"* and *"political education"*.

> V18: *"I don't think that enough productive discussion is happening on social media. I think that it is just propagating untruths."*

Opportunity 1. Increase informational value through supporting material. The participants felt that a second screen tool should be there to enlighten the public. They saw three opportunities to increase the informational value of online content. Firstly, by providing factual complementary material provided by the political parties through a second screen tool. Secondly, that second screen tools should also encourage users to share the history and context of their opinions, which may help frame personal opinions in a way that makes them useful to the general public (V8: *"Everyone must try and explain why they feel a certain way"*). Finally, through a viewer generated fact-base consisting of government documents and news sources. V9 said it should be open source, publicly accessible, reliable and independently regulated, much like Wikipedia. A tool that enables users to quickly and easily find facts could help the public identify misinformation from the live debate.

Issue 2. It is difficult to understand and write content. The tweets and Reddit posts at the workshop were seen to lack insightfulness and political focus. The participants felt that Twitter's short comment length meant that content could easily be *"misinterpreted"* due to the way it is worded. The vast

amounts of tweets generated live along the debate also meant that any *"useful comments get just lost"* in the crowd. Reddit was seen as *"useful"* but *"too long"*, while Facebook's recent live streaming and commentating tools were seen as chaotic. V14 thought that the low quality of online content is in part due to how difficult it is to write commentary and watch the debate at the same time. All of these issues around how difficult it is to understand and write second screen content were tied to the limited tools we use.

Opportunity 2. Create alternative participation methods. The social media platforms we use alongside debates enable us to view opinions and share our own, in a way that does not complement the fast-paced debate. To enable political focus, V8 had the idea of compartmentalising the discussion by prompting viewers to share their thoughts on the debate questions, which could help increase content quality by giving posts more context, while lowering visible quantity. To find an alternative to the traditional written post platforms, V14 felt that viewers should be able to provide live-feedback in a simple form: *"you get agree or disagree on an app and you just tick […] like a snapshot as it goes. It stops you having to type"*. V10 envisioned an online network like Twitch, which lets people live-stream themselves while others send them messages. V13 imagined a speculative tool that is centred around a game *"where you can put in how you think the country should be governed and actually model that and show other people"*.

6.4.3.2. Identity

Issue 3. Anonymity can empower abusive behaviour but revealing your identity could negatively impact your credibility and personal life. From personal accounts and observations, the participants often attributed abusive and derogatory language online to the veil of anonymity. V5 felt that anonymity online is *"dangerous"*, while V16 recalled how her 17-year-old friend was bullied by an anonymous Twitter account due to her political views. Conversely, anonymity could help people express themselves more freely. Our profiles on Facebook and Twitter leave a permanent record that can be seen by our friends, family and employers. V12

felt that political discourse *"shouldn't have to factor in your family and friendships and getting jobs"*. Furthermore, your location and job may be used as a tool to undermine the value of your opinions. V3 explained how in Kenya, a person's name is indicative of the region they come from, so their opinions may be dismissed based on their name. Overall the participants agreed that for some revealing their full identity creates a threshold for participation, where their identity may prevent them from sharing their thoughts or being taken seriously.

> V18: *"if you make it so that there is a certain threshold for knowledge in order to use it, then it cuts out a population of people who have always been voiceless"*

Opportunity 3. Give users control over their public profile information but restrict interactions between anonymous and full-identity profiles to promote equality. Some participants felt that full transparency is required online. Sharing their name, age, education level, ideology and even salary would aid a self-regulated respectful discussion, because people's experience could validate their opinions. V17 felt that despite fears people may have, it is vital that there is an open discussion with full transparency because it is *"the most effective way of defending our freedom of speech"*. Other participants felt that pseudonimity, where individual contributors use consistent pseudonyms, would still enable respect and civil discussion. Within more pseudonymous solutions, relationships and a sense of community would have to be built over time. Some playful ideas emerged, such as the development of a dating style app with the use of a political allegiance cross to connect people, matching people based on similar interests, not party allegiances.

As a result of this division between participants on the topic of identity, the discussion leaned towards promoting equality and choice. Participants felt future second screen tools should restrict interactions between profiles with unequally visible personal information. They felt debate viewers should also have a choice in their online presence and be able to take part in both pseudonymous and full identity networks.

Issue 4. Filter bubbles and echo chambers can limit viewers' exposure to diverse political opinions. In the context of online political discourse, it was seen as beneficial to be exposed to a broad range of opinions that challenge your own views. The participants were aware of effects commonly referred to as filter bubbles or echo chambers: V14: *"A lot of the time you can be fed stuff that kind of backs your opinion, which is I feel social media's extreme weakness at this point"*. They identified that the structure of social media platforms can limit exposure to diverse opinion through the way they bring people together. The pages users follow and the friends they have influence what content the network makes visible to them.

Opportunity 4. Control the political diversity of the group by grouping users. In line with the ethos of political debates, participants felt a second screen tool should connect people with different views. V8 imagined a tool with different topic-related chat rooms, where a user would volunteer information such as voting history, location and interest, "*debating in assigned rooms, based on a diverse population of people"*. By compartmentalising the discussion and grouping viewers, a second screen tool would both limit the vast amounts of content and allow users to talk about issues they are interested in. V13 imagined a forum style tool, where under each discussion topic the screen splits in two and users see, and can contribute to, the different sides of an argument.

6.4.3.3. Communication

Issue 5. Communication with others alongside the debate can be uncivil. Uncivil communication was seen as a major issue in political discourse due to its ability to deteriorate the discussion (V8: *"If someone says something offensive that dominates the political debate"*). The participants made a distinction between free speech and hate speech: although free speech is vital for political discourse, abuse and trolling border on anti-social and criminal behaviour and have the potential to make a lasting negative impression on people's lives.

> V18: *"An online forum encourages people to react emotionally, because it gives them a forum that is real time and when it is real time they don't have to really filter their thoughts."*

The format of the debates themselves aided personal attacks. Both the media and the public pay attention to the way the politicians dress, talk and behave. It was observed that one UK politician is constantly criticized by news outlets who, as V9 observed, point out *"how he eats hummus, he sits on the floor, he rides a bike, he wears a shabby hat. They made this little pathetic persona"*. Although, the participants were aware that the politician's self-presentation was often used to attack and undermine them on a personal level, they often did the same when focusing on the debate within the workshop. One was seen as *"hyper"*, while another was described as an *"asshole"*. V18 identified that political debates stimulate an emotional reaction, where it is difficult for viewers to *"filter their thoughts"*.

Opportunity 5. Create a code of conduct or a requirement to provide sources for statements. It was agreed that online content needs to use *"non-derogatory language, productive discussion, backed by evidence, not assumptions"*. The participants felt that a fact-base, such as the one from the Content theme, could enable civil behaviour because it would empower viewers to fact-check both the debate and each other. When viewers are posting personal opinions they should be prompted to share the reasons for their opinions, which would enable understanding. Moderation was seen as a viable way to establish a self-regulated and productive political discussion. V18 felt that a *"flame war"* on social media is mostly conducted for the benefit of the audience, which could be tackled by allowing people to have a personal conversation with fewer people.

Issue 6. Users lack the power to regulate and moderate. The online discourse could enable the public to identify misinformation and repetitive rhetoric in the debate. V7 felt the internet provides a platform for the crowdsourced fact-checking of the debates. Furthermore, there are many benefits to using social media alongside debates, such as to improve your personal debate skills, gain in-depth understanding of the issues, and establish

meaningful connections. In this way, online discourse can create *"value for the community"* and help *"build civil society"*. However, these benefits of social media use are undermined by the unequal distribution of power between the networks and their users. In its current form, social media platforms have control over mediating and moderating the discourse. This was seen as problematic, particularly in light of recent allegations that fake "troll" or "bot" accounts are being used to influence election and referendum results internationally (BBC News, 2017b).

Opportunity 6. Moderation powers given to users. The participants envisioned that future second screen tools could shift the power to the users. Network moderators from within the community and a code of conduct could help enable communication that is *"always respectful and following pre-determined rules"*. The moderators could be determined through *"a system allowing a reputation score"*, while respect between users could be encouraged through a sense of community that spans beyond political allegiance. This could be done by amplifying other commonalities between people, such as their interests and location. A mix between a forum and chat room was widely favoured. Forums benefit from having a compartmentalised discussion with some level of moderation, while chat rooms can foster a personal conversation with a limited number of people.

6.5.   Design Concepts

Based on these issues and opportunities generated by the participants I developed four speculative design concepts. They attempt to make visible some of the implications of exploring the opportunities for second screens to address current issues with political discourse. They all have social elements because they tend to seek a way to help debate viewers voice their opinions, find facts, or interact with others, which were seen as beneficial in the workshops.

6.5.1.   Approach

I adopted a speculative design approach to convey the workshop findings to experts in a way that would enable reflection. I created a series of four design concepts that served as mediators between the audience and expert perspectives. They were not intended to act as solutions, but rather to encapsulate the key issues and some of the prominent opportunities identified by the participants. By offering possible futures, none of which were intended to be without faults of their own, the designs were acted as provocations to prompt discussion and highlight some of the implications of addressing the workshop results. I presented simple mock-ups to the experts alongside a small paragraph describing their function.

6.5.2.   Viewers' Debate
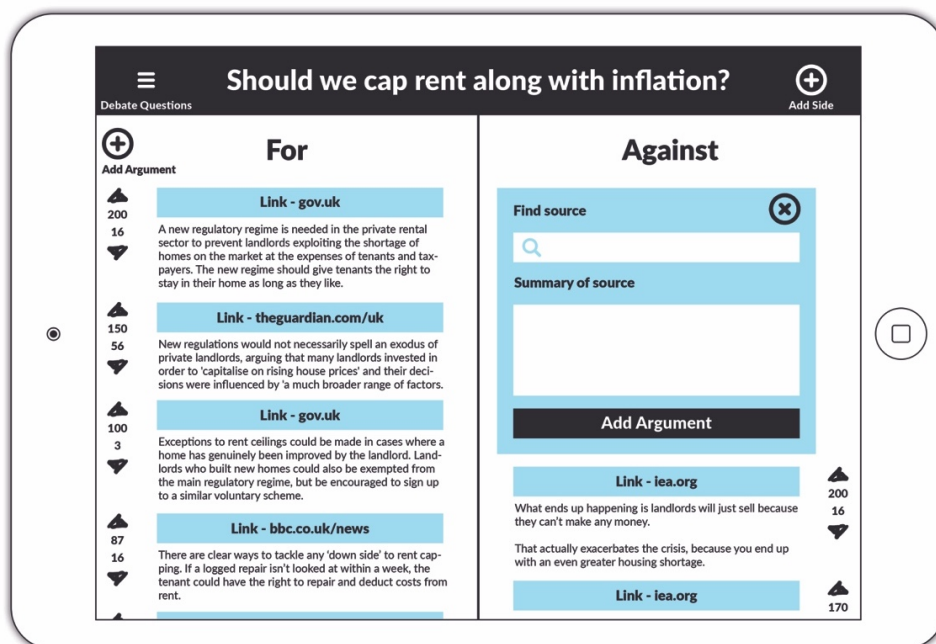
Figure 23 The Viewer's Debate speculative design concept.

This tool would allow debate viewers to find, submit and summarise links to external sources for and against policies being discussed during the debate (Figure 23). It would also enable the users to moderate the content by giving

them the power to add new points of view and to vote content up or down on all sides of the argument.

Rationale: This tool was inspired by the strong desire for fact-based deliberation captured within opportunity 1, which aims to increase the informational value of the debate by providing supporting material on a second screen. It also addresses opportunities 4, 5, and 6, which identify a need for control of the ideological diversity of users online, to require users to provide sources, and give them moderation powers.

The tool aims to expose viewers to good quality information rather than tackle fake news or enable fact-checking. It aims to give viewers the power to curate content by upvoting and downvoting links to articles with short summaries of their contents. By exposing viewers to the different political opinions around a question posed within the televised debate the tool would break users away from their pre-existing filter bubbles. It also aims to tackle issues around anonymity and identity by eliminating user profiles altogether. The application was partly inspired by ConsiderIt, a pro/con political deliberation tool (Kriplean et al., 2012a). The main difference is that Viewers' Debate only allows users to share links to external sources rather than personal opinions.

6.5.3. Political Date App
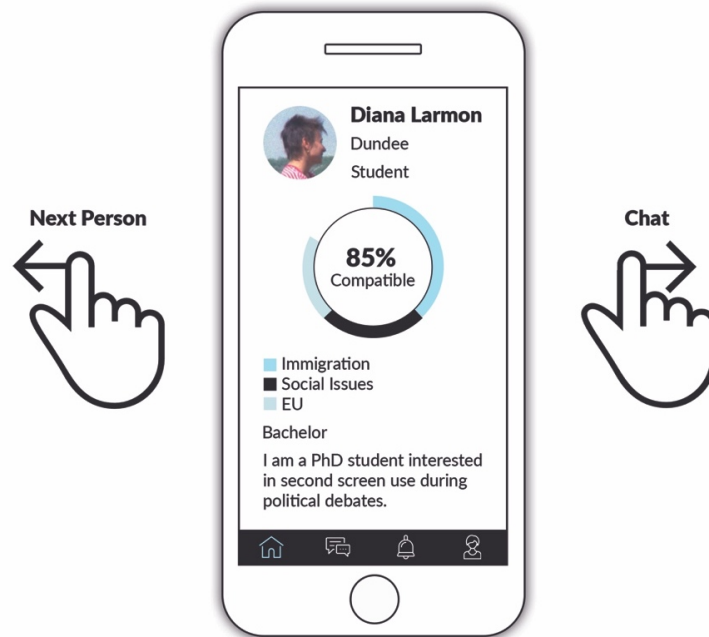
Figure 24 The Political Date App speculative design concept.

Rather than start romantic relationships, this Political Date App (Figure 24) would enable personal communication between people with different political ideologies. This design concept aims to encourage civil interaction between users by fostering personal one-on-one conversation. Profiles on the app would summarise the users' stance on different issues (e.g. healthcare and immigration), allowing comparison with other users on both points of similarity and difference between them. It was designed to reduce the temptation to see the other person solely in terms of a single issue, considering things you share as well as things you do not. Reminiscent of apps like Tinder or Chat Roulette, in which users are potentially exposed to a wide variety of other users, the Political Date App would let people choose a selection of potential talking partners by either swiping left or right. Only if the other person has swiped right for them would they be able to have a conversation alongside the debate.

Rationale: This design concept aims to encourage civil interaction between users by fostering personal conversation. The Political Date App addresses opportunity 3 and 4 identified within the Identity theme, which aim to

promote equality between users through their profiles and controlling the political diversity of online discussions by grouping users. It also aims to address issue 5, which identifies that political communication can be uncivil, but rather than creating a code of conduct for the users to abide by, it gives users control over who they are interacting with, letting them change the person they are communicating easily.

6.5.4. Identity Equality
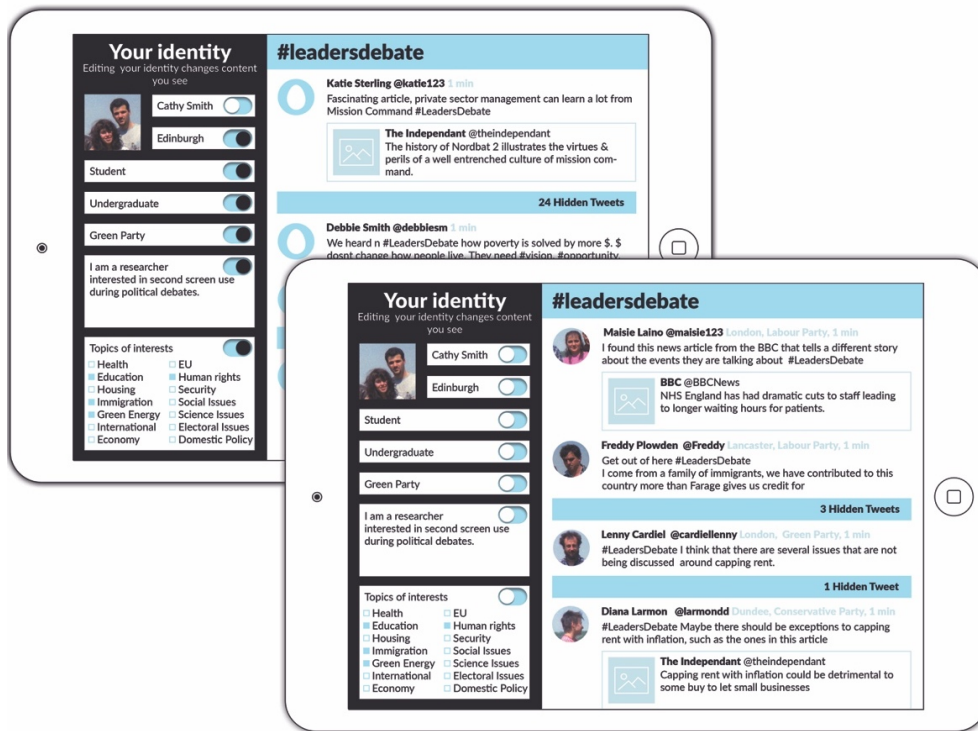
Figure 25 Identity Equality speculative design concept.

Anonymity can give people power to abuse others online. This tool would promote equality between users. It would give users full control and choice in their self-representation online, allowing them to reveal as much or as little about themselves as they wish, but would only allow them to see and interact with Twitter content from accounts that have made the same level of public personal information available (Figure 25). This enables them to interact with others on an equal basis within discussion spaces that suit their preferred interaction experience.

Rationale: By restricting interactions between users to a network of people with the same level of public information available, the tool aims to encourage respectful and equal communication. I expect to see a positive influence on comfort levels within users and the emergence of civil discourse within the more developed identity discussions. Within the more anonymous discussion spaces within the tool, I expect to observe both more heated, aggressive commentary, as well as more humorous content, including memes.

This tool mainly addresses opportunities within the theme of identity (3) and communication (5). As outlined by the opportunity 3 identified by the participants the tool gives users control over their public profile information but restrict interactions between anonymous and full-identity profiles to promote equality. By interlinking identity and anonymity with the group of people that the user has the ability to communicate with, the tool aims to create an unwritten code of conduct like the one identified within opportunity 5, where negatively perceived behaviours, such as abusive language might be observed only within the more anonymous discussion spaces.

6.5.5. Live Feedback Tool
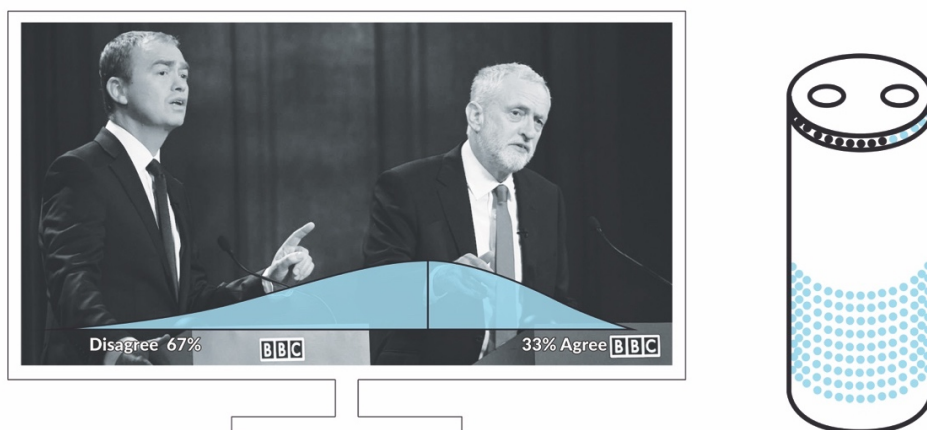
Figure 26 Live Feedback speculative design concept

Viewers often find paying attention to the debate while interacting with others through written messages online challenging. The Live Feedback tool will utilise voice assistant technology as a hands-free interface, removing the need for the 'second screen' and allowing the viewers to focus on the broadcast. The

tool would listen to the viewer in order to detect key words, phrases and verbal reactions indicating either agreement and disagreement to the arguments brought forward by the politicians. The device would collect representative opinions from across the country in real time. The feedback would then be visually overlaid onto the debate through a wave-like visualisation reflecting the quantity and attitude of viewer opinion.

Rationale: The design explores ways to address opportunity 2, which identifies a need for alternative participation methods. The participants felt the debate is at time too fast paced for the writing of informed commentary. Instead this tool would automate feedback collection. It will remove personal communication, which will eliminate abuse between users. It would be more inclusive to the segment of the audience that avoids confrontations or does not actively utilise social tools during political debates.

6.6.   Interviews with Experts

The four speculative designs were used to mediate some of the salient opportunities identified by the workshop participants to politics and media experts. They were used in a series of one-on-one interviews where we discussed the issues with political discourse that were identified within the workshops, the speculative designs, and what the implications of developing second screen tools would be on viewers and politics.

