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Opinion Forming in the Digital Age

Fake News, Echo Chambers and Populism - Key Themes, Concerns & Recommendations for European Research and Innovation

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The Internet provides fast and ubiquitous communication that enables all kinds of communities and provides citizens with easy access to vast amounts of information, although the information is not necessarily verified and may present a distorted view of real events or facts. The Internet's power as an instant source of mass information can be used to influence opinions, which can have far-reaching consequences.

This report's purpose is to provide input into the advisory processes that determine European support for research into the effects and management of Fake News (e.g. deliberate misinformation), Echo Chambers (e.g. closed communities where biases can be reinforced through lack of diversity in opinions), and the Internet's influence on social and political movements such as Populism; to provide insight into how innovation that takes these aspects into account can be supported. To address this aim, this report concerns socio-technical implications of the Internet related to the impact of closed communities and misinformation and makes recommendations derived from a consultation with domain experts concerning the research needed to address specific challenges.

This study has used the Delphi Method, an iterative consultation mechanism aimed at consensus building within a targeted panel of experts. Three rounds of iteration were undertaken and a total of fourteen experts participated in all three rounds. The result of the consultation is 67 assertion statements that reached consensus amongst the experts in five broad themes, and these are presented in this report and summarised into key recommendations.

The key overarching recommendation is that we need to understand how opinions are formed and are influenced in the current digital age. Investigations are needed to understand the underlying cognitive and emotional processes that enable peoples' opinions to be influenced in the context of a hybrid media system that mixes online and offline channels and broadcast and interactive social media.

Acknowledgements

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Summary of Key Recommendations

The Internet provides fast and ubiquitous communication that enables all kinds of communities and provides citizens with easy access to vast amounts of information, although the information is not necessarily verified and may present a distorted view of real events or facts. The Internet's power as an instant source of mass information can be used to influence opinions, which can have far-reaching consequences.

This report's purpose is to provide input into the advisory processes that determine European support for research into the effects and management of Fake News (e.g. deliberate misinformation), Echo Chambers (e.g. closed communities where biases can be reinforced through lack of diversity in opinions), and the Internet's influence on social and political movements such as Populism; to provide insight into how innovation that takes these aspects into account can be supported. To address this aim, this report concerns socio-technical implications of the Internet related to the impact of closed communities and misinformation and makes recommendations derived from a consultation with domain experts concerning the research needed to address specific challenges. This study has used the Delphi Method, an iterative consultation mechanism aimed at consensus building within a targeted panel of experts. Three rounds of iteration were undertaken and a total of fourteen experts participated in all three rounds. The result of the consultation is 67 assertion statements that reached consensus amongst the experts in five broad themes, and these are presented in this report and summarised into key recommendations.

The key overarching recommendation is that **we need to understand how opinions are formed and are influenced in the current digital age.** Investigations are needed to understand the underlying cognitive and emotional processes that enable peoples' opinions to be influenced in the context of a *hybrid media system* following Andrew Chadwick's work[3] that mixes online and offline channels and broadcast and interactive social media.

Fake News

- Understanding the **societal effects of fake news** is important – whether people believe it, whether and how they distribute it and whether they are influenced by it.

- Investigation of **effective and observable measures** for the influence of fake news is advocated.

- **Effective mechanisms** are needed to address three specific elements of fake news: *emergence*, *distribution* and *effects*.

- The **propagation of fake news** needs to be studied, especially within and across **hybrid media systems**.

- Fake news propagation patterns, strategies and effects need to be evaluated in **different countries and world regions**.

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[3] Chadwick, A., 2017. *The hybrid media system: Politics and power*. Oxford University Press.

- We need to understand **how the new dissemination channels offered by the Internet and social media** contribute to the social effects of fake news and propaganda.

- Understanding of the **different actor types who spread fake news** is needed, coupled with their motivations for doing so.

Populism

- There is a need to investigate the **root causes, underlying forces, evolution, and dynamics** of **different types** of populism.

- We need to understand **how people are socialised into populist movements**. The phenomenon of populism is well studied, but we specifically need to understand the contribution of **hybrid media systems** including **interactive online communities**, plus **fake news** and **echo chambers** to populist recruitment; individually and in conjunction.

- Investigation into **measures to address populism** is recommended. A specific point made by the panel is to understand and assess the effectiveness of the different countermeasures currently employed by different societal actor types to address populist activity, and to learn from them.

Echo Chambers

- Investigation is needed to **characterise echo chambers** to: describe them, to find out how they are working and understand how effective they are at reinforcing entrenched beliefs.

- We need to understand how echo chambers are **supported by hybrid media systems**.

- We need to investigate how **selective filtration and suggestion by search engine providers** influence polarisation.

- Research is needed to **determine distinctions and interplay between confirmation bias and critical analysis.** What characterises the situations and people that determine whether confirmation bias or critical analysis takes precedence?

- **Motivations** for people **joining, participating in, staying** and **leaving** echo chambers need to be investigated.

Research

- Understanding **how to assess the veracity of information** is needed. Specifically needed is to understand how people (of different types, e.g. professionals, private citizens and others) assess the truth in a piece of information is needed, as well as how to help people assess the truth of a news item.

- **Exploration of diversity in terms of the information sources that people see** is needed so that people get the option of exposure to diverse viewpoints, but this should be investigated considering the **motivations that determine whether people will read them**.

- We need to **guard against partisanship** or **inherent bias** in potential solutions.

- **Collaborative, interdisciplinary research** is needed, and **cross-discipline collaboration needs to be improved. Funding** is needed to enable this interdisciplinary collaboration.

- A **diverse population of subjects** for interviews and experiments is needed, and **trust of the target community** is essential in an experiment study.

- In addition to standard data gathering methods such as **surveys** or **interviews, methods specifically observing peoples' response to fake news** are needed.

- **Multiple research approaches and mixed-methods research** are advocated to cross-check and validate evidence generated through different methods.

- **Skills** needed to address the inter-related challenges of fake news, echo chambers and populism include: **social science, ethnography, data gathering, qualitative** and **quantitative analysis, statistics**; and **hypothesis development** coupled with **experiment design.**

- **Definitions and conceptual models for key terms** are needed, with the caveat that while there is a need for adequate definitions, exhaustive, **full-consensus definitions are likely to be difficult and unnecessary.** We also need to acknowledge that there may be **different definitions for the same term or concept** and to understand the effects of using different definitions.

- **New and diverse datasets are needed** – there is too much reliance on existing benchmark datasets. **Funding** is needed for the purchase (or collection and cleaning) of large new data sets.

- **Social media data** is especially needed, and it is recommended that **social media operators be encouraged to make it easier to access their data.** The current situation is that it is very difficult, and in some cases impossible, to access this data, which is a major barrier to quantitative research and analysis.

- A **directory of existing tools and methods** is proposed, that can act as a one-stop-shop so that researchers (and citizens) can access them and can understand what resources are available.

Societal Impacts

- **We need to test the overall hypothesis that fake news, echo chambers and populism have detrimental or destabilising effects on democracy.** We need to understand each of their individual contributions, as well as their effects in combination, to the undermining of liberal democracy.

- **Individual and collective effects** of fake news, echo chambers and populism on citizens need to be investigated. What factors determine citizens' susceptibility, and what makes some citizens more susceptible than others? Secondly, we need to understand the effects on "bystanders" – citizens who see fake news or populist content etc, but do not actively engage with it.

- In addition to fake news and echo chambers, the **social influences** of **search engine manipulation, search result filtration** and **search suggestion** mechanisms need to be investigated.

Introduction

This report's purpose is to provide input into the advisory processes that determine European support for research and innovation into the socio-technical related phenomena of Echo Chambers, Fake News and Populism. It is a summary of the recommendations resulting from a consultation into these three subjects with a multidisciplinary international panel of experts in relevant fields.

This study has used the Delphi Method, an iterative consultation approach aimed at consensus building within a targeted panel of experts. Three iterations were undertaken and a total of fourteen experts participated in all three rounds. The result of the consultation was 67 assertion statements that reached consensus amongst the experts, in five broad themes. Three are the original themes of the consultation, and an additional two have emerged based on the responses and subsequent collation. The key themes are:

- Fake News & Misinformation;
- Populism;
- Echo Chambers;
- Research; and
- Societal Impacts.