6.6.1.   Method

Seven political and media professionals were interviewed to give their feedback on the issues and design concepts. They were recruited through direct emails, based on my knowledge of their work, or suggestions by fellow academics. Due to their limited availability, the expert's insights were gathered through one-on-one semi-structured interviews that lasted between 38 and 56 minutes rather than a workshop. They were interviewed either in person (N=4), through Skype (N=2), or through Facebook Messenger (N=1) at a

location and time that suited their schedule. They were given the speculative designs and issues derived by the workshop participants ahead of the interview in order to give them the opportunity to consider their feedback over a longer period of time. Each feedback session started with an overview of issues identified by the participants where the experts spoke about how relevant they felt the issues were. Then we discussed each speculative design concept, if it addressed the issues identified, and what the implications of giving a viewer that tool might be. The experts, referred to as E1 through to E7, held a range of professional roles (Table 6).

Table 6 The professional roles of politics and media experts that took part in the Exploring Future Directions with Stakeholders study.

Expert	Occupation
E1	A researcher for a major social media network who focuses on social psychology.
E2	An elected city councillor who had worked as a political advisor for 15 years.
E3	Former newspaper journalist, now a politics textbook author and journalism lecturer.
E4	A policy researcher who used to be a local political party vice-chair, and has been involved in the running of elections and referendums locally since 2013.
E5	A politics lecturer who researches public opinions around political debates.
E6	The interactive producer for a major political debate program in the UK since 1999.
E7	A professor of politics who was part of a parliamentary commission on digital democracy.

6.6.2. Data Collection and Analysis

The expert interviews were audio recorded, transcribed, and thematically analysed in relation to the issues derived from the workshops (Braun and Clarke, 2006). An anonymised version of the transcripts from each interviews are available on an open data repository (Gorkovenko and Taylor, 2019). The codes and themes were verified by a second researcher until reaching overall agreement.

6.6.3.   Results

The speculative design concepts were presented to a series of experts for feedback. I verbally explained the issues and opportunities identified by the workshop participants and showed them the four designs with an accompanying short description of their function (see Appendix D.7). Overall, the experts felt that the workshop results accurately reflected the issues with political discourse on social media. Uncivil behaviour and anonymity were generally seen as the most prominent of the six issues. Considering recent claims of foreign intervention through social media, which dominated the media at the time, E2, who is an elected city councillor, felt that the biggest issue with social media is its openness to abuse by external influences. There was no one specific design concept that was favoured by the majority of experts. Instead, they predicted an ever-changing and diverse design space that adapts to issues and caters to a variety of viewers (E7: *"Different tools for different people, different types of conversations. I think it would be changing all the time"*).

6.6.3.1. Fact-Based, Informed Content

The lack of fact-based and informed content online was by far the most controversial issue for the experts. Most experts felt that this claim was problematic. E5 referred to Shephard (2014), which contradicts the notion that content on Twitter is uninformed. Furthermore, a lot of political discourse is speculative and opinion based, which makes determining the validity of facts extremely challenging. Within a debate, every *"fact"* can represent a certain position, which can seem biased to viewers. E4 felt that rather than creating a new second screen tool, broadcasters could promote the perception of a more-fact based debate by allowing additional information to be displayed on screen.

> E2: *"I think that the kind of response to fakeness or lies, that there is an objective truth on the other side, in many circumstances it doesn't apply [...] it is that culture of dismissing expertise that is the issue, it is not the information that is available."*

Despite their issues with the underlying beliefs, the Viewers' Debate concept received positive attention. E5 felt that such a tool would be extremely beneficial for researchers who study deliberation. The experts felt the up and down voting of content should be excluded because viewers would not be able to appropriately access the credibility of sources, instead the tool should focus on exposing viewers to a wide range of content.

> E3: *"Take the focus away from let's vote on what is the most reliable or the least reliable kind of thing and instead put the focus on people using this tool as an avenue to actually pro-actively explore more widely."*

Conversely, E1 felt that in order for the Viewers' Debate to promote people's understanding of key issues, sources would need to be verified. She felt that vetted individuals such as journalists or an independent body of professionals, rather than viewers, should fact-check sources.

E6, who works as an interactive debate producer, felt that a complex tool like Viewers' Debate may be difficult to use alongside a debate due to time pressures, but may bring about great benefits for extending the conversation throughout the week after the debate (*"You could […] go beyond a mere one-hour shouting match and actually take it onto a much more serious and informed debate on a more prolonged scale"*). It could promote greater reflection amongst viewers in the days following the debate and be used as an information bank.

6.6.3.2.   Ease of Content Production and Understanding

In the context of political debates, current second screen tools can feel inaccessible and elitist as an engagement tool for the general public. The Viewers' Debate tool was seen as the most inaccessible tool for the public, while the Live Feedback tool was seen as the only design concept that allowed for the collection of opinions from the less politically engaged segment of the audience.

The Live Feedback Tool was the most disliked concept, with concern being raised around the ethics of collecting and owning the data, its reliability and its effect on the debate. However, it was also seen as the most likely to actually come into existence in the near future, since it has the most potential to excite TV producers, politicians and pollsters. E2 felt that with the prevalence of smart TVs and voice assistants in the near future, it would be an opt-out rather than an opt-in aspect of watching televised debates. E1 felt the Live Feedback tool could also encourage the public to be abusive towards the politicians, while, E2, E3 and E5 identified that a big issue with the idea is that it would encourage politicians to appeal to the masses by expressing opinions they see get a positive feedback. Instead of agree and disagree options, they felt the tool could measure party allegiance of the viewers throughout the debate.

> *E4: "A live feedback tool [...] could tell us what we are getting right and what we are getting wrong."*

6.6.3.3. Uncivil Communication

There was an overall agreement that discourse online can be uncivil: *"It is a very hostile environment and people are often right to step away from it"* (E4). E1 felt that eliminating anonymity, as in the case of the Political Date App and parts of the Identity Equality tool, would decrease trolling. She referred to YouTube as an example: *"the abuse got so bad that they had to enforce a comment-only-if-you're-logged-in policy, which drove down engagement but also decreased harassment"*.

There was no agreement on which of the design concepts would encourage respectful conversation the most. E5 and E7 felt that the Identity Equality tool would encourage civility, while the politicians and debate program producer seemed to favour the Political Date App. E2 felt that no digital tools encourage the collective view of the world and find common ground with each other. Instead, he felt that face-to-face communication is better for political discourse, so favoured that way that the Political Date App was *"effectively digitising face to face conversation"*. E6, who works as a producer on a debate

program, compared the interaction that the Political Date app may create to what he observes in the program between audience members:

> E6: *"You often end up with a very intriguing discussion between two people sitting next to each other [...] what could almost be seen by viewers as hostile, but it is actually quite friendly robust discussion by people who don't have clearly the same political views."*

On the other hand, the politics professors felt that the Political Date App would not encourage political deliberation because it would break the debate viewer's filter bubble, thus hindering a relaxed conversation.

6.6.3.4. Filter Bubbles and Echo Chambers

Filter bubbles were seen as contributing to people's perceptions of a lack of informed content. E7 felt that they are at times responsible for the public's inability to spot fake news, because they see a very limited scope of bias and opinions. At the same time E6 and E7 doubted the public's desire to actually escape those bubbles, especially during political debates. E7 states that *"people are only willing to deliberate and discuss* [...] *when they agree with each other"*, citing Mutz (2013), who identifies a common misconception that the public want to discuss and deliberate, whereas in reality it is just a small group of informed individuals.

The rest of the experts felt that breaking the existing filter bubbles on social media during political debates is vital to help inform people's voting choices. The two design concepts that are meant to address this issue are the Viewers' Debate and the Political Date App, which were both found to be at risk of creating filter bubbles of their own. The Political Date App could be appealing to a small demographic subsection of viewers, whereas the Viewers' Debate tool could have limited market appeal and would likely be dominated by engaged individuals:

> *E4: "You would end up with people like me using it and dominating the political conversation and on the other end of the scale you would end up with some of the more wild elements of the online community. The people who we should be targeting are somewhere in the middle."*

The Viewers' Debate tool was favoured by E1, E3 and E5, who felt that it has significant potential to expose viewers to a wide range of opinions. Even if the content is generated by experts or trolls, E3 felt it may still be beneficial to viewers who observe the range of information.

> *E3: "Whether you have gravitated to your natural source because you like the politics or you have just decided for once to look at the other side and what they are saying, it can only be better to consult a variety of different sources."*

E2 and E4 preferred the Political Date App. They identified that one-on–one conversation in the context of a political debate would be less intimidating, less time demanding, and more entertaining. Contrary to E7's citation of Mutz (2013), the way the interaction is structured may even feel supportive due to the highlighting of similarities between users. E4 felt that instead of matching people if they favour different parties that the tool would be more engaging if it matches people based on opposing views on key issues such as immigration.

6.6.3.5. Identity and Anonymity

The experts also felt strongly that anonymity is linked to abusive behaviour. E4 pointed out that in addition to not developing an online profile, people can also feel anonymous by hiding in plain sight: *"in the sense that it gets lost in the crowd"*. The Political Date app combats that: "When you have got a smaller sample of people, people will automatically behave themselves a bit more". Although that may positively affect behaviour, the Date App would not aid the formation of a community, which E7 felt was vital for engagement. Instead, the Identity Equality tool may help people build up their confidence and relationships with others over time. Despite this E2 felt that it may *"become*

too dry too quickly", because at the full- identity side of the tool the discourse may encourage participation by a small group of very engaged individuals.

> E2: *"It would probably just create a second kind of gated community, where you have people who are prepared to tell you who they are and they would have reasonably moderate opinions."*

E4 and E5 noted that the design concepts highlighted some vital questions about the meaning of labelling one-self as for a certain party, or as interested in a certain topic. Rather than forming an identity, these labels could be misrepresentative. Instead users should be allowed to provide a more nuanced biography.

> E5: *"So if someone says the Green Party. What does that say? Are they a member of the Green Party, did they vote Green last time, are they going to vote Green next time, or is it just how they happened to feel aligned to that particular topic on that day?"*

The experts felt that there is room to combine the Identity Equality tool with the Political Date App and the Viewers' Debate. By elevating the importance of equality between users, promoting intimate conversations, and the development of a community, a tool could have a positive effect on both behaviour and ability to deliberate. E2 felt that introducing identity can *"validate"* the content.

6.6.3.6. Power to Regulate and Moderate

All of the above issues are enabled by the current social media platforms utilised by the public. E1, who works for a major social network, felt that it is possible to enable more civil and productive discussion by empowering the public to moderate together like in the Viewers' Debate concept. E7 felt that the different laws on freedom of expression online differ across the globe, which makes it difficult for networks to accommodate for everyone. When E1 was asked if in the future social media platforms would be able to account for the differences in law for political contexts she said: *"Trying to meet everyone in the*

middle is the best compromise I can see in the future". Contrary to the view that social media platforms can find a compromising solution to discourse regulation and moderation E2 felt that *"we will come to the point reasonably soon where people think, why on earth did we allow these companies to have a global monopoly on how we interact as human beings".*

Instead, E7 predicted that the future of social media second screen tools for political debates would be very volatile and dynamic, with many tools for different types of people. She felt that these tools would be owned by the big international social media platforms that exist today because of their capital and influence, instead she felt governments could *"promote regulations and laws that shape and frame the space".* On the other hand, E5 felt that broadcasters could potentially benefit from adding second screen tools to their pre-existing debate pages. This way local broadcasters could moderate and facilitate the discourse.

6.7.   Discussion

Designing appropriate second screen tools inevitably involves addressing the larger issues with online political discourse. The experts felt that the range of issues viewers are currently experiencing are all interconnected: anonymity empowers abusive behaviour; filter bubbles limit our ability to spot factual and false content, and social media platforms' prevalence in the second screen use enables all of the above. However, there are opportunities for the development of a healthy internet practice around second screens and debates. Below, I discuss some of the key themes emerging from the research that suggest possible ways forward, drawing on both viewer and expert insights. These findings point to three considerations for future tools.

6.7.1.   Diversity versus Homogeneity

Both the experts and viewers felt debate audiences should not communicate in echo chambers around debates. Understanding opposing opinions could help people make informed voting choices. However, while diversity in

political discourse was desired by everyone, the experts identified that extreme political opinions could alienate the general public. Literature on the topic also gives us conflicting perspectives: Semaan et al. (2015a) shows that people actively seek out an audience that is diverse in political opinion, while Mutz (2013), who was cited by E7, shows that people seek out supportive and homogenous political deliberation environments. Although the participants reported wanting diverse opinions, the experts were critical of the effects on deliberation and participation that could result from breaking existing filter bubbles.

Future second screen tools will need to explore how to balance creating a supportive online environment and fostering diverse political views. Both the experts and debate viewers agreed that networks containing politically polarising views can encourage abusive and derogatory language, which can in turn limit deliberation and engagement. The participants and experts felt that these unwanted effects can be addressed in a variety of ways, such as fostering more personal one-on-one communication by limiting the group size of discussion spaces. Another solution may be encouraging pseudonymity because full identity second screen tools may feel inaccessible for the general public due to fear of engaging with controversial topics (Taber and Whittaker, 2018). I propose that future second screen tools should encourage the sharing of partial personal information, as explored through the *Identity Equality* design, but that special care is taken for users to feel equal. As identified by Opportunity 4, promoting dialogue within groups would help the development of a community, which may raise engagement.

6.7.2. Facts and Validity of Content

The currently unfolding narrative around the impact of data mining, bots and fake news on elections and referendums emphasises the importance of leveraging factually accurate content online. For example, a recent study showed that fact checks rarely reach those who read fake news articles (Guess et al., 2018). Social media gives a platform for "troll" or "bot" accounts to attempt to influence elections internationally by posting divisive political

opinions (BBC News, 2017b). Furthermore, the use of data gathered about individual's opinions and identity, like in the case of Cambridge Analytica, may be used by campaigners to influence voting choices through targeted advertisements (Halpern, 2018). These problems with social media use raise serious concerns about the effects of encouraging more political engagement through second screen tools, where a variety of stakeholders attempt to gather data and influence the public's opinions.

This study indicates that when addressing issues around increasing the prominence of factual content online around debates, special care needs to be taken not to give moderating powers to groups who may find it hard to rate the validity of information, such as viewers and social media platforms. The viewers felt the power to moderate and fact-check should be given to the audience, but the experts found this problematic. They were particularly sceptical of up-and down voting of content used by *Viewers' Debate*, which they felt would not lead to a well curated fact-based stream of information. The experts felt that instead of looking for an elusive objective truth, debate viewers should be exposed to a wide range of diverse information. Despite these suggestions of how to create a more truthful information stream for viewers, E7 identified that the future directions for second screen tools would likely be influenced by new government legislations on social media networks. Future legislation may seek ways to limit the impact and exposure of debate viewers to targeted adverts, fake news, and troll and bot accounts.

Alternatively, we may increase the perceived validity of online content by promoting more in-depth, respectful discourse. By enabling the public to discuss rather than just comment alongside the debate, the content which is generated may not be perceived as noise. A way to improve the way debate viewers communicate with each other online may be to encourage more one-on-one communication and active listening between users, as was done in the work of Kriplean et al. (2012b). Active listening is facilitated by prompting responses, which summarise the previous point of the other user. One way that active listening could be implemented within the speculative designs may be

within the Viewer's Debate tool where users can be requested to create their own summaries of the sources added to the platform by other users.

6.7.3.   Alternatives to Fast-Paced Second Screen Experiences

The participants reflected that the real-time format of the debates meant that viewers experience a time pressure to write and interact with others online. This contributes to the kind of commentary that participants felt lacked *"substance"* and described as *"noise"*. Second screen tools can help viewers to either share their opinions more easily by enabling instant feedback or prolong the conversation beyond the broadcast.

The workshop participants imagined a simple agree/disagree feedback tool that would simplify the interaction. Work in this area includes the research of De Liddo et al. (2017), in which a variety of responses in the form of feedback cards allowed viewers to give nuanced feedback, or Feltwell et al. (2017b) who explored social tagging as a way to enable critical viewing. New technological developments in the home, such as IoT, could help further facilitate instant interactions with the debate content and provide an alternative to conventional screen-based applications. As I explored in the previous chapter, IoT products can successfully be utilised as second screen political discourse tools. While the Live Feedback tool attempted to illustrate the potential of IoT within this context, the experts felt that such a tool may have negative effects on the debate quality. Instead they proposed the tool may become more useful by measuring party allegiance throughout a debate rather than agreement with the speaker.

These real time interactions may be facilitating a reactionary and shallow response. Instead second screen tools could gather insights and opinions throughout the debate but encourage users to continue using the tool after it is finished. This idea is supported by a study around the politically charged reality program *Benefits Street*, in which it was observed that the content on Twitter in the hours after the program became less judgemental and empathetic (Brooker et al., 2015). While extending the use of a second screen

tool beyond the duration of a broadcast is unsuitable for most TV contexts, I feel that it may be beneficial for political debate discussions. A tool that gathers links, and opinions like the Viewer's Debate tool could help create a knowledge bank. E6, the interactive debate producer, especially favoured the Viewers' Debate concept because he felt that extending the discussion throughout the week may increase the public's ability to find information, deliberate, and may help form an online community.

6.7.4. Combining Stakeholder Perspectives

This research approach gathered multiple perspectives from both debate viewers and experts. Through the process of gaining the expert's feedback I was able to identify some of the limitations of collecting data from "the viewers". Although the experts agreed with the majority of the viewer's issues with political discourse, they also identified some of the negatives of the opportunities for second screen that the participants identified. Where the viewers wanted more fact-based discussion, the experts felt that "facts" were subjective; where the viewers wanted to full identity discussion spaces and to break away from their filter bubbles, the experts felt this may exclude the wider public. At the same time experts and the audience agreed on many of the issues and potential solutions for second screen debate tools, such as the problem of uncivil online behaviour, issues with anonymity and the limitations of conventional social media platforms for second screen purposes.

Reconciling those perspectives was made possible with the help of the speculative designs. They were able to highlight how the functional implementation of new second screen tools may impact the way the audience interacts with the debate and deliberate. The feedback I gained from the experts validated the majority of the opinions given to us by the workshop participants. Critically, the experts were able to pre-emptively identify weak or inconsistent points within the reasoning of participants, such as their search for an elusive political truth.

6.7.5. **Limitations**

No strong feedback on the topic of Relationships emerged, in part because the relationships between the network users was strongly dependant on the types of communication that would be fostered, and also in part due to the discussion of the topic at the end of the workshop by when participants had already discussed aspects of online relationships under all of the other discussion topics.

6.8. **Summary**

Second screen activity around political debates is vulnerable to an array of issues that undermine the audience's ability to deliberate and discuss. I have taken a bottom-up approach to research by involving both the debate audience and political and media experts. The 18 participants who watch debates identified seven key issues: lack of fact-based content, uncivil communication, filter bubbles, tensions between anonymity and identity, lack of diversity of medium and content, and social media platforms' monopoly over political discourse. These findings were communicated to experts through four speculative design concepts. The experts identified the most legitimate audience concerns and the most problematic ones. They were able to envision strategies that can improve future second screen tools, such as constructing safe and diverse networks, regulate online services, and finding alternatives to the current fast-paced online experiences. These findings critically explore the opportunities for second screens to support debate viewers. They benefit from a juxtaposition of multiple stakeholder perspectives, which highlight areas of similarities and differences between the perspectives of media and politics experts and those of debate viewers.

7.   Discussion

Technology is shifting the political landscape in ways that are both empowering and unpredictable. Online platforms, such as Facebook and Twitter, are now a vital part of the campaign toolkit. They are used by politicians to raise funds, advertise, organise events, and engage with the public during key moments, such as during political debates. Although technology has helped make political campaigns more accessible to the electorate, it has also created uncertainty about the way it influences and even manipulates public opinion. Thus, it is vital to explore the opportunities for digital tools to appropriately enable discourse and deliberation.

This thesis focused on the way the public uses second screens during televised debates. It was motivated by the belief that debates provide an invaluable opportunity for the public to engage in political discourse. The aim of this research was to understand how and why personal devices are currently used, and how emerging technologies could shape the future of second screens during televised political debates. The research adopted a design-led approach and used a triangulation of methods in order to explore this complex issue in depth. Speculative designs, research products, workshops, interviews, and at-home observations were used to gain insight into the debate viewing context and perspectives of viewers and experts.

Through the four studies presented in this thesis, the research makes two major contributions to the study of second screen use during televised debates. The first is an understanding of the range of second screen activity that takes place during a debate and the motivations that frame it. The second is an exploration of the design opportunities for second screen tools to engage debate viewers and address some of the issues with political discourse.

Below I discuss the research findings and their implications. I begin with how second screens are used currently, the ways in which they support debate viewers and the ways that they do not. I then recount how this research challenged their secondary screen-based nature. I further discuss in greater

detail what design directions for second screens were identified within this research and how they might affect the political discourse. I end by discussing the implications of this research in terms of social media platforms, broadcasters and politics.