The report is structured as follows. Firstly, a brief background is presented, followed by the key recommendations that form the main body of the report, grouped into six major themes. Finally, brief conclusions are presented. The report's appendix contains a description of the consultation methodology followed by detailed results from which the key recommendations were determined, to provide more detail and evidence behind the recommendations.

Background

The Internet provides fast and ubiquitous communication that enables all kinds of communities and provides citizens with easy access to vast amounts of information, although the information is not necessarily verified and may present a distorted view of real events or facts. The Internet's power as an instant source of mass information can be used to influence opinions, which can have far-reaching consequences.

This consultation concerns socio-technical implications of the Internet related to the impact of closed communities and misinformation. The topics of "echo chambers"[4], "fake news" and "populism" are all currently trending, with major movements or political events associated with them. Multidisciplinary research and innovation are needed to answer questions relating to understanding of populist movements and how the Internet supports them; as well as the promotion of diversity and truth in the Internet.

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[4] An echo chamber may be defined as "an environment in which a person encounters only beliefs or opinions that coincide with their own, so that their existing views are reinforced and alternative ideas are not considered" (OED). With the power and reach of the web, an online echo chamber may result in far reaching consequences. False information, but also social group membership, may distort what individuals can see.

Internet content can be filtered and censored, often without the knowledge of the consuming citizens. A 2016 consultation by the Ditchley Foundation states that *"increasingly consumers are being presented with a selected slice of the Internet, controlled, filtered and sanitised"*[5]. The phrase "filter bubble" was coined by Eli Pariser[6] and refers to the isolation of citizens in "bubbles" of information filtered by providers such as search engines or news portals based on profiling their previous Internet activity. This is claimed to have benefits, e.g. avoiding information overload for the consumer and presenting them with results they find interesting. While Beam & Kosicki indicate that filtration and personalisation of news does not necessarily lead to polarised views in the reader[7], the fact remains that users are not seeing the full picture, and often do not realise that their content is filtered or tuned. Internet search result bias, where different users get different search results for the same query based on the search provider's profiling of the user and advertisement targeting, is not new: in 2005, Goldman stated: *"Due to search engines' automated operations, people often assume that search engines display search results neutrally and without bias. However, this perception is mistaken. Like any other media company, search engines affirmatively control their users' experiences, which has the consequence of skewing search results (a phenomenon called 'search engine bias')"*[8]. Carson appeals to Google to provide a switch *"that will allow users to manually toggle between results returned through Google's new personalization algorithms and results returned through Google's original PageRank algorithms"*[9] so as to show the effects of the personalization algorithms.

In addition to the providers filtering information, human interactions over the Internet can also result in similar effects. The Ditchley Foundation consultation states that *"there is a risk that the Internet becomes an echo chamber for our own prejudices and preconceptions, rather than a source of objective facts and challenge. We are already seeing this in the rapid spread of false news"*[5]. Influential figures such as Bill Gates have identified the dangers of closed communities that reinforce entrenched opinions: *"(Technology such as social media) lets you go off with like-minded people, so you're not mixing and sharing and understanding other points of view ... It's super important. It's turned out to be more of a problem than I, or many others, would have expected"*[10]. Jasny et al[11] break down the "echo chamber" into the "echo", which is information matching the recipient's entrenched beliefs, and the "chamber" which is the minimum network that permits *"the same information to be transmitted from one source to one recipient via different paths"*[11]. Populist rhetoric (more of which later) clearly contributes to the "echo" because it is targeted at sympathetic audiences and cast in a way that it is easy to agree with. Social media networks provide

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[5] Will we still have a single global Internet in 2025? - The Ditchley Foundation http://www.ditchley.co.uk/conferences/past-programme/2010-2019/2016/global-Internet 2016

[6] Eli Pariser. The Filter Bubble: What the Internet Is Hiding from You. 2011.

[7] Beam, M.A. and Kosicki, G.M., 2014. Personalized news portals: Filtering systems and increased news exposure. *Journalism & Mass Communication Quarterly*, 91(1), pp.59-77.

[8] Goldman, E., 2005. Search engine bias and the demise of search engine utopianism. Yale JL & Tech., 8, p.188.