7.1. Current Second Screen Practices

Chapter 4 examined the current second screen practices of viewers through two studies. The first thematically analysed tweets generated during the General Election Leaders' Debate in order to investigate the visible behaviours exhibited within. This work identified a small gap in the relevant research into the use of Twitter, which has looked at the sentiment of the posts (Wang et al., 2012, Wang et al., 2011), or has organised the content in pre-determined themes (Wohn and Na, 2011), but has not thematically analysed what behaviours are present. Results demonstrated that debate viewers use Twitter in order to interact with others, post relevant factual information, and for four different types of commentating: sharing experiences, evaluations, humour, and provocations. While the analysis of Twitter may illustrate the behaviours that the social network currently supports, it does not account for less visible activity, such as searching for information.

The second study examined the ways in which current tools support debate viewers and how they do not. Where past research into second screen use around televised debates have been limited to the analysis of Twitter (Anstead and O'Loughlin, 2014, Anstead and O'Loughlin, 2011, Trilling, 2014, Wohn and Na, 2011), I aimed to investigate what motivates viewers to use their devices, what social media platforms and digital tools they choose, and in what ways do they use them. I used home observations where I could capture both behaviours that resulted in visible online activity, such as posting a comment on Facebook, and those that did not, such as searching for information. This allowed me to investigate the real-life context of debate viewing. The study revealed that posting opinions and content is a small fraction of the activity that takes place in the home.

The research revealed that debate viewers are motivated to use second screens for a variety of different reasons, including to gauge the opinions of others, enrich the experience of watching a debate and to share their own opinions. The current use of second screens in a debate context can also be a challenging experience. The participants discussed how they had to split their attention between the information intensive debate and the even more abundant online content. Within section 4.4.3.3. the participants discussed some of the barriers to participation they experienced. Their Facebook accounts were connected with their friends and family, which had the effect of discouraging some of them from posting their opinions knowing that they may be perceived negatively. Furthermore, they did not want to flood others' timeline. Twitter posed a different set of challenges, such as the perception that *"it can go badly"* (P1) if you post controversial views or get into an argument with strangers. Regardless of the social platform they did not wish to engage in discussions with negative and aggressive language. The participants in the observation study reported that the perceived online audience, effort to write, and the possible repercussions of posting, all led to their disengagement and unwillingness to share their thoughts with others online. These barriers stifled their participation. Instead many of the participants, especially those who did not see themselves as very politically engaged, expressed a preference for passively observing the online activity surrounding the debates and engaging in conversation with others in the living room rather than online.

Being exposed to both the debate and viewer generated opinions gave viewers an opportunity to learn, reflect and reaffirm their opinions. The participants reported that the content they found as being most valuable online usually had to be humorous, have integrity and be relevant to the discussion topics discussed within the debate. Online content could create discussions within the living room and stimulated a more engaging debate experience. Having access to online platforms was also empowering for those who chose to voice their opinions. As reported by the participants in section 4.4, utilising social media around debates can empower political activism, inform them about aspects of the election they are interested in, entertain them, help them reflect, reaffirm their opinions, and give them a platform to share their own views.

The analysis of Twitter revealed a wide range of contextually and informationally rich content, which was useful to the participants within the observation study as a means to gauge the reaction of others to the debate. The range of behaviours visible within the tweets reveal that debate viewers who use Twitter can be exposed to a wide range of political opinions that may be absent from their social circles. Furthermore, the behaviours exhibited within the Twitter posts, such as sharing evaluations and experiences (section 4.3.3.1.), reveal that Twitter could help viewers feel part of a community and give them a platform for self-expression.

These two studies illustrate the ways that current tools both support and hinder engagement around political debates. Twitter had a strong role within the home observations, in part due to its live event appeal. Although Twitter is just one social media platform among many, its content is open to the public and broadcasters commonly encourage viewers to join in on the online discussion through the use of a debate specific hashtag. The analysis of Twitter content generated alongside a UK General election debate revealed a variety of behaviours. Although, some of them like the evaluations, and humour may be boosting viewer engagement, others like provoking may be deterring users. Here the utopian vision of technology as a tool for political engagement and empowerment clashes with its use as a means for provoking and mocking. Social media platforms for political engagement would benefit from exploring the relationship between observed behaviour and user engagement in order to understand how to increase engagement.

7.2.   Challenging the Notion of the Second Screen

Within the observation study the second screen was at times central to the debate experience. The discussions that happened on screen guided the participants through a range of online activities, from seeing what the public thinks about a key election issue, to posting a jokey comment about the behaviour of one of the politicians, to discussing a tweet made by a celebrity. The second screen activities that emerged during the broadcast were framed by the debate but were at times primary.

One of the things that became evident throughout the exploration of current second screen practices was that viewers have a variety of different reasons to pick up their personal devices. The highly attention demanding activity was motivated by the wish to verify information, gauge the opinions of others, to commentate along or even engage in an online conversation. The research projects within this thesis illustrated that the 'second screen' often took on a more primary role than the debate itself. Political debates can be seen as boring and repeating the party rhetoric, but the second screen bridged the viewers to each other, allowing them to engage in an array of activities, which they found empowering.

Although I have embraced the phrase 'second screens' within this thesis, I challenge the inherent assumption about the type of devices we should use alongside television and which content is at the forefront of the attention of the viewer. This prominence of the value of the secondary device was also observed in the work of Kusumoto et al. (2014) and Holz et al. (2015) where they discovered that the second screen may become primary *"when the TV program is not appealing"*. With the aid of their personal devices the participants in section 4.4 took on a variety of roles including fact-checkers, content contributors, activists and spectators. These activities sparked discussion within the living room.

These findings echo the work of Geerts et al. (2014) who discovered that viewers value social interaction while watching TV and often talk with those in the living room. This research reveals that we need to find ways to distinguish between foreground and background content rather than assuming the dominance of any one device. By challenging these preconceived notions, we can further explore new ways to create complementary content or social interactions around televised debates. These may have significant benefits for debate viewers who choose to use their personal devices, such as fostering positive engagement, learning, understanding opposing views, and giving viewers a platform for self-expression. Furthermore, as technology develops and we adopt new specialised internet connected devices, other modes of

interaction, such as voice commands, may facilitate faster and less taxing engagement around the debates.

7.3.   Design Directions for Future Political Second Screens

My work investigated how the development of new tools can help make second screens more engaging, useful, and safe. As explored in section 4.4, second screens can engage viewers further with the broadcast by giving them a platform for self-expression and empowerment. The Social Printers presented in section 5 illustrated how in small social groups with the aid of pseudonymity, IoT products provide alternative, novel, and intimate ways for viewers to share their experiences with each other and form social bonds. My work with debate viewers and experts in section 6 revealed many opportunities for new tools that tackle some of the greater issues with online political discourse, such as abusive behaviour, the formation of echo-chambers, and tensions between anonymity and identity online.

Looking towards the future there are multiple design directions and considerations, which may influence the development of new tools. I have developed the design directions discussed below by considering the opportunities identified by debate viewers and experts in section 6, the lessons I learned by exploring the potential of IoT technology in section 5, and the needs that were not currently being met by existing digital tools as reported by the participants in section 4.4.

Although I see several directions for the future development of tools, which have the potential to alleviate some of the prominent current issues and support deliberation and discourse, there are wide-ranging implications of developing online political discourse tools, which are difficult to foresee and understand. Political discourse tools are subject to several ethical considerations. Do political online spaces make people susceptible to manipulation? Is changing the voting choices of people a sign of enabling more informed formation of opinions or a form of manipulation, as has been implied

within the Cambridge Analytica scandal? Do political discussions spaces ultimately lead to enabling the formation of populist views? These considerations are vital to establishing healthy political discourse practices. The below presented design directions illustrate some of the ways that second screen tools can be more engaging, empowering, and safe.

7.3.1. Validating Content

The debate viewers, from the study presented in Chapter 6, expressed concerns around the quality of information distributed in debates and through the digital tools around them. The opinions expressed by others online were described as *"noise"* and to lack political focus. Furthermore, concerns around the emergence of fake news within online discussion spaces revealed that even very politically engaged members of the public do not differentiate between news stories that are factually incorrect and satirical news sources like The Onion. These findings are further confirmed by research into fake news, where people were asked to identify fake news articles from a Facebook feed (Flintham et al., 2018). The findings indicate that social media users rely on personal judgement, such as perceptions about the trustworthiness of the news source, to decide if articles they are seeing are true or not (Flintham et al., 2018). Furthermore, search engines provide biased search results, which may also affect the user's perception of the trustworthiness of the sources they find (Kulshrestha et al., 2017). As the experts within the final study identified, these reported concerns around facts and fake news raise questions about the extent to which fake news is a problem, and if the public differentiates between biased and false information.

Claiming that politicians do not present factually accurate information when given a media platform is problematic. Political debates often expose the public to speculations about the future impact of their proposed political agenda. As E2, who is a politician, identified that politicians often propose their hypothesis about the future during elections and referendums. He felt that although politicians can draw allusions to other places, it is ultimately an educated speculation. Instead of searching for an elusive truth, debate viewers

need to be presented with a wide range of information that would help them make an informed decision about their vote.

As it was seen in the final study, section 6.4.3.1, the way politicians present information within televised political debates can be confusing for viewers who may feel that they are getting conflicting information. This perception is supported by existing research into the way politicians use misleading rhetoric when speaking (Jackson and Jamieson, 2004). Jackson and Jamieson (2004) discovered that although politicians say information that is literally truthful, they do not adopt coherent definitions of terms, do not clarify underlying assumptions, equate average with typical, and omit key details that frame and give context to the information. In light of these strategies when framing information, it is not surprising that debate viewers felt that debates need to present more factually accurate information. This may mean that rather than needing more facts viewers need greater detail about the context and meaning of the rhetoric used by politicians on screen. A key opportunity identified within this work would be to give politicians a platform to give evidence to support their claims. The time-constrained debate requires clear and concise reasoning, which can lack the information depth that can be provided through links to documents, manifestos, and news articles. Giving viewers such supporting material through a companion application can aid their deliberation and understanding of the key issues discussed on screen.

In addition to improving the value of the debate discussion, online content can also be validated. There are several opportunities to frame content in way which would help viewers make informed conclusions about its truthfulness. These include providing fact-checks alongside the content and providing information about the bias of the publisher. Fact-checking content is already being pursued by social media: in order to facilitate the better spread of factchecks, Facebook has an initiative to automatically add fact-checks to sources (Vargo et al., 2018). While this may seem like a straightforward solution, convincing the public of the validity of the fact-checks may be difficult. Past research indicates that in order to increase the trustworthiness of a fact-checking tool, there needs to be full transparency about the process,

funding and function of the tool (Brandtzaeg and Folstad, 2017). Another way to help the public assess the validity of information is to identify the biases of the news provider. As outlined in the work of Kulshrestha et al. (2017), which looks into the bias of search results, there is an opportunity to inform users of the bias contained within the sources that they see. This may help the public make a more informed judgement of the value and diversity of information they are exposed to.

7.3.2.   Break the Formation of Echo Chambers

There is an intricate moral dilemma lurking beneath the premise and assumptions of this thesis. Based on the overall agreement within this research field I have worked on the basis that echo chambers and filter bubbles have a primarily negative effect on democracy and political discourse. They limit our exposure to diverse information and bias and leave us uninformed about the politics of others. But is it right to purposefully deter people from supportive and friendly deliberation environments? E7 highlighted the work of Mutz (2013) who points out that having extremely diverse deliberation environments decrease both participation and our ability to deliberate. This may lead to networks and platforms to be dominated by political elites and to feel inaccessible to the general public. Furthermore, research suggests that due to normative conformation effects people can be swayed into agreeing and going along with the opinions of the majority. Although it may seem beneficial in certain cases, as when a single individual's views are extremely politically radical, it may also have significant negative repercussions if the opinions of the masses are extreme in themselves. With thousands of troll and bot accounts attempting to sway elections internationally, it is worth considering how exactly we make social media platforms diverse, how we encourage social interaction and who are those taking part. How do we make sure that we are not making tools that would inadvertently manipulate, mislead and misinform the public?

Echo chambers form within both Twitter and Facebook because these networks encourage their users to follow or befriend people they already know

or like. These tools are not designed for political discourse and the formation of likeminded discussion groups is not an issue in most other circumstances. Furthermore, as identified by E7 in the last study, people naturally seek supportive environments, which in turn foster deliberation (Mutz, 2013, Wojcieszak and Mutz, 2009). Although there is evidence to suggest that debate viewers may feel uncomfortable in very politically diverse environments, within the context of elections and referendums understanding the different political ideologies and different sides of political arguments is crucial. Debates aim to inform the public of this diversity in opinions. Furthermore, as indicated by Kelly (2009), people may be slightly less likely to open articles that oppose their views but when they do they spend more time reading them and being critical.

Future second screen interfaces for political debates will need to strike a balance between diversity and conformity of opinion. Viewers may benefit from a more scaffolded experience, designed to guide participation in ways that are simple and effective, building confidence and reducing barriers. One way to achieve this might be to offer more structured avenues for contributing content, as having complete freedom can often cause anxiety. Structuring the format of posts may have additional benefits that ease producing content, such as shortening content generation time and supporting the process of reflection.

Another design opportunity for breaking the formation of filter bubbles may be to limit discussions to very small groups. As we saw in the last study (sections 6.5.3 and 6.6.4) there is an opportunity to help debate viewers talk to people with different political ideology from themselves by helping them engage in one on one conversation. The Political Date App concept also encouraged the highlighting of commonalities as well as differences. Helping debate viewers establish a common ground with each other despite differences in political ideology has also been suggested as a potential way to bridge uses on traditional social media platforms when discussing politics (Grevet et al., 2014).

7.3.3.   Connecting the Audience with the Debate

Currently there is a limited scope for the audience to engage with televised debates directly. Programs like BBC's *Question Time* encourage viewers to commentate along using a dedicated hashtag, but this discussion does not feed into the program itself. Many of the participants that took part in the studies did not wish to post their opinions online (section 4.4.3.3). Posting opinions could be intimidating, reach an unwanted audience, provoke others, and take a lot of effort. Instead, as discussed in section 6.4.1, there may be other ways to engage the public that make it easier to share opinions.

Connecting the audience with the debate in a meaningful way can benefit the viewers, broadcasters and politicians. One way to draw this connection may be to allow politicians to gather supporting information, which could be used to complement the broadcast at key times of the debate. Although this opportunity was not explored within the speculative designs, it was identified by the debate viewers is section 6.4.1. Supportive material can be delivered to viewers through a dedicated second screen application, the broadcaster's website, or even interactive services (such as the BBC's Red Button). Giving politicians an opportunity to gather and distribute such supportive material would reinforce their points within the time-constraint debate.

Another opportunity to connect the debate with the viewers may be to enable the collection of live feedback. One of the speculative designs is section 6.5.4 illustrated what this may look like. The Live Feedback Tool used a voice assistant to detect approval or disproval in the viewer's vocal reactions to the debate and visualised the collective reaction of the audience by overlaying it on the screen. A benefit of utilising voice would be that it does not require visual attention. Although the design was not liked by the experts, they felt that some iteration of this idea would soon come into existence. Issues that they saw included that it may influence the politicians, who may feel they need to say content that the audience like, and that it could influence other viewers.

Finally, although currently televised debates like *Question Time* allow audience members to participate by asking questions, the online audience could also be

involved within this process. Currently audience questions are pre-selected. They are then given the opportunity to ask them on air, and potentially ask follow up questions. Viewers at home may take part in this process in a very structured manner, for example by allowing viewers to vote on which questions they would like to be asked. In contrast to the Live Feedback Tool this opportunity for direct feedback may be less detrimental for the deliberation of other viewers.

7.3.4. Fostering Civil Interactions

Finding ways to combat trolling and derogatory language will be a crucial challenge for future tools. As reported by participants throughout all of my studies, viewers do not want to interact with others who use provocative language. This was especially salient within the home observations, where some of the participants felt that sharing their opinions on social media could mean they get a negative reaction. Within the study fears of an unwanted reaction were not limited to strangers but also included friends and family, who may not have the same political opinions as the participant. When designing for such an emotionally charged context, where people are exposed to opinions and information that may be in conflict with their beliefs, creating safe and civil discussion spaces may be achieved in several ways, including by establishing a code of conduct and fostering more personal communication.

Within the Social Printer's study, which facilitated social interactions around televised debates between participants, no uncivil behaviour was observed. Contrary to expectation, pseudonimity did not help participants feel a lack of repercussions when interacting with others. Several reasons contributed to the sense of accountability that they experienced. The situated nature of the device made them feel as if they shared a space, they felt "stuck" with the other participants, some of them experienced a sense of community with each other, and the group size was small. Although there are many factors that influenced the overly civil interactions that were observed within the Social Printers study, all these factors may positively facilitate civil interactions in other contexts as well.

Another opportunity would be to create a tool that uses a code of conduct as described in section 6.4.3. The debate viewers felt that abusive and derogatory language has no place within online political discourse and that online platforms should actively moderate the conversation in order to limit hate-speech. Another opportunity they identified was that users should be encouraged to explain what they believe and why in order to help others understand their point of view.

7.3.5. Enabling Self-Expression

Through a large scale survey, which looked at secondary content practices of viewers, Bentley (2017) discovered that people are reluctant to post online even when it is about their favourite shows, instead he proposed that one-on-one communication may help them overcome their reluctance. Although the study looked at second screens use in the context of TV series, in section 4.4 I also observed a reluctance to contribute online. Political debates are divisive and contentious, which can make communicating with others seem intimidating. Furthermore, even within when people post of Twitter alongside debates the presence of an @ sign does not indicate discussion and conversation (Mascaro and Goggins, 2015). Discourse around political debates is difficult for several reasons. The first is that the second screen experiences are very fast paced. As we saw in Chapter 5, even when people talk within very small networks they can struggle to keep up with the pace. Another reason is that the debate content can be very controversial and as discussed in 4.4.4.1, participants did not want to receive a negative reaction online or say something that may have negative repercussions for them.

During the Social Printers study at least one person in each household took ownership of both the object and interacting with others. Although some of the participants may have felt compelled to interact with the others because they were taking part in a study, none of them reported feeling intimidated or that they observed provocative language within the prints. Instead they were able to commentate and chat alongside the debate and as the study progressed formed relationships with each other. This indicates that social media

platforms can be formed in ways that encourage debate viewers to engage in conversation. As discussed in Chapter 6, the small group size, the situated nature of the object and the veil of pseudonimity aided the use of the printers as platforms for discussion.

I suggest several opportunities for encouraging debate viewers to engage with others, these include facilitating personal communication, making the communication feel more ephemeral, fostering digital storytelling, or by separating viewers from their pre-existing online social group. While social media users are reluctant to post controversial opinions on Facebook because they view their audience as judgemental, other more ephemeral forms of creating content, like Snapchat, where the content disappears after it is seen, can help users feel more extroverted and stimulate content creation (Taber and Whittaker, 2018). A way to help debate viewers feel that they would not be judged, or that they will not experience repercussions for posting controversial opinions may be to adopt an approach to treating content similar to Snapchat, where content and conversations are deleted in the hours after the broadcast. Another way to limit perceptions around negative repercussions may be to separate the network of users the participant interacts with day to day from those they interact with during a debate. Finally, Michie et al. (2018) discovered that digital storytelling can be used to engage the public with very politically polarising issues, such as abortion rights in Ireland, both expanding the pro-choice community and stimulating engagement. By encouraging viewers to share stories, they may feel the interactions they have with others are more personal and approachable. A point of concern within this drive to encourage more active participation would be that by encouraging this type of engagement viewers may become more susceptible to changing their opinions because the act of posting and reading content online can change the opinions of the writer and well at the reader of that content (Pingree, 2007).

7.3.6. Designing for a Time Constrained Context

The participants throughout my home observation and Social Printers studies expressed how difficult it is to divide their attention between the debate and

the second screen or printer. Not only are the debates rich in information, but the accompanying social media feed or print roll may also be seen as interesting and engaging. This meant that the participants using the Social Printers had to be very focused throughout the debate. Within the observation study in Chapter 4, the participants reported that they struggled to write commentary alongside the debate. In part, this happened because they felt that the content they post had to be relevant to the topics of the debate as they were being discussed, and have integrity which often meant that their opinions had to be researched. Writing content that was both timely and had integrity was difficult to achieve in the time constrained context of the broadcast. Although the character limitations of Twitter made reading content generated by others quicker, this is easily offset by the sheer volume of Tweets generated throughout the duration of the program. Furthermore, writing tweets within the character limit imposed by the platform made participants agonise over draft tweets, which were at times illegible. Overall neither the tools the participants used in the home observations, nor the Social Printers were seen as easy to use in the fast-paced debate. This was addressed within the workshops with debate viewers, who felt there should be alternatives to the current second screen interactions utilised by the public. One way to enable social interaction with others may be by allowing viewers to give quick feedback about their opinions and feeling throughout the debate, much like the Live Feedback Tool. This could be done through a simple screen-based app or with the help of IoT and voice commands. While the simplicity of the feedback means that the interactions can be creative and diverse, giving viewers the ability to provide just negative or positive responses may be an oversimplification of their experience.

Another way to design content for viewers in a way that would require less visual attention than reading through a long list of opinions and comments may be to aggregate this information in a visual way. This might be achieved using the contextual data gathered by networks about their users, such as location and age. This data could be used to help users gauge the opinion of the public in a more realistic manner, for example by allowing them to see how opinion varies around the country. As a participant mentioned (Chapter

4), it was very valuable to see the approval from people from other parts of the country for a particular candidate, which verified his belief that the candidate had performed well. Further research is needed to examine the most appropriate ways to gather and visualise data generated by debate viewers. Finally, Bentley (2017) discovered that TV viewers often engage with secondary content before the start and after the end of a program. One way to help viewers engage with each other around political debates without creating a very intensive, stressful experience may be to encourage engagement in the hours before and after the event.

7.3.7. Enabling Equality

Throughout this research the inequality between the value of content created by different viewers was repeatedly highlighted. In *The Myth of the Digital Democracy,* Hindman (2009) discusses how technology provides a platform for everyone to express their opinions, but it is difficult for those opinions to reach a wide audience. Instead, political discourse online is dominated by a series of political experts and journalists (Ausserhofer and Maireder, 2012, Hindman, 2009, Kreiss, 2014). The content generated by these small groups of individuals is seen and discussed by more people due to their pre-existing network and status (Ausserhofer and Maireder, 2012, Kreiss, 2014). It is interesting to note that the participants throughout all of the studies did not flag that as a concern that they account for in their personal online participation activity. Some participants, such as E4 in section 6.6.3, identified that on Twitter content can get lost in the crowd. Instead of finding this problematic, a participant reflected in section 4.4.3.3 that different patterns of use emerged around the different social media platforms. That participant used Facebook to reach and interact with their friends, whereas he used Twitter to gauge the opinions of the public. In addition to this difference is online influence, inequality is also created by the use of anonymity. As discussed by a participants in section 6.4.2, Issue 3, anonymity can empower individuals on the internet to harass others.

Future second screen tools should explore strategies that enable the perception of equality between accounts. As discussed in section 6.5.4, one potential solution may be to only allow interactions between accounts who are prepared to reveal the same amount of information about themselves. A design that leverages equality may help viewers express themselves without fearing trolling and may increase the credibility of views expressed by ordinary citizens. As E2 discussed, this may also create communities of very moderate and politically engaged individuals where discussions become dry.

Another possible solution to leveraging equality may be to encourage one-on-one communication, as presented in the Political Date App design concept. This design direction would limit the range of views that the public interact with but may help people communicate on a personal and equal level, which could increase user's ability to empathise with each other's views. Furthermore, discussing the debate with one person at a time, would be less time-demanding and complement the fast-paced nature of the debate.

7.3.8.   Utilising Emerging Technologies

As IoT technology becomes prevalent, it would likely be utilised for second screen type engagement around broadcasts. The current dominance of screen-based social media interactions around debates, may create a barrier to online participation for many viewers, who experience concerns posting online. Furthermore, posting opinions is time-consuming and difficult. The future of second screen interactions might not involve screens at all, but rather collect opinions and data through IoT sensors. Reducing the visual attention of the debate viewer would be a vital component of bettering such tools for communication.

Although I see many benefits to the development of physical engagement tools like the Social Printers, this work has also highlighted considerations for future designs solutions. The most important of which is to keep the activity at manageable levels within the dynamic and fast-paced nature of a political debate. Although it seems beneficial to have a large social network, in practice

I observed that even with only five households the amount of activity taking place on the printers was overwhelming for some of the participants. Alternatively, future designs may find more appropriate data outputs than the thin paper rolls that I used. Finally, it is vital to consider to what extent will a physical solution be intrusive in the home environment, as the noise disrupted the Red household. Despite the shortcomings of the Social Printers I argue that they were intrinsically more interesting to interact with than a conventional social network.

7.3.9. Designing for Less Politically Engaged Viewers

It is evident throughout the home observation study that the more politically engaged a participant self-reported to be the more likely they were to actively engage in social media use around the debates. The politically active participants reported that posting content gave them the opportunity to commentate along, gave them an ego-boost, and could benefit their career. Their pro-active forms of engagement contrasted those of the participants who self-reported to have low of average political engagement level. They were more likely to just use their personal devices to seek information and gauge the public's opinions. They also found second screens helped to lighten up the emotionally charged debate through humour-often seeking out memes and jokes that complemented the debate. Humour was also seen as a beneficial tool for expressing political ideas in a way that would make them less antagonistic for others. Humour also had a prominent role within the Tweets that were thematically analysed in section 4.3. Previous research has also identified that sarcasm, satire and irony are used in political debate commentary (Trilling, 2014). Debate viewers use humour for meaningful political engagement (Davis et al., 2018). It can "express opposition, establish political subjectivity, and engage in direct and symbolic civic support" (Davis et al., 2018). This may indicate that humour can be used as a tool to involve less politically engaged viewers in political discourse.

In addition to fostering humour as part of political engagement, the study in Chapter 6, outlined that scaffolding interactions, and creating supportive

deliberation environments may also help engage a wider segment of viewers. The politics and media experts identified that some speculative designs, such as the Viewers' Debate tool and the Identity Equality tool, presented in sections 6.5.2 and 6.5.4, may create a sort of gated community that feels inaccessible to the general public. Instead as a participant within the workshops reflected, an online political engagement tool should not require a certain threshold of knowledge in order to participate, because that may cut out a segment of the population that has traditionally been voiceless within politics. The expert feedback suggested that creating very supportive deliberation environments, and scaffolding the way viewers contribute to online discourse tools, may help make digital tools feel more accessible. The Live Feedback Tool, which scaffolds participation through simple verbal feedback may be seen as inclusive by the wider public. Despite this, the experts felt that the tool may have adverse effects on the politicians that take part in the debate. Meanwhile, creating supportive deliberation environments may be difficult due to the possibility of creating very homogenous echo-chambers. A challenge remains to identify the most appropriate ways to do this, but it may be beneficial to explore how the diversity of views within a group and its size affect the comfort levels of viewers who do not see themselves as politically engaged.

7.4.   Implications of Research Findings

Designers, developers, governments, and broadcasters will all play a role in the shaping of future second screen tools. Below I discuss several wide-reaching implications of the research in relation to these stakeholders.

7.4.1.   Implications for Online Platforms

If online platforms were to explore the development of second screen tools for political debates, they would need to be acutely aware of the way they affect their users. Balancing anonymity and identity, homogeneity and diversity, and small and large group size could all have a significant impact on the quality of

discourse. Within my Social Printers study, I found similarities between the physical social network created by the Social Printers and conventional platforms like Facebook and Twitter. The printers were able to create a community, the feeling of a shared experience, and helped reaffirm the views of some of the participants in a similar way users adopt Twitter during TV dramas (Schirra et al., 2014). A dedicated outlet for political discourse around election periods may have numerous benefits, such as the establishment of a strong community, in-depth discussions and a more informed electorate. For example one participant reflected that Facebook users do not typically post while watching TV, whereas Twitter does not allow for in-depth discourse. The printer was able to fill in a potential gap in the digital platforms available to her. These insights into how anonymity and playful behaviour in the establishment of a community would affect engagement could be used in the design of political discourse tools.

While the studies presented in this thesis highlight many opportunities for online platforms to develop engaging debate tools, there are also concerns that they need to address. As seen by the study I present in Chapter 6, viewers may not have a well-developed understanding of what constitutes factual content. The audience has not adopted a journalistic definition of what fake news means and instead tends to believe that news is fake when it does not align with their beliefs (Nielsen and Graves, 2017). This lack of agreement about notions of truth was clearly seen within this research. The participants also expressed a desire for more facts, which would accompany the debates, but the experts expressed concerns about what it means to decide what content is reliable and what is not. Pre-existing social media platforms and tools that cater to debate viewers are responsible for the way they present information to their users.

The future of political engagement online more broadly would depend on the continuous self-monitoring of tech companies and their transparency on the ways their tools are being used. Previous research has already established the strong need for technology firms like Facebook, Google and Twitter to tackle issues like echo-chambers, filter bubbles, and fake news (Spohr, 2017). New

worrying trends like bot/troll accounts, data mining, and targeted advertisements are yet to be fully researched, but tech giants like Facebook and Google have disclosed data, which reveals that political advertisements are targeting specific groups of people with tailored political messages in order to influence their voting decisions (Wong, 2018). These technology firms have expressed their willingness to collaborate with governments and to help alleviate the growing influence of malicious actors within democratic processes. An example is Google's decision to stop any targeted advertisements during the Irish Abortion Referendum campaign, which ran during May of 2018 (Waterson, 2018). This is important, since social media platforms and search engines would likely continue to be used by the public around elections and televised debate to search for information and socialise. As David Runciman (2014) argues, although governments may feel an incentive to champion technology, they cannot gather enough resources to develop digital tools on their own. Governments need large social media platforms to research, develop and host tools that would enable political discourse. In return the social media platforms need governments to provide the necessary infrastructure needed for the adoption of this technology, for example they need favourable social climate where people can afford their tools (Runciman, 2014). This may result in the necessity for a strong future partnership between tech companies and governments.

7.4.2. Implications for Broadcasters

Broadcasters can also help their viewers connect to the debate and each other. In the final study, which examined viewer and expert perspectives on the potential directions for second screen tools, both the experts and viewers felt that broadcasters should explore opportunities within second screens. Viewers currently utilise pre-existing digital tools, which are not designed specifically for this context and which exhibit a worrying susceptibility to data mining and external influence (BBC News, 2017b, Halpern, 2018). One of the greatest worries around encouraging broadcasters to explore ways to facilitate political interaction around debates is their potential bias and the effect it may have on

the viewers. If broadcasters create second screen tools for their debate viewers it would be their responsibility to remain neutral.

Despite concerns, broadcasters have an advantage when it comes to creating tools for viewers because they can tailor the viewer's experience specifically to their debate programs. Broadcasters have already ventured into the second screen market with an array of event specific and series specific applications (Ansaldo, 2016, Ansaldo, 2017), which has not been reflected within real-time debates. Within the final study the British debate program's interactive producer felt that there is room to incorporate a tool for the viewers into their website. The debate show has already utilised an array of interactive tools, including the Red Button, where if viewers press the red button on their remote control they can see a selection of incoming texts. Although, this service is moderated by the broadcaster it does not provide the same interactivity as online tools and attracts viewers over the age of 50 (E6). As the debate producer reflected, political debates thrive on human interaction, and while broadcasters currently encourage viewers to join in on Twitter, they lose an opportunity to create a safe discussion space on their own websites. Creating second screen tools for debate viewers would be a difficult task for broadcasters, but it could receive backing and support from government who may seek to regulate online political discussion spaces.

7.4.3. Implications for Politics

The research I present within this thesis has several implications for politicians, these include that they should embrace political debates and the social activity surrounding them because it helps them seem transparent and approachable, they should aim to give viewers supplementary material to back up their points from the debate, and that they should seek to regulate how social tools enable communication and distribute information around debates.

Despite worries that political debates overemphasise the role of party leaders and the importance of smaller parties, they would continue to be used in the United Kingdom (Gardam et al., 2011, Walker, 2015). Debates are an

accessible way to inform and engage citizens. They play a vital role in the public's understanding of key issues and the formation of their political opinions (McKinney and Warner, 2013). While the information delivered by politicians during debates can be thoroughly researched, practiced, and framed in a favourable way, the online discourse surrounding them can be unstructured, provocative, and contradict the discussion on screen. This highlights the importance of recognising the issues with second screen use during political debates. Understanding how technology affects viewers can empower politicians to make educated decisions about appropriate ways to engage with them.

This can in turn have several positive effects for politicians. The public views politicians who use social media to express personal opinions as more authentic, and this perception of authenticity can in turn foster more trust and be a decisive factor in voting preference (Enli and Rosenberg, 2018). As discussed by participants in section 4.4.3.2, politicians can foster these positive perceptions if they engage with the public through social media. Furthermore, the participants in section 6.4.1 identified, that there is an opportunity to provide viewers with complementary information that would support the debate. This was seen as necessary because televised debates were seen to repeat the party rhetoric without informing the public of its justifications and meaning. Politicians may want to provide supporting material to their claims and speculations about the impact of their future policies. This can in turn help them appear more transparent and approachable to the public.

While embracing social tools could have a positive effect on the way politicians are perceived they may also have negative effects on democracy. Second screens affect viewer's ability to form opinions. The majority of the participants who took part in the home-observation study, section 4.4.3.1, reported that they used social media to gauge the opinions of others, which largely affirmed their pre-existing beliefs. Nonetheless, some of the participants, such as P7, identified that social media posts affected the way they perceived the performances of the party leaders. These effects have also been observed by Maruyama et al. (2014, 2017), who discovered that viewers

conform to the opinions of others when they actively post online. In line with this work, the politics and media experts in section 6.6.3 felt that the Live Feedback Tool concept could have a detrimental effect on viewer's ability to deliberate. The on-screen visualisation is similar to that of the Worm, which, as Davis et al. (2011) discovered, impacts viewer's perceptions of the performance of politicians and impedes them from developing opinions of their own. These conformational trends make it difficult to assess the value of encouraging viewers to actively engage online during debates.

Although we have observed the predominant issues with political discourse online, this activity has emerged in an extremely unregulated social space. Recent events, such as Cambridge Analytica, have demonstrated the increasing importance technology plays throughout elections and the ways it can negatively influence democratic processes. This is especially concerning in light of research that demonstrates that propaganda and media control can effectively steer populations into embracing radical ideologies (Palonen, 2009). Governments across the globe should seek out ways to regulate technology companies in order to preserve the integrity of campaigns. The past three years have brought to light the power of social media to collect data and influence voters. Although, governments find it difficult to keep up with the fast development of technology (Wadhwa, 2014), they should aim to continuously evolve their data protection policies, such as the General Data Protection Regulation (GDPR) in the European Union (Tankard, 2016), in order to protect their citizens. Although governments can aim to regulate online discussion spaces, they would likely continue to rely on pre-existing social media platforms and broadcasters to host and facilitate online engagement.

7.4.4. Implications for Citizens

The studies presented in this thesis have been conducted using design research methods in order to explore current effects of technology and new directions for the development of engagement tools alongside televised debates. Past research views online political engagement as a sign of *everyday socio-political talk*

and a *talking electorate* (Brooker et al., 2015, Halpern and Gibbs, 2013). This engagement has been seen to influence the emergence of activist movements and grassroots campaigning (Dommett and Temple, 2018, Gibson, 2013, Lotan et al., 2011, Parker, 2014). The research presented within this thesis has also had a primarily positive view of online engagement around debates and has been motivated by the belief that it contributes to society. Meanwhile there is still room to generate critical implications for debate viewers. These implications refer to the choice of tools they use and the way that they use them. Below I outline some of the considerations that viewers may have when picking up their second screen, but it is important to highlight that there are no definitive best practices that have been generated throughout this research, instead I present the range of factors that have influenced the thinking and experiences of debate viewers and experts from across the studies.

As discussed within chapter four debate viewers use online tools in order to gauge the views of others, enrich the debate, or share their own opinion. These varying intents should impact the choice of pre-existing tools that viewers use in order to foster experiences that suit their needs. The participants in the home observation study indicate that a key reason to use second screens is to gauge the opinions of others. Viewers should consider if they are interested in select individuals, relatives, or the public as a whole. Participants felt that Facebook is suitable to access the views of friends, while Twitter could be used to see the views of politicians, journalists, celebrities, and strangers.

When using second screens to enrich the experience of watching the debate, viewers reported utilising a much more varied set of tools. Whether using Wikipedia to find a specific answer, or scrolling through a satirical Twitter account, all activities surrounding political debates are valuable. Meanwhile discussions generated around the study presented in chapter six indicate that the quality and truthfulness of content online are key considerations. Suggestions generated by the experts indicate that viewers would benefit from seeking out a variety of content within news with a variety of bias, rather than searching for purely factual content.

Finally, when posting opinions online viewers would benefit from considering the audience they would like to reach, what they would risk by posting an opinion, how difficult or easy it would be to post and engage in discussion on a particular platform, and the normative rules that they perceive as being commonly adopted on a platform. Issues around uncivil communication are more difficult to address, both the debates and the conversations around them can be extremely emotionally charged, this means that the language used by viewers can be at times harsh and disrespectful. The issue of negative and derogatory language and trolling has no straightforward solution. While social networking platforms are working hard on enforcing fact-checkers and moderation practices, on an individual level political discourse with strangers can have serious negative consequences. In response to that the participants who took part in the studies had adopted a range of practices, from using humour when expressing themselves, to withdrawing from online discussions altogether.

8. Conclusion

This thesis has explored how second screens allow debate viewers to gauge the opinions of the public, share their own opinions, and enrich the experience of watching the broadcast. Rather than taking on a strictly secondary role, they were at times central to the experience. The debate acted as a metronome for the activity, guiding viewers through discussion topics and prompting interactions with their digital devices and each other. These findings challenged the underlying assumptions within the phrase second screens, where the primary screen is the TV and visual content is delivered to viewers through the secondary device. Through the deployment of an IoT research product, I questioned the dominance of screen-based interactions and allowed viewers to have a new type of social experience around debates. The Social Printers study illustrated how in small pseudonymous groups relationships begin to flourish and people can engage in supportive political conversations. The success of the physical research products in enabling conversation around debates revealed that "second screens" have the potential to take on a multitude of forms and create social media platforms that enable different behaviours than the commonly used Facebook and Twitter. In order to investigate new design directions, I conducted the final study, which explored viewer and expert perspectives on the future of engagement around televised debates. It unravelled what viewers feel are the predominant issues with political discourse online and how they can be addressed through second screens. Using speculative designs their ideas were mediated to politics and media experts who were able to identify how these design opportunities may affect the discourse.

This varied methodological approach allowed me to explore the real-life context of debate viewing, explore unrealised possibilities for the development of new tools, and gather insights from a variety of stakeholders. It revealed insights into both active behaviours, such as posting on social media, and more passive behaviours, such as reading the posts of others. These findings make two major contributions to the study of second screens. The first is an

understanding of the behaviours and motivations of debate viewers, and the second is an exploration of design directions for future second screen tools.

Meanwhile, developments in the political landscape over the past four years have revealed how online tools are used in malicious ways for political purposes, which further highlighted the importance of understanding debate viewer's use of technology. Numerous stakeholders attempt to influence public opinion either through advertisements or through their online presence. Trolls, bots, data leaks, and data mining practices highlight how vulnerable we are to being unknowingly exploited. In 2016 bot and troll accounts were said to spread divisive messages through Twitter and to have purchased political advertisements aimed at the US electorate (Savage and Rosenberg, 2018). This activity led to multiple House intelligence investigations, which aimed to reveal how this troll and bot activity affected the election. Since then, a Republican House investigation into accusations against Russia found that there was interference involved, but their report raised doubts about whom this activity benefited (Savage and Rosenberg, 2018).

In addition to bot and troll activity, since the completion of the final study presented in this thesis the Cambridge Analytica scandal revealed that data for around 87 million Facebook users was gathered through the use of a personality quiz (Halpern, 2018). This data mining tactic was developed with the intention of gathering data not just from the users that consented to it but also the public profiles of all of their friends who had not (Halpern, 2018). This data was then used by Cambridge Analytica as a campaign information tool, data from which influenced campaign tactics in both the US Presidential Election and in the UK's EU Referendum (Halpern, 2018). The story brought to light how little users understand the terms and conditions they sign up for when using social media platforms, and how easy it is to exploit the data that they provide online. The scandal led to the Congress hearing of Mark Zuckerberg, the creator and CEO of Facebook, where he gave testimony about the company's involvement and role within the Cambridge Analytica scandal. The hearing led to the consideration of government regulation on technology and social media platforms (Sorkin, 2018). We are yet to

understand how targeted advertisements and provocations by troll and bot accounts affected the voting decisions in the recent elections and referendums. These events have raised serious concerns about how digital tools are used to influence the opinions of the electorate. Furthermore, they highlight the importance of investigating how and why debate viewers use digital tools during the broadcast.

While these events will impact the future of online political discourse it is vital to highlight that technology has wide-reaching benefits for the electorate, such as enabling the development of grassroots political activism (Dommett and Temple, 2018, Gibson, 2013, Lotan et al., 2011). Televised political debates provide an invaluable opportunity to both inform and engage the public. Millions of viewers watch the debates every election and referendum in the United Kingdom (BBC News, 2015b, Shepherd, 2017). As a large portion of the country takes the opportunity to become more informed about the current political campaign, they can also engage with each other, deliberate, and be heard. For those that choose to use their personal devices during political debates, digital tools can help them share their opinions (Anstead and O'Loughlin, 2011, Trilling, 2014), aid their learning (Jennings et al., 2017, Nee and Dozier, 2017), and increase engagement by making the debates more enjoyable (Thorson et al., 2015). This research was based in the belief that second screen tools can further empower citizens while they watch political debates.

In this section, I return to my research questions and recount the studies I conducted in order to address them. I further identify some of the key challenges and opportunities for future work within second screens for political discourse. Finally, I finish this conclusion with closing remarks.

8.1.   Research Questions

How and why are second screens used currently by the public during political debates?