[9] Carson, A.B., 2015. Public Discourse in the Age of Personalization: Psychological Explanations and Political Implications of Search Engine Bias and the Filter Bubble. Journal of Science Policy & Governance, 7(1).

[10] Filter bubbles are a serious problem with news, says Bill Gates. https://qz.com/913114/bill-gates-says-filter-bubbles-are-a-serious-problem-with-news/

[11] Jasny, L., Waggle, J. and Fisher, D.R., 2015. An empirical examination of echo chambers in US climate policy networks. Nature Climate Change, 5(8), pp.782-786.

an environment that can promote online echo chambers – they comprise a vast multiplicity of forums, groups and pages where like-minded people can gather, each of which can be dedicated to a specific interest or viewpoint, from the moderate to the extreme.

The ease that the Internet affords the spread of false & biased information, coupled with the current perceived magnitude of misinformation's impact, means that research into addressing the issues of misinformation and fake news is becoming pressing, both to understand what is fake and how misinformation is propagated. Tim Berners-Lee has stated that the web needs "saving", and major issues to be addressed are the spread of misinformation and that political advertising online needs transparency and understanding[12,13]. Whilst not claiming that fake news affected the outcome, a recent study into fake news and its impact on the 2016 US election by Allcott & Gentzkow indicated that the number of false news stories favouring Trump shared on Facebook was 3.75 times greater than those favouring Clinton: *"of the known false news stories that appeared in the three months before the election, those favoring Trump were shared a total of 30 million times on Facebook, while those favoring Clinton were shared 8 million times"* [14].

Given the current focus on major political events, there is a significant amount of recent literature regarding the propagation of misinformation, and it falls into two major categories: misinformation propagated by bots and the factors that encourage humans to share misinformation. Howard and Kollanyi studied bots that propagated propaganda during the Brexit referendum[15], and found that bots were predominantly propagating tweets to hashtags advocating leaving the EU, resulting in an artificial imbalance of perceived opinions. They also found that a small number of sources (less than 1% Twitter accounts) was responsible for a large number of messages (almost one third). Maasberg et al approach misinformation propagation from the human perspective and consider factors that cause people to propagate new items[16]. Novelty (e.g. surprising news) was found to be the only influencer to propagation. It was hypothesised that the credibility of the source was also an influencer to sharing, but this was unsupported.

Understanding how people assess the credibility of information found on the Internet is clearly important, especially in this era of fake news. As with trust, assessment of credibility is a judgement made by the

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[12] Tim Berners-Lee, I invented the web. Here are three things we need to change to save it. The Guardian, 12 March 2017. https://www.theguardian.com/technology/2017/mar/11/tim-berners-lee-web-inventor-save-internet

[13] Berners-Lee also mentions that citizens have lost control of their personal data. This is important, but is outside the scope of this consultation as it is already well addressed by existing EC work programmes.

[14] Allcott, H. and Gentzkow, M., 2017. Social media and fake news in the 2016 election (No. w23089). National Bureau of Economic Research. © 2017 by Hunt Allcott and Matthew Gentzkow.

[15] Howard, P.N. and Kollanyi, B., 2016. Bots,# strongerin, and# brexit: Computational propaganda during the uk-eu referendum. https://arxiv.org/pdf/1606.06356 and https://ora.ox.ac.uk/objects/uuid:d7787894-7c41-4c3b-a81d-d7c626b414ad

[16] Maasberg, M., Ayaburi, E., Liu, C. and Au, Y., 2018, January. Exploring the Propagation of Fake Cyber News: An Experimental Approach. In Proceedings of the 51st Hawaii International Conference on System Sciences.

recipient of information based on possibly many factors. Metzger[17] states that "*a long history of research finds that credibility is a multifaceted concept with two primary dimensions: expertise and trustworthiness*". There are numerous information sources operating via traditional media and/or Internet channels that have a long-standing brand and a reputation to maintain, and their content is mostly subject to basic journalistic practices such as fact-checking because publishers clearly have a vested interest to protect their reputation and avoid libel suits by ensuring the information they broadcast is factually correct. Some have biases (e.g. political), but this is usually well-known amongst the consumers (e.g. left-leaning newspapers). Today there is an additional deluge of information - it is easy for anyone to publish unverified information, fake news or propaganda in the multitude of channels and locations available today in the Internet (especially in social media), and any bias or slant is very often not explicit. Mele et al[18]: "*Social media platforms provide a megaphone to anyone who can attract followers.*" Massberg et al found that readability of an item positively affects a subjective assessment of the credibility (believability) of its source. Citing previous work, Johnson and Kaye [19] consider the question of information credibility from the perspective of trust placed in political information from social media networks and found that "*politically interested Internet users in general judged SNS quite low in credibility, 7.4 on a 4–20 point index*".