In order to investigate how and why second screens are currently used by the public, I conducted two studies around the UK General Election of 2015. The election held four separate televised debates. Thematic analysis of tweets during one of these debates revealed that the public uses Twitter in order to commentate along by sharing evaluations, experiences, post humorous and provocative tweets and interact with and inform others. The study makes a minor contribution to our understanding of Twitter activity surrounding political debates. It provides a look into the visible online content posted by a fraction of debate viewers.

In order to gain a more nuanced and in-depth view of how second screens are used during political debates I conducted at-home observations of 18 participants, who recorded themselves watching a debate of their choosing with a small wearable camera. This study makes a significant contribution to our understanding of the motivations and behaviours that frame political second screen use. The study gathers insights into the range of second screen activity beyond the use of Twitter and captures both the fulfilled and unfulfilled needs of the viewers. We see that second screens were used by viewers in order to gauge the opinions of others, enrich the experience of watching the debate and share their own opinions. The participants describe barriers to online participation, such as fear of engaging with provocative topics and reaching an unwanted audience, such as family members with different political views. The study also revealed how second screens can be used as a focus point for conversations within the living-room. An unexpected finding of the study was that the debate took on a secondary role when the personal device presented the participants with more engaging content.

The studies into current second screen practices led me to challenge the pre-determined notions of the phrase second screens and explore if connected

devices can offer an alternative to screen based interactions. It also allowed me to look for design opportunities that place greater importance and value on the social interactions around debates, leveraging the communication over the passive consumption of debates.

Can emerging technologies offer new opportunities for engagement in political discourse around televised debates?

In order to investigate how emerging technologies can be used to engage the public in political discourse I conducted the Social Printers study. I deployed a series of internet-connected printers into five Scottish homes for two separate month-long studies during the Scottish Election and the EU Referendum. The printers were used by the participants during televised political debates in order to pseudonymously talk with each other. The study revealed how a social object in the home is used by the house-members, what relationships emerge between households, and how it is used for debate related conversations. The printers were successful in allowing the households to communicate with each other and the study indicates that in small groups self-moderation may contribute to polite conversation despite the veil of pseudonymity. The situated nature of the object, the way it enabled discourse, and the long duration of the study contributed to the emergence of a sense of community between the households. The study explored an alternative to traditional screen-based interactions and revealed how the constraints of a social network impact what benefits and issues occur.

The Social Printers study revealed the potential of new technology to be used within a second screen context. It also revealed that certain issues can be diminished by altering the functions and constraints of the social network, such as limiting abusive behaviour by limiting the communication group size. This led me to question how second screen tools can be designed in order to address the greater challenges with political discourse online.

What opportunities for second screens to address issues with political discourse can be identified through design-led research combining viewer and expert perspectives?

In order to investigate new design opportunities for second screens I designed a study, which gathered insights from both debate viewers and political and media experts. Debate viewers were recruited in four two-hour long workshops alongside a televised debate, in which we discussed issues with political discourse and how second screens can address them. The participants were able to identify six issues, including the need for more fact-based content, easier tools for content production, uncivil interactions, filter bubbles, issues around identity and anonymity and the lack of regulation and moderation power for the users. They were then able to identify potential opportunities for design to address them, such as controlling the political ideology diversity of online discussion spaces, asking users to provide links to sources, creating tools for live feedback, and giving content moderation powers to the end user. These issues and opportunities make a minor contribution to our understanding of the public's perspective on online political discourse and largely overlap with existing research.

These findings were then encapsulated in a series of four speculative designs, which were used in interviews with political and media experts. Until this point I relied on the experiences of debate viewers in order to understand second screen activity, but investigating possible future solutions required the involvement of individuals with political and media experience who could use their professional experiences to speculate on the implications of identified design opportunities. The experts were able to identify issues with the opportunities presented in the four designs, such as tensions around breaking people from their existing filter bubbles and the problematic nature of assessing the credibility of sources. The final study presented in this thesis identified both design opportunities for second screen tools and provided predictions about their impact on the debate viewer.

8.2.   Future Work

Looking forward, the speculative designs can be altered in order to address the feedback provided by the experts. The Viewer's Debate can eliminate up and down voting of content. The Political Date App can be more specific about the user's interests and sensitive to the way it displays similarities and differences between people. The Live Feedback tool can express party preference rather than sentiment and agreement. Finally, the Identity Equality Tool can be made to encourage more politically diverse discussion groups. These tools should be prototyped and tested in order to assess their impact on debate viewers and examine whether they do have potential to mitigate the negative issues identified with political discourse, such as the lack of perceived factual information, the formation of filter bubbles, and uncivil interactions. In the same way that I was able to observe how the use of playful language and limited group size fostered a sense of community between the Social Printer's households, by deploying prototypes in the wild, we would be able to identify if they engage the viewers in a meaningful, productive and enjoyable way. These studies would be required to evaluate to what extent the design directions that have been identified within this thesis manage to enhance the experience of using second screens alongside debates.

Although HCI research can further explore how to facilitate political discourse using social digital tools, a major challenge looking forward would be to involve the politicians, broadcasters and social media platforms in this research process. Televised debates can inform the public of manifestoes, prominent issues and political arguments, meanwhile giving them the opportunity to discuss and deliberate. Much of the visible public engagement is facilitated through the use of second screens. Currently broadcasters promote the use of a dedicated hashtag, which is used by viewers on Twitter, but there are issues and barriers to participation around the currently utilised second screen tools. While exploring the benefits of technology, we have to be mindful of the ways it can influence and manipulate the public.

The events that occurred during this PhD have also highlighted the importance of security. While the aim remained to explore how second screen tools can support debate viewers to engage with politics, the importance of data security has significantly increased. At the start of this research in 2014 the main issues around second screen use during political debates involved breaking people away from their pre-existing echo chambers and protecting them from abusive behaviour. Today we have to consider an even more worrying possibility, that by encouraging debate viewers to share their political ideology and opinions online we may be making them vulnerable to being manipulated by private companies and international political actors. In order to address this we need to explore how to support debate viewers in learning and engaging around debates. This could be achieved by finding ways to validate content and expose viewers to a wide range of information.

Looking forward governments should aim to regulate search tools and social media platforms in order to protect their citizens. This can be done by continuously updating and protecting people's rights to digital privacy, security, and limiting the reach of political advertisements. Technology companies like Facebook, Google, and Twitter can also explore ways to help their users discuss and deliberate in safe and supportive environments. Finally, broadcasters can also create second screen tools for their debate viewers. They have the advantage of being able to communicate with the politicians ahead of the debates, in order to collaborate on the content and information they provide. Furthermore, they can create complementary experiences for their viewers that are tailored to the format, topics, and events of the debate. All of these stakeholders are part of the discussions that arise around televised debates. They can take on a more pro-active role by designing discussion and deliberation tools or implementing legislation to protect citizens when they share their views online.

8.3.   Closing Remarks

Multiple elections and referendums framed this research. The aftermath of each political campaign revealed the importance of technology for the public

as a means to learn, reflect, share their opinions, and deliberate. However technology has also been seen to negatively influence the electorate by exposing them to fake news, trolling, and abusive behaviour, mining their data for political purposes, and limiting the scope of opinions they are exposed to.

Campaigns are accompanied by televised political debates, where the public could join in on the debate discussions through an array of online tools. They provide a key opportunity to engage viewers from across a multitude of political ideologies in a dialogue with each other. Viewers currently utilise pre-existing tools in order to find information and communicate with each other, and while these tools support a lot of the needs of debate viewers, they are subject to issues that can hinder-self-expression and engagement.

This research was motivated by the belief that second screens can present an opportunity for the public to feel more politically engaged and informed. Throughout the four studies I presented within this thesis, I explored both current behaviours and opportunities for the development of new second screen tools. My work revealed that the public used their personal devices to gauge the opinions of others, share their own, and to enrich the viewing of the broadcast. The second screens were at times central to the experience of watching the debates. The way they were used illustrated how the debate could act as a metronome for online activity, guiding the participants through different topics and activities on their personal devices. These findings allowed me to challenge the underlying assumptions embodied within the phrase second screens and explore the possibilities for connected devices within this context.

The Social Printers successfully enabled political talk and the establishment of relationships between households. A sense of community and friendly political talk emerged in a small pseudonymous network of participants. The qualities of the printers, their physicality, interactions and situational purpose framed the experiences of the participants. Some behaviours were similar to those of conventional second screen use, while others were surprising and novel. Primarily the study revealed how by changing the communication constraints and functions of digital tools we can affect the experiences of viewers.

The Social Printers study led me to investigate new design directions for second screen tools through workshops and interviews with both debate viewers and media and politics experts. By combining research with a variety of stakeholders I was able to identify six key issues with online political discourse. The experts and debate viewers identified that these issues can be mitigated within second screen tools through a series of strategies, including constructing safe and diverse social media platforms, regulating online services, and finding alternatives to the current fast-paced online experiences. An opportunity remains to explore these design directions and evaluate their impact on debate viewers. As a result of these four studies this thesis contributes an understanding of current second screen behaviours and explores future design directions for second screen tools that support debate viewers in their political engagement.

9.   References

@JOANNAG 2015. How the #LeadersDebate happened on Twitter. twitter.com: Twitter, https://blog.twitter.com/official/en_gb/a/en-gb/2015/how-the-leadersdebate-happened-on-twitter.html.

AL-DEEN, H. & HENDRICKS, J. 2012. *Social Media Usage and Impact*, Lexington Books.

ANSALDO, M. 2016. The best second-screen apps for watching the 2016 Olympics. Available: https://www.techhive.com/article/3098765/data-center-cloud/the-best-second-screen-apps-for-watching-the-2016-olympics.html.

ANSALDO, M. 2017. It's football season! These second-screen apps make NFL games even more fun to watch. Available: https://www.techhive.com/article/2975922/apps/its-football-season-these-second-screen-apps-make-nfl-games-even-more-fun-to-watch.html.

ANSTEAD, E., BENFORD, S. & HOUGHTON, R. J. 2014. Many-screen viewing: evaluating an olympics companion application. *Proceedings of the ACM International Conference on Interactive Experiences for TV and Online Video.* Newcastle Upon Tyne, United Kingdom: ACM.

ANSTEAD, N. & O'LOUGHLIN, B. 2014. Social Media Analysis and Public Opinion: The 2010 UK General Election. *Computer-Mediated Communication,* 20**,** 204-220, 10.1111/jcc4.12102.

ANSTEAD, N. & O'LOUGHLIN, B. 2011. The Emerging Viewertariat and BBC Question Time:Television Debate and Real-Time Commenting Online. *The International Journal of Press/Politics,* 16**,** 440-462, 10.1177/1940161211415519.

AUSSERHOFER, J. & MAIREDER, A. 2012. National Politics on Twitter: Stuctures and topics of a networked public sphere. *Information, Communication and Society,* 16**,** 291- 314, 10.1080/1369118X.2012.756050.

BAILLIE, L. & BENYON, D. 2008. Place and Technology in the Home. *Comput. Supported Coop. Work,* 17**,** 227-256, 10.1007/s10606-007-9063-2.

BAKKER, T. 2013. *Citizens as political participants: The myth of the active online audience?*, Amsterdam School of Communication Research.

BANDZIULIS, L. 2014. This Tiny Printer Is a Physical Ticker Tape for the Internet. Available: https://www.wired.com/2014/07/little-printer/.

BARNIDGE, M., GUNTHER, A. C., KIM, J., HONG, Y., PERRYMAN, M., TAY, S. K. & KNISELY, S. 2017. Politically Motivated Selective Exposure and

Perceived Media Bias. *Communication Research*, 0, 0093650217713066, 10.1177/0093650217713066.

BBC News. 2014. Romania and Bulgaria EU migration restrictions lifted. Available: http://www.bbc.co.uk/news/world-europe-25565302.

BBC News. 2015a. Election 2015: Conservative manifesto at-a-glance. Available: http://www.bbc.co.uk/news/election-2015-32302062 [Accessed 13 Feb 2018].

BBC News. 2015b. How the internet reacted to the leaders' debate. Available: http://www.bbc.co.uk/news/election-2015-32174120.

BBC News. 2015c. Scottish independence debate far from over. Available: http://www.bbc.co.uk/news/uk-scotland-34263130.

BBC News. 2016a. EU facts behind the claims: 'Brussels bureaucrats'. Available: https://fullfact.org/europe/eu-facts-behind-claims-brussels-bureaucrats/.

BBC News. 2016b. Scotland Election 2016 Results. Available: https://www.bbc.co.uk/news/election/2016/scotland/results.

BBC News. 2017a. BBC debate: Rivals attack Theresa May over absence. Available: http://www.bbc.co.uk/news/election-2017-40105324.

BBC News. 2017b. How Russian bots appear in your timeline. Available: http://www.bbc.co.uk/news/technology-41982569.

BEAN, J. 2017. The medium is the fake news. *interactions*, 24, 24-25, 10.1145/3064776.

BEHR, R. 2016. How remain failed: the inside story of a doomed campaign Available: https://www.theguardian.com/politics/2016/jul/05/how-remain-failed-inside-story-doomed-campaign.

BENTLEY, F. R. 2017. Understanding Secondary Content Practices for Television Viewing. *Proceedings of the 2017 ACM International Conference on Interactive Experiences for TV and Online Video.* Hilversum, The Netherlands: ACM.

BIRKS, M., & MILLS, J. 2011. Grounded theory: A practical guide. London: Sage.

BISHOP, B. 2014. How a second-screen app made 'The Walking Dead' come alive. Available: https://www.theverge.com/entertainment/2014/2/13/5406498/how-a-second-screen-app-made-the-walking-dead-come-alive.

BLEECKER, J. 2009. Design Fiction: A Short Essay on Design, Science, Fact and Fiction. Available: http://blog.nearfuturelaboratory.com/2009/03/17/design-fiction-a-short-essay-on-design-science-fact-and-fiction/.

BOTELHO, G. 2016. The day politics and TV changed forever. Available: https://edition.cnn.com/2016/02/29/politics/jfk-nixon-debate/index.html.

BRAUN, V. & CLARKE, V. 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3, 77-101, 10.1191/1478088706qp063oa.

BROOKER, P., BARNETT, J., VINES, J., LAWSON, S., FELTWELL, T., LONG, K. & WOOD, G. 2018. Researching with Twitter timeline data: A demonstration via "everyday" socio-political talk around welfare provision. *Big Data & Society*, 5, 2053951718766624, 10.1177/2053951718766624.

BROOKER, P., VINES, J., SUTTON, S., BARNETT, J., FELTWELL, T. & LAWSON, S. 2015. Debating Poverty Porn on Twitter: Social Media as a Place for Everyday Socio-Political Talk. *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*. Seoul, Republic of Korea: ACM.

BRUNS, A. & BURGESS, J. 2011. #Ausvotes : how Twitter covered the 2010 Australian federal election. *Communication, Politics and Culture*, 44, 37-56.

BUCKELS, E. E., TRAPNELL, P. D. & PAULHUS, D. L. 2014. Trolls just want to have fun. *Personality and Individual Differences*, 67, 97-102, https://doi.org/10.1016/j.paid.2014.01.016.

BULKLEY, K. 2013. How lucrative are second screen companion apps for TV broadcasters? . Available: https://www.theguardian.com/media-network/media-network-blog/2013/jun/05/second-screen-companion-apps-tv-broadcasters.

CAMERON, J. & GEIDNER, N. 2014. Something Old, Something New, Something Borrowed From Something Blue: Experiments on Dual Viewing TV and Twitter. *Journal of Broadcasting & Electronic Media*, 58, 400-419, 10.1080/08838151.2014.935852.

CENTIEIRO, P., ROM, T., #227 & DIAS, A. E. 2014. From the lab to the world: studying real-time second screen interaction with live sports. *Proceedings of the 11th Conference on Advances in Computer Entertainment Technology*. Funchal, Portugal: ACM.

CHENG, J., BERNSTEIN, M., DANESCU-NICULESCU-MIZIL, C. & LESKOVEC, J. 2017. Anyone Can Become a Troll: Causes of Trolling Behavior in Online Discussions. *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*. Portland, Oregon, USA: ACM.

CLARKE, H. D., GOODWIN, M. & WHITELEY, P. 2017. Why Britain Voted for Brexit: An Individual-Level Analysis of the 2016 Referendum Vote. *Parliamentary Affairs*, 70, 439-464, 10.1093/pa/gsx005.

COURTOIS, C. & D'HEER, E. 2012. Second screen applications and tablet users: constellation, awareness, experience, and interest. *Proceedings of the 10th European Conference on Interactive TV and Video.* Berlin, Germany: ACM.

CRABTREE, A., CHAMBERLAIN, A., GRINTER, R. E., JONES, M., RODDEN, T. & ROGERS, Y. 2013. Introduction to the Special Issue of "The Turn to The Wild". *ACM Trans. Comput.-Hum. Interact.*, 20, 1-4, 10.1145/2491500.2491501.

CRAM, L., LLEWELLYN, C., HILL, R. & MAGDY, W. 2017. General Election 2017: a Twitter Analysis. Available: http://ukandeu.ac.uk/wp-content/uploads/2017/06/General-Election-2017-a-Twitter-analysis.pdf [Accessed 4 May, 2018].

CRIVELLARO, C., COMBER, R., BOWERS, J., WRIGHT, P. C. & OLIVIER, P. 2014. A pool of dreams: facebook, politics and the emergence of a social movement. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems.* Toronto, Ontario, Canada: ACM.

CROSSLEY, J. 2015. How did social media influence the general election? Available: http://www.harvard.co.uk/how-did-social-media-influence-the-general-election/ [Accessed 14 Feb 2018].

DATHAN, M. 2015. TV leaders' debate: 'You should be ashamed of yourself' Farage told as he lashes out at foreigners with HIV. Available: http://ind.pn/1Gln95u.

DAVIS, C. J., BOWERS, J. S. & MEMON, A. 2011. Social Influence in Televised Election Debates: A Potential Distortion of Democracy. *PLoS ONE*, 6, e18154, 10.1371/journal.pone.0018154.

DAVIS, J. L., LOVE, T. P. & KILLEN, G. 2018. Seriously funny: The political work of humor on social media. *New Media & Society*, 0, 1461444818762602, 10.1177/1461444818762602.

DEARDEN, L. 2016. Refugee crisis: 2016 on course to be deadliest year on record as thousands of asylum seekers drown in Mediterranean. Available: http://www.independent.co.uk/news/world/europe/refugee-crisis-2016-on-course-to-be-deadliest-year-on-record-as-thousands-of-asylum-seekers-drown-in-a7164271.html.

DEMOCRACY, S. S. C. O. D. 2015. Digital Democracy Report. http://www.digitaldemocracy.parliament.uk/.

DISALVO, C., JENKINS, T. & LODATO, T. 2016. Designing Speculative Civics. *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems.* San Jose, California, USA: ACM.

DOMMETT, K. & TEMPLE, L. 2018. Digital Campaigning: The Rise of Facebook and Satellite Campaigns. *Britain Votes*, 71, 189-202, https://doi.org/10.1093/pa/gsx056.

DORIS-DOWN, A., VERSEE, H. & GILBERT, E. 2013. Political blend: an application designed to bring people together based on political differences. *Proceedings of the 6th International Conference on Communities and Technologies.* Munich, Germany: ACM.

DOUGHTY, M., ROWLAND, D. & LAWSON, S. 2011. Co-viewing live TV with digital backchannel streams. *Proceedings of the 9th European Conference on Interactive TV and Video.* Lisbon, Portugal: ACM.

DOUGHTY, M., ROWLAND, D. & LAWSON, S. 2012. Who is on your sofa?: TV audience communities and second screening social networks. *Proceedings of the 10th European Conference on Interactive TV and Video.* Berlin, Germany: ACM.

DRUD, T. 2010. DISCOURSE ANALYSIS: KEY CONCEPTS AND PERSPECTIVES. Alathar journal. 09. 20-25.

DUNNE, A. & RABY, F. 2013. *Speculative Everything: Design, Fiction and Social Dreaming,* MIT Press.

ELGOT, J. 2016. EU referendum debates: when and where to watch them. Available: https://www.theguardian.com/politics/2016/jun/02/eu-referendum-tv-debates-when-where-watch-them.

ENLI, G. & ROSENBERG, L. T. 2018. Trust in the Age of Social Media: Populist Politicians Seem More Authentic. *Social Media + Society,* 4, 2056305118764430, 10.1177/2056305118764430.

ESSER, F. & VREESE, C. H. D. 2007. Comparing Young Voters' Political Engagement in the United States and Europe. *American Behavioral Scientist,* 50, 1195-1213, 10.1177/0002764207299364.

FELTWELL, T., VINES, J., SALT, K., BLYTHE, M., KIRMAN, B., BARNETT, J., BROOKER, P. & LAWSON, S. 2017a. Counter-Discourse Activism on Social Media: The Case of Challenging "Poverty Porn" Television. *Comput. Supported Coop. Work,* 26, 345-385, 10.1007/s10606-017-9275-z.

FELTWELL, T., WOOD, G., LONG, K., BROOKER, P., SCHOFIELD, T., PETRIDIS, I., BARNETT, J., VINES, J. & LAWSON, S. 2017b. "I've been manipulated!": Designing Second Screen Experiences for Critical Viewing of Reality TV. *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems.* Denver, Colorado, USA: ACM.

FERRARIO, M., SIMM, W., WHITTLE, J., RAYSON, P., TERZI, M. & BINNER, J. 2012. *Understanding Actionable Knowledge in Social Media: BBC Question Time and Twitter, a Case Study.*

FLINTHAM, M., KARNER, C., BACHOUR, K., CRESWICK, H., GUPTA, N. & MORAN, S. 2018. Falling for Fake News: Investigating the Consumption of News via Social Media. *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems.* Montreal QC, Canada: ACM.

FOA, R. S. & MOUNK, Y. 2017. The Signs of Deconsolidation. *Journal of Democracy*, 28, 5-15, https://muse.jhu.edu/article/645532.

FOURNEY, A., RACZ, M. Z., RANADE, G., MOBIUS, M. & HORVITZ, E. 2017. Geographic and Temporal Trends in Fake News Consumption During the 2016 US Presidential Election. *Proceedings of the 2017 ACM on Conference on Information and Knowledge Management*. Singapore, Singapore: ACM.

FUNK, P. 2010. SOCIAL INCENTIVES AND VOTER TURNOUT: EVIDENCE FROM THE SWISS MAIL BALLOT SYSTEM. *Journal of the European Economic Association*, 8, 1077-1103, http://www.jstor.org/stable/25700915.

GARDAM, T., ASH, T. G., LEVY, D., LINNEBANK, G., LLOYD, J., NIELSEN, R. K., PAINTER, J., PICARD, R. & WATSON, D. 2011. Leaders in the Living Room. *The Prime Ministerial Debates of 2010: Evidence, Evaluation and Some Recommendations*. University of Oxford, https://reutersinstitute.politics.ox.ac.uk/sites/default/files/2017-12/Leaders%20in%20the%20Living%20Room.%20The%20Prime%20Ministerial%20Debates%20of%202010%20Evidence%2C%20Evaluation%20and%20some%20Recommendations.pdf.

GAVER, W., BOUCHER, A., JARVIS, N., CAMERON, D., HAUENSTEIN, M., PENNINGTON, S., BOWERS, J., PIKE, J., BEITRA, R. & OVALLE, L. 2016. The Datacatcher: Batch Deployment and Documentation of 130 Location-Aware, Mobile Devices That Put Sociopolitically-Relevant Big Data in People's Hands: Polyphonic Interpretation at Scale. *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*. San Jose, California, USA: ACM.

GAVER, W., BOWERS, J., BOUCHER, A., LAW, A., PENNINGTON, S. & VILLAR, N. 2006. The history tablecloth: illuminating domestic activity. *Proceedings of the 6th conference on Designing Interactive systems*. University Park, PA, USA: ACM.

GAVER, W., MICHAEL, M., KERRIDGE, T., WILKIE, A., BOUCHER, A., OVALLE, L. & PLUMMER-FERNANDEZ, M. 2015. Energy Babble: Mixing Environmentally-Oriented Internet Content to Engage Community Groups. *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*. Seoul, Republic of Korea: ACM.

GAVER, W. W., BOWERS, J., BOUCHER, A., GELLERSON, H., PENNINGTON, S., SCHMIDT, A., STEED, A., VILLARS, N. & WALKER, B. 2004. The drift table: designing for ludic engagement. *CHI '04 Extended Abstracts on Human Factors in Computing Systems*. Vienna, Austria: ACM.

GEERTS, D., LEENHEER, R., GROOFF, D. D., NEGENMAN, J. & HEIJSTRATEN, S. 2014. In front of and behind the second screen: viewer and producer perspectives on a companion app. *Proceedings of the ACM International Conference on Interactive Experiences for TV and Online Video*. Newcastle Upon Tyne, United Kingdom: ACM.

GIBSON, R. & CANTIJOCH, M. 2013. Conceptualizing and Measuring Participation in the Age of the Internet: Is Online Political Engagement Really Different to Offline? *The Journal of Politics*, 75**,** 701-716, 10.1017/s0022381613000431.

GIBSON, R., MARGOLIS, M., RESNICK, D. & WARD, S. 2003. Election Campaigning on the WWW in the USA and UK: A Comparative Analysis. *Party Politics*, 9**,** 47-75, 10.1177/135406880391004.

GIBSON, R. K. 2013. Party change, social media and the rise of 'citizen-initiated' campaigning. *Party Politics*, 21**,** 183-197, https://doi.org/10.1177/1354068812472575.

GIL DE ZÚÑIGA, H., GARCIA-PERDOMO, V. & MCGREGOR SHANNON, C. 2015. What Is Second Screening? Exploring Motivations of Second Screen Use and Its Effect on Online Political Participation. *Journal of Communication*, 65**,** 793-815, 10.1111/jcom.12174.

GORKOVENKO, K. & TAYLOR, N. 2019. Audience and Expert Perspectives on Second Screens (Transcripts of Co-Design Workshop and Expert Interviews). https://doi.org/10.15132/10000148.

GORKOVENKO, K. & TAYLOR, N. Katerina Gorkovenko and Nick Taylor. 2016. Social Printers study data (2016 Scottish Election and EU Referendum debates). http://doi.org/10.15132/10000122.

GREVET, C., TERVEEN, L. G. & GILBERT, E. 2014. Managing political differences in social media. *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing.* Baltimore, Maryland, USA: ACM.

GUEORGUIEVA, V. 2008. Voters, MySpace, and YouTube.

The Impact of Alternative Communication Channels on the 2006 Election Cycle and Beyond. *Social Science Computer Review*, 23**,** 288-300, https://doi.org/10.1177/0894439307305636.

GUESS, A., NYHAN, B. & REIFLERSELECTIVE, J. 2018. Exposure to Misinformation: Evidence from the consumption of fake news during the 2016 U.S. presidential campaign. Available: http://www.dartmouth.edu/~nyhan/fake-news-2016.pdf.

HABERMAS, J. 1991. The structural transformation of the public sphere. MIT Press, Cambridge, Massachusets,

HALPERN, D. AND GIBBS, J. 2013. Social media as a catalyst for online deliberation? Exploring the affordances of Facebook and YouTube for political expression. Computers in Human Behavior, 29 (2013), 1159-1168.

HALPERN, S. 2018. Cambridge Analytica and the Perils of Psychographics. Available: https://www.newyorker.com/news/news-desk/cambridge-analytica-and-the-perils-of-psychographics.

HARGITTAI, E. & SHAW, A. 2013. Digitally Savvy Citizenship: The Role of Internet Skills and Engagement in Young Adults' Political Participation around the 2008 Presidential Election. *Journal of Broadcasting & Electronic Media*, 57, 115-134, 10.1080/08838151.2013.787079.

HASTIE, P. 2016. Round-up: The first 2016 Scottish Leaders' Debate. Available: http://www.bbc.co.uk/news/election-2016-scotland-35862394.

HELMES, J., TAYLOR, A. S., CAO, X., HOOK, K., SCHMITT, P. & VILLAR, N. 2011. Rudiments 1, 2 & 3: design speculations on autonomy. *Proceedings of the fifth international conference on Tangible, embedded, and embodied interaction.* Funchal, Portugal: ACM.

HENLEY, J. 2016. Iceland PM steps aside after protests over Panama Papers revelations Available: https://www.theguardian.com/world/2016/apr/05/iceland-prime-minister-resigns-over-panama-papers-revelations.

HERRING, S., JOB-SLUDER, K., SCHECKLER, R. & BARAB, S. 2002. Searching for Safety Online: Managing "Trolling" in a Feminist Forum. *The Information Society*, 18, 371-384, 10.1080/01972240290108186.

HINDMAN, M. 2009. *The Myth of Digital Democracy*, Princeton University Press.

HOLT, R. 2013. Twitter in numbers. Available: http://www.telegraph.co.uk/technology/twitter/9945505/Twitter-in-numbers.html.

HOLZ, C., BENTLEY, F., CHURCH, K. & PATEL, M. 2015. "I'm just on my phone and they're watching TV": Quantifying mobile device use while watching television. *Proceedings of the ACM International Conference on Interactive Experiences for TV and Online Video.* Brussels, Belgium: ACM.

HUTCHINSON, H., MACKAY, W., WESTERLUND, B., BEDERSON, B. B., DRUIN, A., PLAISANT, C., BEAUDOUIN-LAFON, M., ST, #233, CONVERSY, P., EVANS, H., HANSEN, H., ROUSSEL, N., BJ, #246, EIDERB, R., #228 & CK 2003. Technology probes: inspiring design for and with families. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems.* Ft. Lauderdale, Florida, USA: ACM.

IANDOLI, L., QUINTO, I., SPADA, P., KLEIN, M. & CALABRETTA, R. 2018. Supporting argumentation in online political debate: Evidence from an experiment of collective deliberation. *New Media & Society*, 20, 1320-1341, 10.1177/1461444817691509.

JACKSON, B. & JAMIESON, K. H. 2004. Finding Fact in Political Debate. *American Behavioral Scientist*, 48, 229-237, 10.1177/0002764204267268.

JENNINGS, F. J., COKER, C. R., MCKINNEY, M. S. & WARNER, B. R. 2017. Tweeting Presidential Primary Debates: Debate Processing Through

Motivated Twitter Instruction. *American Behavioral Scientist*, 61, 455-474, 10.1177/0002764217704867.

JOMINI STROUD, N., STEPHENS, M. & PYE, D. 2011. The Influence of Debate Viewing Context on Political Cynicism and Strategic Interpretations. *American Behavioral Scientist*, 55, 270-283, 10.1177/0002764210392163.

KELLY, G. R. 2009. Echo chambers online?: Politically motivated selective exposure among Internet news users1. *Journal of Computer-Mediated Communication*, 14, 265-285, doi:10.1111/j.1083-6101.2009.01440.x.

KIETZMANN, J., HERMKENS, K., MCCARTHY, I. & SILVESTRE, B. 2011. Social media? Get serious! Understanding the functional building blocks of social media. *Business Horizons*, 54, 241-251, https://doi.org/10.1016/j.bushor.2011.01.005.

KNAPTON, S. 2015. General election 2015: highest turnout since Tony Blair landslide. Available: http://www.telegraph.co.uk/news/general-election-2015/11592557/General-election-2015-highest-turnout-since-Tony-Blair-landslide.html.

KOU, Y. & NARDI, B. 2018. Complex Mediation in the Formation of Political Opinions. *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. Montreal QC, Canada: ACM.

KREISS, D. 2014. Seizing the moment: The presidential campaigns' use of Twitter during the 2012 electoral cycle. *New Media & Society*, 18, 1473-1490, 10.1177/1461444814562445.

KRIPLEAN, T., MORGAN, J., FREELON, D., BORNING, A. & BENNETT, L. 2012a. Supporting reflective public thought with considerit. *Proceedings of the ACM 2012 conference on Computer Supported Cooperative Work*. Seattle, Washington, USA: ACM.

KRIPLEAN, T., MORGAN, J. T., FREELON, D., BORNING, A. & BENNETT, L. 2011. ConsiderIt: improving structured public deliberation. *CHI '11 Extended Abstracts on Human Factors in Computing Systems*. Vancouver, BC, Canada: ACM.

KRIPLEAN, T., TOOMIM, M., MORGAN, J., BORNING, A. & KO, A. 2012b. Is this what you meant?: promoting listening on the web with reflect. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. Austin, Texas, USA: ACM.

KULSHRESTHA, J., ESLAMI, M., MESSIAS, J., ZAFAR, M. B., GHOSH, S., GUMMADI, K. P. & KARAHALIOS, K. 2017. Quantifying Search Bias: Investigating Sources of Bias for Political Searches in Social Media. *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*. Portland, Oregon, USA: ACM.

KUSUMOTO, K., KINNUNEN, T., KTSYRI, J., LINDROOS, H. & OITTINEN, P. 2014. Media Experience of Complementary Information and Tweets

on a Second Screen. *Proceedings of the 22nd ACM international conference on Multimedia.* Orlando, Florida, USA: ACM.

LAPOWSKY, I. 2018. House Democrats Release 3,500 Russia-Linked Facebook Ads. Available: https://www.wired.com/story/house-democrats-release-3500-russia-linked-facebook-ads/.

LARSSON, A. O. & MOE, H. 2011. Studying political microblogging: Twitter users in the 2010 Swedish election campaign. *New Media & Society,* 14, 729-747, 10.1177/1461444811422894.

LEE, S.-H. & KIM, H.-W. 2015. Why people post benevolent and malicious comments online. *Commun. ACM,* 58, 74-79, 10.1145/2739042.

LIDDO, A. D., PLUSS, B. & WILSON, P. 2017. A Novel Method to Gauge Audience Engagement with Televised Election Debates through Instant, Nuanced Feedback Elicitation. *Proceedings of the 8th International Conference on Communities and Technologies.* Troyes, France: ACM.

LINDLEY, S. E., HARPER, R. & SELLEN, A. 2010. Designing a technological playground: a field study of the emergence of play in household messaging. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems.* Atlanta, Georgia, USA: ACM.

LINDSAY, J. 2015. The World Events That Mattered Most in 2015. Available: https://www.theatlantic.com/international/archive/2015/12/world-events-news-2015/421545/.

LIPTAK, A. 2017. Amazon's Alexa started ordering people dollhouses after hearing its name on TV. Available: https://www.theverge.com/2017/1/7/14200210/amazon-alexa-tech-news-anchor-order-dollhouse.

LOTAN, G., GRAEFF, E., ANANNY, M., GAFFNEY, D., PEARCE, I. & BOYD, D. 2011. The Arab Spring| The Revolutions Were Tweeted: Information Flows during the 2011 Tunisian and Egyptian Revolutions. *International Journal of Communication,* 5, 1375-1405.

MAHONEY, J., FELTWELL, T., AJURUCHI, O. & LAWSON, S. 2016. Constructing the Visual Online Political Self: An Analysis of Instagram Use by the Scottish Electorate. *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems.* San Jose, California, USA: ACM.

MANCINI, P. 2015. Why it is time to redesign our political system. *European View,* 14, 69-75, 10.1007/s12290-015-0343-9.

MANTZARI, E., LEKAKOS, G. & VRECHOPOULOS, A. 2008. Social tv: introducing virtual socialization in the tv experience. *Proceedings of the 1st international conference on Designing interactive user experiences for TV and video.* Silicon Valley, California, USA: ACM.

MARUYAMA, M., ROBERTSON, S. P., DOUGLAS, S., RAINE, R. & SEMAAN, B. 2017. Social Watching a Civic Broadcast: Understanding the Effects of Positive Feedback and Other Users' Opinions. *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing*. Portland, Oregon, USA: ACM.

MARUYAMA, M., ROBERTSON, S. P., DOUGLAS, S. K., SEMAAN, B. C. & FAUCETT, H. A. 2014. Hybrid media consumption: how tweeting during a televised political debate influences the vote decision. *Proceedings of the 17th ACM conference on Computer supported cooperative work in social computing*. Baltimore, Maryland, USA: ACM.

MARWICK, A. E. & BOYD, D. 2010. I tweet honestly, I tweet passionately: Twitter users, context collapse, and the imagined audience. *New Media & Society*, 13, 114-133, 10.1177/1461444810365313.

MASCARO, C. M. & GOGGINS, S. P. 2015. Technologically Mediated Political Discourse During a Nationally Televised GOP Primary Debate. *Journal of Information Technology & Politics*, 12, 252-269, 10.1080/19331681.2015.1071687.

MCKINNEY, M. S. & WARNER, B. R. 2013. Do Presidential Debates Matter? Examining a Decade of Campaign Debate Effects. *Argumentation and Advocacy*, 49, 238-258, 10.1080/00028533.2013.11821800.

MCLELLAND, D.C. 1961. The achieving society. Princeton, NJ: Van Nostrand.

MCPHERSON, K., HUOTARI, K., CHENG, F. Y.-S., HUMPHREY, D., CHESHIRE, C. & BROOKS, A. L. 2012. Glitter: a mixed-methods study of twitter use during glee broadcasts. *Proceedings of the ACM 2012 conference on Computer Supported Cooperative Work Companion*. Seattle, Washington, USA: ACM.

MICHIE, L., BALAAM, M., MCCARTHY, J., OSADCHIY, T. & MORRISSEY, K. 2018. From Her Story, to Our Story: Digital Storytelling as Public Engagement around Abortion Rights Advocacy in Ireland. *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. Montreal QC, Canada: ACM.

MUDDE, C. 2017. What the stunning success of AfD means for Germany and Europe Available: https://www.theguardian.com/commentisfree/2017/sep/24/germany-elections-afd-europe-immigration-merkel-radical-right.

MUTZ, D. 2013. Reflections on Hearing the Other Side, in Theory and in Practice. *Critical Review*, 25, 260-276, 10.1080/08913811.2013.852346.

NANDAKUMAR, A. & MURRAY, J. 2014. Companion apps for long arc TV series: supporting new viewers in complex storyworlds with tightly synchronized context-sensitive annotations. *Proceedings of the ACM International Conference on Interactive Experiences for TV and Online Video*. Newcastle Upon Tyne, United Kingdom: ACM.

NEATE, T., JONES, M. & EVANS, M. 2015. Mediating Attention for Second Screen Companion Content. *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems.* Seoul, Republic of Korea: ACM.

NEE, R. C. & DOZIER, D. M. 2017. Second screen effects:Linking multiscreen media use to television engagement and incidental learning. *Convergence,* 23, 214-226, 10.1177/1354856515592510.

NIELSEN, R. K. & GRAVES, L. 2017. "News you don't believe": Audience perspectives on fake news. Available: https://reutersinstitute.politics.ox.ac.uk/sites/default/files/2017-10/Nielsen%26Graves_factsheet_1710v3_FINAL_download.pdf.

NILS, G. 2012. The subtle nature of Facebook politics: Swedish social network site users and political participation. *New Media & Society,* 14, 1111-1127, 10.1177/1461444812439551.

ODOM, W., WAKKARY, R., LIM, Y.-K., DESJARDINS, A., HENGEVELD, B. & BANKS, R. 2016. From Research Prototype to Research Product. *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems.* San Jose, California, USA: ACM.

OOSTERWAAL, A. & TORENVLIED, R. 2010. Politics Divided from Society? Three Explanations for Trends in Societal and Political Polarisation in the Netherlands. *West European Politics,* 33, 258-279, 10.1080/01402380903538880.

PALONEN, E. 2009. Political Polarisation and Populism in Contemporary Hungary1. *Parliamentary Affairs,* 62, 318-334, 10.1093/pa/gsn048.

PARKER, E. 2014. Social Media and the Hong Kong Protests. Available: https://www.newyorker.com/tech/elements/social-media-hong-kong-protests.

PATTERSON, D. 2016. Twitter sentiment analysis finds two candidates have never been more controversial-or unpopular. Available: https://www.techrepublic.com/article/what-twitter-sentiment-analysis-is-saying-about-the-first-presidential-debate/.

PEDERSEN, S., BAXTER, G., BURNETT, S., GOKER, A., CORNEY, D. & MARTIN, C. 2015. Backchannel chat: peaks and troughs in a Twitter response to three televised debates during the 2014 Scottish Independence Referendum campaign. *Proceedings of the international conference for e-democracy and open government 2015 (CeDEM15).* Krems, Austria, http://www.donau-uni.ac.at/imperia/md/content/department/gpa/zeg/bilder/cedem/cedem15/cedem15_oa_proceedings.pdf.

PINGREE, R. 2007. How Messages Affect Their Senders: A More General Model of Message Effects and Implications for Deliberation. *Communication Theory,* 17, 439-461, 10.1111/j.1468-2885.2007.00306.x.

PLUSS, B. & LIDDO, A. D. 2015. Engaging Citizens with Televised Election Debates through Online Interactive Replays. *Proceedings of the ACM International Conference on Interactive Experiences for TV and Online Video.* Brussels, Belgium: ACM.

PROULX, M. & SHEPATIN, S. 2012. *Social TV: How Markets Can Reach and Engage Audiences by Connecting Television to the Web, Social Media and Mobile,* John Wiley & Sons. David A.

RAINIE, L., SMITH, A., SCHLOZMAN, K. L., BRADY, H. & VERBA, S. 2012. Social Media and Political Engagement. Available: http://www.pewinternet.org/files/old-media/Files/Reports/2012/PIP_SocialMediaAndPoliticalEngagement_PDF.pdf.

RENTOUL, J. & JOHNSTON, I. 2016. EU referendum: The ten worst clichés from the campaign so far. Available: http://www.independent.co.uk/news/uk/politics/eu-referendum-the-ten-worst-clich-s-from-the-campaign-so-far-a6898701.html.

RESEARCH, I. 2014. Scottish Independence Referendum Research. Post-polling day opinion research report. Available: https://www.electoralcommission.org.uk/__data/assets/pdf_file/0005/179807/Scottish-referendum-Public-Opinion-survey-ICM-Report-WEBSITE.pdf.

RUNCIMAN, D. 2014. *Politics,* London, Profile Books Ltd.