Accuracy of information is closely related to credibility. In some cases, the platforms (e.g. social media) are becoming concerned with the veracity of the information shared within them. Fact-checking is costly in terms of both time and resources needed, so prioritisation strategies are needed to determine if, when and how an item should be fact-checked. As an example, Papanastasiou addresses the question regarding which strategy that platforms should adopt when faced with fake news[20] based on economic principles – the decision to fact-check an item is considered bearing in mind the costs and potential benefits of checking vs the cost savings and potential penalties of not checking. Being first to publish a news story is a major advantage, so reductions of the time cost for fact-checking are highly desirable.

Metzger also discusses user motivation whether to verify or accept information at face value. The issue of motivation to verify information relates to the previous subtopic of filter bubbles and also confirmation bias: whether a recipient of information is motivated to evaluate the information may depend on their own opinions and biases. In a survey of the psychology of misinformation, Mele et al discuss the motivations behind confirmation bias and the acceptance of fake news: people have a tendency to reinforce their already-existing beliefs, and are more likely to accept information that concurs with their beliefs and question information that contradicts them[18]. Kolbert[21] concurs with Mele et al's major points

[17] Metzger, M.J., 2007. Making sense of credibility on the Web: Models for evaluating online information and recommendations for future research. Journal of the Association for Information Science and Technology, 58(13), pp.2078-2091.

[18] Mele, N., Lazer, D., Baum, M., Grinberg, N., Friedland, L., Joseph, K., Hobbs, W. and Mattsson, C., 2017. Combating Fake News: An Agenda for Research and Action.

[19] Johnson, T.J. and Kaye, B.K., 2014. Credibility of social network sites for political information among politically interested Internet users. Journal of Computer-Mediated Communication, 19(4), pp.957-974.

[20] Papanastasiou, Yiangos, Fake News Propagation and Detection: A Sequential Model (January 28, 2018). Available at SSRN: https://ssrn.com/abstract=3028354 or http://dx.doi.org/10.2139/ssrn.3028354

[21] Kolbert, E., 2017. Why facts don't change our minds. The New Yorker, 27(2017), p.47.

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concerning what forms opinions, and both agree that often in populist situations, facts alone won't change peoples' minds. This is backed up to some extent by Maasberg et al's study, in that they did not find a positive correlation between source credibility and propagation. Mercier and Sperber[22] use the term "myside bias" to describe a related aspect: people are good at spotting flaws in other peoples' arguments, but poor at spotting flaws in their own. Polletta and Callaghan[23] describe "stories" as means of propagating misinformation that contribute to confirmation bias. These are exemplary cases that act as fables to illustrate a point that is consistent with the teller's ideology, and elements of the stories may be exaggerated or cut as necessary to better illustrate the point.

Populism is a well-known area where confirmation bias, echo chambers and fake news feature widely, either knowingly or unknowingly. In general, populism is founded in the dissatisfaction of "the people" with "the elite" or "the others". According to Speed & Mannion[24], populism can be indicated by one or more of the following characteristics.

- People feel that their treatment by "the system" is unfair – they often feel that "others" (both known and unknown) are getting a better deal.
- There is a distrust of "the elite" by "the people", who blame "the elite" for perceived unfairness. This has connotations of the proletariat railing against the bourgeoisie, but populism is not necessarily left-wing – it can equally apply from the left or right and often depends on who is in power.
- There is a distrust of anything "foreign" (a form of "others") and a desire to hark back to a golden age of nationalism.
- There is a desire to acquire (or re-acquire) sovereignty for the people, which they see as their right. There is often the sense that sovereignty has been illegitimately taken from the people.