SAMPATHKUMAR, M. 2018. The tweets that have defined Donald Trump's presidency Available: https://www.independent.co.uk/news/world/americas/us-politics/donald-trump-twitter-president-first-year-a8163791.html.

SAVAGE, C. & ROSENBERG, M. 2018. 5 Takeaways From the House Report on Russian Election Meddling. Available: https://www.nytimes.com/2018/04/27/us/politics/takeaways-house-intelligence-committee-russian-election-interference.html.

SCHIRRA, S., SUN, H. & BENTLEY, F. 2014. Together alone: motivations for live-tweeting a television series. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems.* Toronto, Ontario, Canada: ACM.

SEMAAN, B., FAUCETT, H., ROBERTSON, S., MARUYAMA, M. & DOUGLAS, S. 2015a. Navigating Imagined Audiences: Motivations for Participating in the Online Public Sphere. *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing.* Vancouver, BC, Canada: ACM.

SEMAAN, B., FAUCETT, H., ROBERTSON, S. P., MARUYAMA, M. & DOUGLAS, S. 2015b. Designing Political Deliberation Environments to Support Interactions in the Public Sphere. *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems.* Seoul, Republic of Korea: ACM.

SHAH, D. V., CHO, J., EVELAND, W. P. & KWAK, N. 2005. Information and Expression in a Digital Age:Modeling Internet Effects on Civic Participation. *Communication Research*, 32, 531-565, 10.1177/0093650205279209.

SHAH, D. V., HANNA, A., BUCY, E. P., WELLS, C. & QUEVEDO, V. 2015. The Power of Television Images in a Social Media Age:Linking Biobehavioral and Computational Approaches via the Second Screen. *The ANNALS of the American Academy of Political and Social Science*, 659, 225-245, 10.1177/0002716215569220.

SHAMMA, D. A., KENNEDY, L. & CHURCHILL, E. F. 2009. Tweet the debates: understanding community annotation of uncollected sources. *Proceedings of the first SIGMM workshop on Social media.* Beijing, China: ACM.

SHEPHARD, M. 2014. Twittish Tweets? Twitter's Anility to be Deliberative? Available: https://ssrn.com/abstract=2452646.

SHEPHERD, J. 2017. BBC Debate beaten by Britain's Got Talent in the ratings. Available: https://www.independent.co.uk/arts-entertainment/tv/news/bbc-debate-britains-got-talent-ratings-jeremy-corbyn-theresa-may-a7766471.html.

SLATER, M. D. 2007. Reinforcing Spirals: The Mutual Influence of Media Selectivity and Media Effects and Their Impact on Individual Behavior and Social Identity. *Communication Theory*, 17, 281-303, 10.1111/j.1468-2885.2007.00296.x.

SMITH, A. 2009. The Internet's Role in Campaign 2008. Available: http://uploadi.www.ris.org/editor/1243958591The_Internets_Role_in_Campaign_2008.pdf.

SORKIN, A. R. 2018. Three Takeaways from Mark Zuckerberg's Senate Testimony: DealBook Briefing. Available: https://www.nytimes.com/2018/04/10/business/dealbook/mark-zuckerberg-congress-hearing.html.

SPOHR, D. 2017. Fake news and ideological polarization:Filter bubbles and selective exposure on social media. *Business Information Review*, 34, 150-160, 10.1177/0266382117722446.

STOLWORTHY, J. 2017. South Park: Latest episode triggers viewers' smart home devices with brutal results. Available: https://www.independent.co.uk/arts-entertainment/tv/news/south-park-season-21-episode-1-amazon-echo-smart-home-devices-alexa-google-home-a7950001.html.

TABER, L. & WHITTAKER, S. 2018. Personality Depends on The Medium: Differences in Self-Perception on Snapchat, Facebook and Offline. *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems.* Montreal QC, Canada: ACM.

TANKARD, C. 2016. What the GDPR means for businesses. *Network Security*, 2016, 5-8, https://doi.org/10.1016/S1353-4858(16)30056-3.

TAYLOR, N. & GORKOVENKO, K. 2015. Tweets from #leadersdebate (2015 UK General Election TV Debates). Available: https://doi.org/10.15132/e0f2d122-f40f-449d-93b1-e58300ab1f3f.

TAYLOR, N., MARSHALL, J., BLUM-ROSS, A., MILLS, J., ROGERS, J., EGGLESTONE, P., FROHLICH, D. M., WRIGHT, P. & OLIVIER, P. 2012. Viewpoint: empowering communities with situated voting devices. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems.* Austin, Texas, USA: ACM.

THOMPSON, N. & VOGELSTEIN, F. 2018. Inside the Two Years that Shook Facebook—and the World. Available: https://www.wired.com/story/inside-facebook-mark-zuckerberg-2-years-of-hell/?mbid=social_fb.

THORSON, E., HAWTHORNE, J., SWASY, A. & MCKINNEY, M. S. 2015. Co-Viewing, Tweeting, and Facebooking the 2012 Presidential Debates. *Electronic News*, 9, 195-214, 10.1177/1931243115593320.

TITCOMB, J. 2017. Not OK, Google: Burger King advert designed to hijack Google Home speakers backfires. Available: https://www.telegraph.co.uk/technology/2017/04/13/not-ok-google-burger-king-advert-designed-hijack-google-home/.

TOAL, D. 2012. TV show will fire back. Available: http://gameological.com/2012/04/the-tv-show-will-fire-back/.

TOPINKA, R. J. 2018. Politically incorrect participatory media: Racist nationalism on r/ImGoingToHellForThis. *New Media & Society*, 20, 2050-2069, 10.1177/1461444817712516.

TOWNSEND, L. & WALLACE, C. 2015. Social Media Research: A Guide to Ethics. Available: https://www.gla.ac.uk/media/media_487729_en.pdf [Accessed 13 Feb 2018].

TRILLING, D. 2014. Two Different Debates? Investigating the Relationship Between a Political Debate on TV and Simultaneous Comments on Twitter. *Social Science Computer Review*, 33, 259-276, 10.1177/0894439314537886.

TSAI, W.-C., WANG, P.-H., LEE, H.-C., LIANG, R.-H. & HSU, J. 2014. The reflexive printer: toward making sense of perceived drawbacks in technology-mediated reminiscence. *Proceedings of the 2014 conference on Designing interactive systems.* Vancouver, BC, Canada: ACM.

VAN DER BOM, I., PATERSON, L. L., PEPLOW, D. & GRAINGER, K. 2018. 'It's not the fact they claim benefits but their useless, lazy, drug taking lifestyles we despise': Analysing audience responses to Benefits Street using live tweets. *Discourse, Context & Media*, 21, 36-45, https://doi.org/10.1016/j.dcm.2017.11.003.

VARGO, C. J., GUO, L. & AMAZEEN, M. A. 2018. The agenda-setting power of fake news: A big data analysis of the online media landscape from 2014 to 2016. *New Media & Society,* 20, 2028-2049, 10.1177/1461444817712086.

VERBA, S., BURNS, N. & SCHLOZMAN, K. L. 1997. Knowing and Caring about Politics: Gender and Political Engagement. *The Journal of Politics,* 59, 1051-1072, 10.2307/2998592.

VRAGA, E. K., ANDERSON, A. A., KOTCHER, J. E. & MAIBACH, E. W. 2015. Issue-Specific Engagement: How Facebook Contributes to Opinion Leadership and Efficacy on Energy and Climate Issues. *Journal of Information Technology & Politics,* 12, 200-218, 10.1080/19331681.2015.1034910.

WADHWA, V. 2014. Laws and Ethics Can't Keep Pace with Technology. Available: https://www.technologyreview.com/s/526401/laws-and-ethics-cant-keep-pace-with-technology/.

WALKER, P. 2015. General election 2015: the drama behind the leaders' debates. Available: http://gu.com/p/46pph/sbl.

WANG, H., CAN, D., KAZEMZADEH, A., FRAN, #231, BAR, O. & NARAYANAN, S. 2012. A system for real-time Twitter sentiment analysis of 2012 U.S. presidential election cycle. *Proceedings of the ACL 2012 System Demonstrations.* Jeju Island, Korea: Association for Computational Linguistics.

WANG, X., WEI, F., LIU, X., ZHOU, M. & ZHANG, M. 2011. Topic sentiment analysis in twitter: a graph-based hashtag sentiment classification approach. *Proceedings of the 20th ACM international conference on Information and knowledge management.* Glasgow, Scotland, UK: ACM.

WANG, Y. & MARK, G. 2017. Engaging with Political and Social Issues on Facebook in College Life. *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing.* Portland, Oregon, USA: ACM.

WARD, S., GIBSON, R. & LUSOLI, W. 2003. Online Participation and Mobilisation in Britain: Hype, Hope and Reality. *Parliamentary Affairs,* 56, 652-668, 10.1093/pa/gsg108.

WARREN, C. 2012. HBO and Miso Bring 'Game of Thrones' Fans to the Second Screen. Available: https://mashable.com/2012/02/02/hbo-miso-game-of-thrones/?europe=true#qya7JzrTdEqk.

WATERSON, J. 2018. Google bans Irish abortion referendum adverts Available: https://www.theguardian.com/world/2018/may/09/google-bans-irish-abortion-referendum-adverts.

WEBB, A. n.d. Party Political Broadcasts. Available: http://www.bbc.co.uk/historyofthebbc/elections/ppb.

WHITAKER, A. 2017. The truth about Scotland and online abuse: 'cybernats' and 'cyberbrits' are just as bad as each other. Available: http://www.heraldscotland.com/news/15102321.The_truth_about_S cotland_and_online_abuse__cybernats__and__cyberbrits__are_just_as _bad_as_each_other/.

WHITE, M. 2011. The history of PMQs. Available: https://www.theguardian.com/politics/2011/oct/27/history-pmqs-prime-ministers-commons.

WILSON, S. 2016. In the Living Room:Second Screens and TV Audiences. *Television & New Media,* 17, 174-191, 10.1177/1527476415593348.

WOHN, D. & NA, E.-K. 2011. Tweeting about TV: Sharing television viewing experiences via social media message streams In First Monday, 16, 3 - 7 https://firstmonday.org/ojs/index.php/fm/article/view/3368/2779.

WOJCIESZAK, M. E. & MUTZ, D. C. 2009. Online Groups and Political Discourse: Do Online Discussion Spaces Facilitate Exposure to Political Disagreement? *Journal of Communication, 59,* 40-56, 10.1111/j.1460-2466.2008.01403.x.

WOLFINGER, E. 2016. "But its already public, right?": The ethics of using online data. Available: http://datadrivenjournalism.net/news_and_analysis/but_its_already_p ublic_right_the_ethics_of_using_online_data [Accessed 13 Feb 2018].

WONG, J. 2018. 'It might work too well': the dark art of political advertising online Available: https://www.theguardian.com/technology/2018/mar/19/facebook-political-ads-social-media-history-online-democracy.

WONG, R. Y., WYK, E. V. & PIERCE, J. 2017. Real-Fictional Entanglements: Using Science Fiction and Design Fiction to Interrogate Sensing Technologies. *Proceedings of the 2017 Conference on Designing Interactive Systems.* Edinburgh, United Kingdom: ACM.

WOOLARD, A. 2011. 'TV-Controlled Daleks' - not coming to a living room near you any time soon... Available: http://www.bbc.co.uk/rd/blog/2011-11-tv-controlled-daleks-not-com.

YAMAMOTO, M. & NAH, S. 2018. Mobile information seeking and political participation: A differential gains approach with offline and online discussion attributes. *New Media & Society,* 20, 2070-2090, 10.1177/1461444817712722.

YOUNG, D. 2014. Theories and Effects of Political Humour:Discounting Cues, Gateways, and the Impact of Incongruities. The Oxford Handbook of Political Communication, 10.1093/oxfordhb/9780199793471.013.29_update_001.

ZIMMERMAN, J., FORLIZZI, J. & EVENSON, S. 2007. Research through design as a method for interaction design research in HCI. *Proceedings of the*

SIGCHI Conference on Human Factors in Computing Systems. San Jose, California, USA: ACM.

10. Appendix

A. Databases

A.1 Tweets used in the thematic analysis presented in section 4.3

Taylor, N. and Gorkovenko, K. (2015). Tweets from #leadersdebate (2015 UK General Election TV Debates). https://doi.org/10.15132/e0f2d122- f40f-449d-93b1-e58300ab1f3f

A.2 Data used in the thematic analysis presented in Chapter 5

Katerina Gorkovenko and Nick Taylor. 2016. Social Printers study data (2016 Scottish Election and EU Referendum debates). http://doi.org/10.15132/10000122

B. Study Materials for Current Second Screen Use

PARTICIPANT INFORMATION SHEET
Project Title: **Second screens for engagement with political discourse**

INVITATION TO TAKE PART IN A RESEARCH STUDY
You are being invited to take part in a research study, which explores how social media is used for political discourse during televised political debates.

The research will be conducted by Katerina Gorkovenko, a PhD student at the University of Dundee. The supervisor of this research is Dr Nick Taylor from the University of Dundee.

PURPOSE OF THE RESEARCH STUDY
This study is intended to explore use of personal devices during the UK General Election debates. It will investigate what information people access during such events, what online behaviours emerge, why people use social media in this context, and how they might like to use it differently.

This research forms part of my PhD studies. The ultimate aim of the research is to explore new ways of engaging the wider public with political debate.

The study will be composed of three different activities:
1. A 5 minute pre-questionnaire.
2. A recording of the debate experience conducted by the participants at home.
3. A follow up interview based on the recordings which will explore what online activity took place and why.

TIME COMMITMENT
The study will require about three hours of personal commitment some time during the month of April. The pre-questionnaire will be done online, the observations will be done at the participant's home without the presence of the researcher, and the interviews will be carried out at the University of Dundee, or at a location suggested by the participant.

COST, REIMBURSEMENT AND COMPENSATION
Your participation in this study is voluntary and no payment will be made for participation.

RISKS
There are no known risks for you in this study.

TERMINATION OF PARTICIPATION
You may decide to stop being a part of the research study at any time without explanation and without penalty.

CONFIDENTIALITY AND ANONYMITY
The data collected will be completely anonymous. The data will be kept in a secure location (not a laptop) and all data will be destroyed at the end of the project.

The data will only be used by the research team for this project and will not be shared with other researchers. Extracts from the data will be included in research publications for conferences and journals and the researchers PhD thesis, but will remain anonymous.

Photos taken during the sessions may be used in publications, but will not show your face. You may ask not to be photographed at all if you wish.

FOR FURTHER INFORMATION ABOUT THIS RESEARCH STUDY
Katerina Gorkovenko will be glad to answer your questions about this study at any time. She will also provide you with the study's results upon rquest. You may contact her at k.gorkovenko@dundee.ac.uk

The University Research Ethics Committee of the University of Dundee has reviewed and approved this research study.

B. 2 Consent Form

Duncan of Jordanstone College of Art & Design, University of Dundee

Participant Informed Consent Form

Full title of experimental programme/ project:
Second screens for engagement with political discourse

I have read the information relating to the above project/ programme of research in which I have been asked to participate and have been given a copy to keep. The nature and purposes of the research have been explained to me, and I have had the opportunity to discuss the details and ask questions about this information. I understand what is being proposed and the procedures in which I will be involved have been explained to me.

I understand that my involvement in this study, and particular information/data from this research, will remain strictly confidential. All the information that I provide for your study will be stored safely and kept separate from information about my identity. Only the student and supervisor involved in the study will have access to the information/ data. If information about me is used for publications or presentation, you will ensure that there is no reference to my identity. Alternatively, you will seek my permission for my name to be included and I will be able to approve this information prior to publishing. If a photograph or video clip is used for presentation, my name will be changed.

With reference to the use of photographic or video data for presentations, please tick one of the following boxes:

I agree to the audio recording of the interview I partake in which would be used anonymously.

YES ☐   NO ☐

I agree to the video recordings of the UK General Election Debates observations which will be seen only by the research team.

YES ☐   NO ☐

I agree to have photos taken of me which feature my face which would be used anonymously for the purpose of documentation and which will not be published publicly.

YES ☐   NO ☐

It has been explained to me what will happen to the data once the project has been completed.

I hereby consent to participation in the study which has been fully explained to me.

Having given this consent I understand that I have the right to withdraw from the programme at any time without disadvantage to myself and without being obliged to give any reason.

By signing below I am agreeing that I have read and understood the Participant Information Sheet and that I agree to take part in this research study.

Participant's name (BLOCK CAPITALS):	Participant's signature:
_____	_____ Date _____
Student investigator's name:	Student investigator's signature:
_____	_____ Date _____

A copy of this signed form must be submitted to the DJCAD Postgraduate Office.

Gogglebox for research

UK GENERAL
ELECTION DEBATE

Questionnaire

Name

Email

How old are you?

18 - 29 ☐   30 - 39 ☐   40 - 49 ☐   50 - 59 ☐   60+ ☐

Do you consider yourself politically engaged?

Very ☐   Moderately ☐   Slightly ☐   Not at all ☐

How will you be watching the debates this year?

Alone ☐   With friends ☐   With family ☐   Other ☐

Do you watch political programmes such as Question Time?

Always ☐   Sometimes ☐   Rarely ☐   Never ☐

Do you use social media on a daily basis?

Yes ☐   No ☐

Which of the following social media platforms do you use on a regular basis?

Facebook ☐   Twitter ☐   Google+ ☐   Tumblr ☐   LinkedIn ☐

Reddit ☐   Other ☐

Tick the boxes of the statements that you agree with.

☐ I use social media to share my opinion with others.

☐ I use social media to see my friend's opinion.

☐ I use social media to see what famous people think about subjects.

☐ I use social media to discover trending information.

☐ I use social media to discover the news.

☐ I use social media as an intimate form of interaction with friends and family.

☐ I use social media to take part in social movements.

☐ I use social media for business.

☐ I use social media for pleasure.

Do you use peripheral devices such as your laptop, phone or tablet while watching television?

Always ☐   Sometimes ☐   Rarely ☐   Never ☐

How do you use your device while watching television?

☐ To look up information related to the TV content.

☐ To socialise with others and discuss the TV content.

☐ Look at unrelated content.

☐ N/A

Other ☐

Have you ever used social media during televised political debates for political discourse?

Always ☐   Sometimes ☐   Rarely ☐   Never ☐

What topics will interest you most in the upcoming UK General Election Debates?

Health ☐   Education ☐   Jobs ☐   Immigration ☐   EU ☐

International Affairs ☐   Democracy ☐   Environment ☐   Poverty ☐

Other ☐

What would you like to gain from the debate?

☐ Help me decide whom to vote for.

☐ Knowledge about party policies.

☐ Knowledge about public opinion.

Other ☐

Gogglebox
for research

UK GENERAL
ELECTION DEBATE

Instructions

Contents

Preparation

Thank you for participating.

The idea of filming an every day part of your life such as watching television may feel awkward. In reality any discomfort you may feel towards the process will disappear within 10 minutes of the debate and you will likely forget that the camera is there.

You are in charge of the experience and you can change the camera angle and position at any time so that you feel comfortable.

It is recommended that you test the camera position you will use a few hours before the debate. There are 2 options that you can choose from on page 4. You can be creative and come up with your own ways of positioning the camera but please make sure that the footage is good and allows the researcher to see your personal device use. You can check the footage by turning the camcorder ON and connecting it to your computer via the USB cable. By testing the camera in advance and looking over the footage on your computer you will see what position works for you and you will be more comfortable with the experience.

How to create the recording

Make sure the camera is fully charged before the start of the debate.

Make some popcorn and sit at your favourite seat.

Ten minutes before the debate is due to begin you will need to:
1. Turn the camera ON.
2. Start recording by pressing the record button on top.
3. Place the camera in your preferred position.

If anything goes wrong throughout the process please get in touch with me immediately I will be available online throughout the duration of the debate on:

📞 0793 243 5714

f www.facebook.com/katerinagorkovenko

S katerina.gorkovenko

✉ k.gorkovenko@dundee.ac.uk

Turn the recording off about 10 minutes after the end of the debate.

Where to place the camera

The camcorder that you have been pro-vided with has a removable clip on the back. You can clip it onto the collar of your top. This method will ensure that your face is not in the shot which you may find more relaxing. This method allows a good overview of your personal device use which is vital to this research. Be careful because some clothes may not be able to support the weight of the camcorder.

If you remove the clip from the back of the device you can place it on a nearly table or surface standing up. If the sur-face is flat the weight of the camera will keep it upright. Make sure that the camera is facing you throughout the debate.

Camcorder instructions

Charging- Charge the Veho MIVI camcord-er by connecting the USB cable to your computer or using a USB Adapter and the mini USB jack on the base of the MUVI. While charging the MUVI LED indicator will display red. Once it is fully charged the red LED indicator will turn off.

Power- Power the MUVI on by pushing up the switch on the left hand side. While the MUVI remains well charged the indicator re-mains solid blue. When the MUVI becomes low on charge the indicator flashes blue slowly.

Recording - To record once the MUVI is powered on press the record button on top of the MUVI. The LED indicator will switch from solid blue to green and flash slowly. If the MUVI is in standby mode then press record to re-activate (LED shows blue) and record again to start recording (LED flashes green slowly). Press the record button again to stop recording.

mini USB

record button

LED indicator

haning ring

power switch

sound activation switch

LED lights quick reference

LED indicator colour	Indicator Activity	Camcorder Activity Mode
Blue (Power Indicator)	Solid ON	Power ON
	No Light	Standby/Power Off
	Flash Slowly	Low Battery
	Flash Fast	Copy Data
Green (Record Indicator)	Solid ON	SD Card Full
	Flash Slowly	Recording
	Flash Fast	No SD Card
Red (Power Indicator)	Solid ON	Charging
	No Light	Fully Charged

B.5 Post-interview questions

1. What did you use your personal device for during the debate. Ask about social media, information retrieval, unrelatedusage, messaging?

2. If they used it for information:

2.1. What information did you look up?

2.2. Which sources did you trust and which did you overlook?

3. If they used their device for unrelated usage:

3.1. What did you use your device for? Why?

4. If they used their device for social media-

4.1. Which social media platform did you use?

4.2. How did you use it?

4.3. Why did you use it?

4.4. What do you like about it?

4.5. Did the use of social media distract you from the debate?

5. If they used Twitter during the debate-

5.1. What value do you see in the tweets under the debate hashtag?

5.2. What value does the ability to address politicians and journalists using an @ sign have for you?

6. Do you prefer actively participating on social media by contributing or reading the stream of information?

6.1 If they like reading the information.

6.1.1. What were you most interested in reading and by whom?

6.1.2. Do you value famous or influential people's opinions more than that of random users?

6.1.3. What hashtags do you follow during a debate?

6.1.4. What content attracted your attention most?

6.1.5. Was it funny, informative, provocative, conversational, or content that gave an opinion about how the politicians were performing?

6.1.6. Does the typical tweet/comment you like contain an image or a link?

6.1.7. Did you contribute any content and if not why?

6.2. If they like taking part by posting content or commenting/chatting.

6.2.1. What triggered you to contribute?

6.2.2. Is there any value to talking with others about politics online?

6.2.3. What is the value for you?

6.2.4. What do you think others gain from it?

6.2.5. Did it influence your opinion on the leaders, or the policies?

6.2.6. Can you give an example?

6.2.7. How do the limitation of your preferred social media platform affect the way you express yourself, for example that Twitter lets you write only 140 characters?

6.2.8. Did you encounter any problems when you used social media to talk about a debate?

7. What do you like about political discourse on social media?

8. What don't you like about it?

9. Is there anything that bothers you about the way others use social media during political debates?

10. What is the effect do radical and biased statements on social media have on you?

11. Did social media have any influence on your political opinion?

12. What do you think politicians gain from people discussing the debates online?

13. What is your favourite part about watching the debate with a friend or family that would lack if you were alone?

C. Study Materials for Beyond the Second Screen

INFORMATION SHTEET

Dear participant,

You are asked to take part in a research project, as part of a PhD called 'Second Screens for Engagement with Political Discourse'. The aim of the research is to explore new ways of engaging the public with political broadcasts.

The research will be conducted by Katerina Gorkovenko, a PhD student at the University of Dundee with Dr Nick Taylor as supervisor. This study will require you to take on an object designed to accompany a political broadcast and use it in your home for the duration of a month, following you will be interviewed about the experience. Each week you will be asked to watch two political programmes chosen by you and me. You will be asked to read and reflect upon the content printed from the printer relating to the programme you are watching. The interviews that follow will be recorded using an audio recorder and will take place in a public location of your convenience and choosing. They will be semi-structured and last 30 minutes. Your participation in this study is voluntary. You may decide to stop being a part of the research study at any time without explanation and without penalty. There are no known risks for you in this study.

For your participation you will receive a £10 Amazon voucher.

The information you provide will not be linked to your name and will be used only for academic research purposes. The anonymous interview transcripts archived at the university's public repository in order to make them available to other researchers. The results will be published as part of academic papers, in addition to a PhD thesis. Katerina Gorkovenko will be glad to answer your questions about this study at any time and would also be able to provide you with the final results from it. You may contact her at k.gorkovenko@dundee.ac.uk

The University Research Ethics Committee of the University of Dundee has reviewed and approved this research study.

Thank you, Katerina Gorkovenko

Social
Printers

CONSENT FORM

'Second Screens for Engagement with Political Discourse' is a PhD project, which explores how social media is used for political discourse during political broadcasts. This study is designed to explore existing behaviours during political programmes. It will investigate how people are utilising personal devices and social media. The ultimate aim of the research is to explore new ways of engaging the wider public with political debates.

By signing below you are indicating that you have read and understood the Participant Information Sheet and that you agree to take part in this research study and have your voice recorded during an interview.

Researcher Name: Katerina Gorkovenko

Researcher Signature:

Your Name:

Your Signature:

I agree to have my voice recorded during the interviews at the end: ☐

I agree to have the anonymised transcripts stored in the university repository: ☐

Date:

UNIVERSITY OF DUNDEE

djcad
duncan of jordanstone
college of art & design

Social Printers

Hello, you are taking part in a research study designed to explore the place of technology alongside political debates. Over the next 4 weeks you will take a small Internet-connected printer into your living room. It will not only give you content generated by people on Twitter but also give you the ability to share your thoughts with the others who have the printer in their home.

Instructions

Overview of the study:

1. Receive the printer - The lead researcher will bring the printer to your home and set it up in your living room.

2. Small pre-interview - You will be asked about your current TV viewing habits.

3. At the start of each week the printer will inform you during which two programmes it will be active.

4. Watch programmes with the printer.

5. Read prints and place them in the scrapbook - Note alongside the prints you place in the scrapbook if they provoked a conversation, they made you laugh or even if you did not like them.

6. During the election debates you will be prompted to share your thoughts with the other participants.

7. Study ends on the 6th. The printer will be collected from your home in the following days.

8. Final interview.

How to send messages to the other printers:

When you are prompted to share your thoughts with the other participants use your phone/tablet or laptop and go to **socialprinters.co.uk/10**

When you have entered the message you want to send the others just press Print and the message will be printed by all of the **Social**Printers.

Social Printers

Your message here...

Print

Setting up the printer:

1. Place printer in your living room and connect to a power outlet.

2. Download the app called **Electric Imp** onto your smartphone or tablet.

3. Turn the brightness of your screen to 100%.

4. Open the app and log in with Email: kgorkovenko@yahoo.co.uk Password: socialprinters

5. Find your WiFi network or enter the name and password of the network.

6. Press 'Send BlinkUp' and place the screen of your device over the white card slot on the back of the SocialPrinter.

7. If successful the card will soon blink Green.
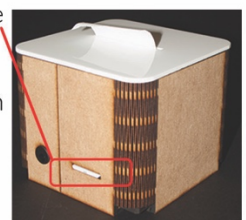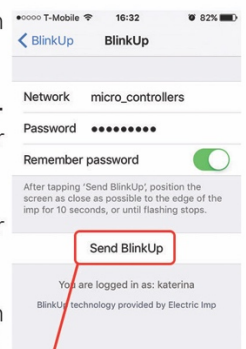
For help contact me at: kgorkovenko@dundee.ac.uk

C.4 Post-interview questions

1. What was the experience like for you?
2. What aspects did you find engaging?
3. What aspects did you find lacking in engagement?
4. What was it like to have the object in your home?
5. In what ways did it affect the experience of watching the program?
6. Were you able to concentrate on what the people on TV were saying?
7. Did it make the experience of watching the program interesting or enjoyable?
8. Would you have normally watched these programs and how?
9. Were you able to pay attention to both the TV program and the printer? If not which one did you prioritise?
10. Which programs did you feel the printer added most value to? How?
11. In the aftermath of the debates did you discuss then or the prints with others (for example at work) and did others agree or disagree with the observations you had?
12. Did you read material about the vent in the aftermath of the debates and did it confirm what was printed though out the event?
13. Did it start conversations in the living room?
14. What was the involvement of the other people in the house with the object though out the programs and outside of program times?
15. What was it like speaking to others?
16. How willing were you to share your thoughts with other using the printer?
17. Were you open and truthful when you sent prints?
18. Did you feel the need to moderate yourself?
19. Has anything that has come out of the printer made you consider a point you have not before?
20. What did you vote in the election and have the programmes you watched and the printer influenced you in any way?
21. Have your political views changed?
22. How did you find the logging process?
23. How did you find the process of sending the messages?
24. Did you feel connected to the others who had the printers?
25. What do you think about the others in the network? What did you mange to learn about them?
26. How do you feel about the role of anonymity in the study?
27. Did you get into arguments with others in the network?
28. If no why not? Do you think that if may have benefited your understanding of the other people's points of view?
29. Do you feel like you wanted to like the other participants?
30. What do you feel about my involvement in it?
31. What did you think about the prompts?
32. Show me the prints that interested you most.
33. Do you see any benefits for a system like this? What were its flaws?
34. What did you do with the prints for the programmes you did not see live? Did you rematch any of the programmes?
35. Why did you take part during certain programmes rather than others?
36. For continuing participants? - What worked and didn't work this time around?
37. What do you think contributed to the amount of conversation taking place in the second study vs the first?

D. Study Materials for Perspectives on the future of Second Screens

CO-DESIGN
Political Engagement

INFORMATION SHTEET

Dear participant,

You are being asked to take part in a research project, which is part of a PhD called 'Second Screens for Engagement with Political Discourse'. The aim of the research is to explore new ways of engaging the public with political broadcasts.

WHAT TO EXPECT
The research will be conducted by Katerina Gorkovenko, a PhD student at the University of Dundee with Dr Nick Taylor as a supervisor. The research is funded by Engineering and Physical Sciences Research Council (EPSRC). This study will require you to take part in a co-design workshop, where you will share your experiences of how you use technology during political debates and brainstorm how technology could be used differently. Refreshments will be provided during the workshop.

TIME COMMITMENT
The workshop will be 2 hours long.

COST, REIMBURSEMENT AND COMPENSATION
Participation in this study is voluntary and there is no reimbursement or compensation for taking part.

RISKS
There are no known risks for you in this study.

TERMINATION OF PARTICIPATION
You may decide to stop being a part of the research study at any time without explanation and without penalty.

CONFIDENTIALITY/ANONYMITY
The information you provide will not be linked to your name and will be used only for academic research purposes. Data collected will include – voice recordings, video recordings, a questionnaire, and all written material you generate during the co-design workshop. This data will be stored in a secure location in the University of Dundee until it is transcribed and anonymised. The data will then be archived and made publically available at the university's public repository. The results will be published as part of academic papers, in addition to a PhD thesis.

FOR FURTHER INFORMATION ABOUT THIS RESEARCH STUDY
Katerina Gorkovenko will be glad to answer your questions about this study at any time and would also be able to provide you with the final results from it. You may contact her at k.gorkovenko@dundee.ac.uk

The University Research Ethics Committee of the University of Dundee has reviewed and approved this research study. By taking part you are indicating that you have read and understood the Participant Information.

Thank you.

Yours, Katerina Gorkovenko
University of Dundee
k.gorkovenko@dundee.ac.uk

CO-DESIGN
Political Engagement

INFORMATION SHTEET

Dear participant,

You are being asked to take part in a research project, which is part of a PhD called 'Second Screens for Engagement with Political Discourse'. The aim of the research is to explore new ways of engaging the public with political broadcasts.

WHAT TO EXPECT
The research will be conducted by Katerina Gorkovenko, a PhD student at the University of Dundee with Dr Nick Taylor as a supervisor. The research is funded by Engineering and Physical Sciences Research Council (EPSRC). This study will require you to take part in a feedback session, where you will share your opinions about a series of design probes, generated as a result of workshop, which explore the future of digital tools for live televised debates.

TIME COMMITMENT
The feedback will be up to an hour long.

COST, REIMBURSEMENT AND COMPENSATION
Participation in this study is voluntary and there is no reimbursement or compensation for taking part.

RISKS
There are no known risks for you in this study.

TERMINATION OF PARTICIPATION
You may decide to stop being a part of the research study at any time without explanation and without penalty.

CONFIDENTIALITY/ANONYMITY
The information you provide will not be linked to your name and will be used only for academic research purposes. Data collected will include a voice recording. This data will be stored in a secure location in the University of Dundee until it is transcribed and anonymised. The data will then be archived and made publically available at the university's public repository. The results will be published as part of academic papers, in addition to a PhD thesis.

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Thank you.

Yours, Katerina Gorkovenko
University of Dundee
k.gorkovenko@dundee.ac.uk

CO-DESIGN
Political Engagement

CONSENT FORM

Please tick the appropriate boxes.

I have read and understood the project information sheet provided. ☐

I have been given the opportunity to ask questions about the project. ☐

I understand that my taking part is voluntary; I can withdraw from the study at any time and I do not have to give any reasons for why I no longer want to take part. ☐

I agree to audio recordings of me being recorded at the co-design workshop. ☐

I agree to photographs and video footage of me being recorded at the co-design workshop. ☐

I understand that an anonymised version of the audio transcripts and written material I generate will be made publically available on the university's public repository. ☐

_____   _____   _____
Name of Participant   Signature   Date

_____   _____   _____
Name of Researcher   Signature   Date

University of Dundee

djcad
duncan of jordanstone
college of art & design

CO-DESIGN
Political Engagement

CONSENT FORM

Please tick the appropriate boxes.

I have read and understood the project information sheet provided. ☐

I have been given the opportunity to ask questions about the project. ☐

I understand that my taking part is voluntary; I can withdraw from the study at any time and I do not have to give any reasons for why I no longer want to take part. ☐

I agree to audio recordings of me being recorded at the feedback session. ☐

I understand that an anonymised version of the audio transcripts and written material I generate will be made publically available on the university's public repository. ☐

_____   _____   _____
Name of Participant   Signature   Date

_____   _____   _____
Name of Researcher   Signature   Date

University of Dundee

djcad
duncan of jordanstone
college of art & design

CO-DESIGN
Political Engagement

University of Dundee
Questionnaire

Name

Age

Education level

Current occupation

Nationality

City of residence

Interest in politics:

a.   Low
b.   Medium
c.   High

Optional Questions - What did you vote in these political events?

General Election 2015

EU Referendum

DESIGN
Political Engagement

1. Content

Discuss the **value of the content** you have been given alongside the debate?

What makes content **appropriate**?

How does an online tool encourage the **sharing** of **trustworthy** information?

DESIGN
Political Engagement

2. Identity

What **information** would you like to share about yourself and see about others?

How can a person's online profile enable **trust and empathy** towards him/her?

How would **anonymity** affect the discourse?

3. Communication

How can a digital tool enable **meaningful political discussion** during televised debates?

What would its **purpose** be?

What **form** would it take?

4. Relationships

What should the relationships between users be?

How can we increase **empathy** between users?

Should a political debate tool force **diversity** into the communication?

Should we cap rent along with inflation?

Debate Questions

Add Side

For

Add Argument

200
16

Link - gov.uk

A new regulatory regime is needed in the private rental sector to prevent landlords exploiting the shortage of homes on the market at the expenses of tenants and tax-payers. The new regime should give tenants the right to stay in their home as long as they like.

150
56

Link - theguardian.com/uk

New regulations would not necessarily spell an exodus of private landlords, arguing that many landlords invested in order to 'capitalise on rising house prices' and their deci-sions were influenced by 'a much broader range of factors.

100
3

Link - gov.uk

Exceptions to rent ceilings could be made in cases where a home has genuinely been improved by the landlord. Land-lords who built new homes could also be exempted from the main regulatory regime, but be encouraged to sign up to a similar voluntary scheme.

87
16

Link - bbc.co.uk/news

There are clear ways to tackle any 'down side' to rent cap-ping. If a logged repair isn't looked at within a week, the tenant could have the right to repair and deduct costs from rent.

Against

Find source

Summary of source

Add Argument

Link - iea.org

What ends up happening is landlords will just sell because they can't make any money.

That actually exacerbates the crisis, because you end up with an even greater housing shortage.

200
16

Link - iea.org

170

Viewer's Debate

This tool would allow debate viewers to find good quality information for and against questions raised during the broadcast . The aim of the tool would be to enable fact based deliberation. The discussion would be split into its composing sides, where viewers would be able to add and summarise sources.

Next Person

Chat

Diana Larmon

Dundee

Student

85%
Compatible

- Immigration
- Social Issues
- EU

Undergraduate

I am a PhD student interested in second screen use during political debates.
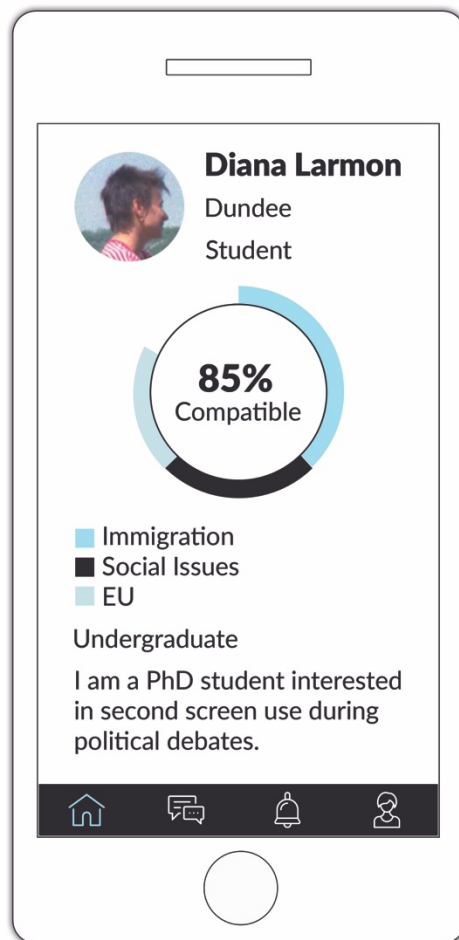
Political Date App

Rather than start romantic relationships, this date app would enable personal communication with people with different political ideology. The app would promote one on one conversations between people in the form of a Tinder/Chat Roulette style application.

The app will highlight points of similarity and differences between people with different political ideology, such as their views on green energy and the NHS.

Your identity
Editing your identity changes content you see

Katya Gorkovenko

Dundee

Student

Undergraduate

Green Party

#leadersdebate

Katie Sterling @katie123 1 min
Fascinating article, private sector management can learn a lot from Mission Command #LeadersDebate

The Independant @theindependant
The history of Nordbat 2 illustrates the virtues & perils of a well entrenched culture of mission command.

24 Hidden Tweets

Debbie Smith @debbiesm 1 min
We heard n #LeadersDebate how poverty is solved by more $. $ dosnt change how people live. They need #vision. #opportunity

---

Your identity
Editing your identity changes content you see

Katya Gorkovenko

Dundee

Student

Undergraduate

Green Party

I am a PhD student interested in second screen use during political debates.

Topics of interests
- Health
- Education
- Housing
- Immigration
- Green Energy
- International
- Economy
- EU
- Human rights
- Security
- Social Issues
- Science Issues
- Electoral Issues
- Domestic Policy

#leadersdebate

Maisie Laino @maisie123 London, Labour Party, 1 min
I found this news article from the BBC that tells a different story about the events they are talking about #LeadersDebate

BBC @BBCNews
NHS England has had dramatic cuts to staff leading to longer waiting hours for patients.

Freddy Plowden @Freddy Lancaster, Labour Party, 1 min
Get out of here #LeadersDebate
I come from a family of immigrants, we have contributed to this country more than Farage gives us credit for

3 Hidden Tweets

Lenny Cardiel @cardiellenny London, Green Party, 1 min
#LeadersDebate I think that there are several issues that are not being discussed around capping rent.

1 Hidden Tweet

Diana Larmon @larmondd Dundee, Conservative Party, 1 min
#LeadersDebate Maybe there should be exceptions to capping rent with inflation, such as the ones in this article

The Independant @theindependant
Capping rent with inflation could be detrimental to some buy to let small businesses

---

Identity Equality

Anonymity can give poeple power to abuse others online. This tool would promote equality between users. It would let viewers see and interact with Twitter content that is generated by accounts with the same level of personal information as you. It would give users full control and choice in their self-representation online, which would enable them to interact with others in their preferred style.

Feedback wave

Disagree 67%   BBC   33% Agree BBC
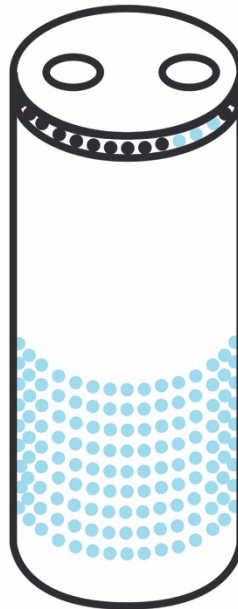
**IoT device
listening for feedback**

Live Feedback Tool

Viewers would be able to agree and dis-
agree to the arguments brought forward
by the politicians, live through an voice
assistant. The aim would be collect live
opinions from across the country. The
device would listen to the users and
detect their reactions. The feedback
would then be visually overlaid onto the
debate.