Populist leaders are typically outside the establishment, enhancing their credentials as crusaders for the people against the establishment. They are often skilful orators, able to use linguistic techniques to engage and win over the audience (for a classical perspective see e.g. Wooten & Kennedy[25]). Their rhetoric contains easy-to-agree-with or inflammatory messages that are targeted at a dissatisfied population, who are promised a better or fairer tomorrow by the leaders. Engesser et al[26] classify populist rhetoric in terms of three key properties: simplification (reduction of nuanced complexity, presenting arguments as simple and black-and-white), emotionalisation (speech or examples that are emotive in nature and often promote a sense of injustice) and negativity (often against the elite or "others" that the leader is targeting).

Surveying relevant literature, Engesser et al concur with the key elements of populism described above and point out that while populism has been studied widely as a social phenomenon, study of the impact

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[22] Mercier, H. and Sperber, D., 2017. The enigma of reason. Harvard University Press.

[23] Polletta, F. and Callaghan, J., 2017. Deep stories, nostalgia narratives, and fake news: Storytelling in the Trump era. American Journal of Cultural Sociology, 5(3), pp.392-408.

[24] Speed, E. and Mannion, R., 2017. The rise of post-truth populism in pluralist liberal democracies: challenges for health policy. International Journal of Health Policy and Management, 6(5), p.249.

[25] Wooten, C.W. and Kennedy, G.A. eds., 2001. The orator in action and theory in Greece and Rome (Vol. 225). Brill.

[26] Sven Engesser, Nayla Fawzi & Anders Olof Larsson (2017) Populist online communication: introduction to the special issue, Information, Communication & Society, 20:9, 1279-1292, DOI: 10.1080/1369118X.2017.1328525

of the Internet on populism is in its infancy. Engesser et al introduce the concept of the "*online opportunity structure*", which describes the structures and mechanisms online communication affords to populist activities. Populist leaders use the Internet to interact directly with their audience online, (typically using social media), enabling them to interact with a targeted (sometimes self-selected) audience, respond quickly and to disseminate the message they want, unfettered by elite propaganda or traditional editorial controls such as journalistic integrity. Online communication also supports homophily in that its users can find online places (e.g. forums, social media pages etc) that correspond to their beliefs and interact with like-minded people. If these places are carefully selected by populist leaders to match their ideology, they provide ready-made, receptive audiences and can function as echo chambers through reinforcement of polarised opinions. Focusing on social media, Hameleers & Schmuck study online blame attribution[27]: "*… ordinary citizens and politicians frequently use social media to stress the divide between the blameless, hardworking people as in-group and culprit others as out-groups.*"

These topics are clearly interdependent and raise questions of fairness, truthfulness, democracy and liberty, but all are grounded in the Internet's implications for the wider society.

Recommendations

This section contains key recommendations derived from the results of the consultation. The recommendations are presented in five sections (corresponding to those described above), supported by quotations from the experts which were given throughout the consultation.

Fake News

Understanding the **societal effects of fake news** is important – whether people believe it, whether and how they distribute it and whether they are influenced by it.

> "*We need more audience research, both qualitative and quantitative. We have little understanding of exactly what people are seeing in their social feeds, how they make sense of that information, what they do with that information (both online in terms of liking, commenting or sharing and offline in terms of conversations as well as concrete actions like voting) and how they feel about the information they are consuming.*"

> "*It is of vital importance to understand what contemporary fake news is, and what drives it, in order to know how to combat it. Contemporary fake news contributes to deception and misinformation running rife among closed online communities, with no hope of being corrected by facts because those inside the filter bubble are either not exposed to the facts, or choose not to believe them. This is democratically problematic: those trapped within the online filter bubble lose touch with reality, and those outside the filter bubble have little or no idea that this state of affairs is taking place. Ultimately,*

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what is at stake is the common foundation of knowledge upon which democratic decisions are made. As such, understanding and combating this phenomenon is of vital societal importance."

Investigation of **effective and observable measures** for the influence of fake news is also advocated. For example, working towards understanding if and how citizens' opinions, actions or comments are changed because of exposure to fake news. How can tangible measures such as voting patterns be attributed to the influence of fake news? This is difficult because the correlations are not direct, often involve multiple factors and exposure to fake news is not straightforward to monitor, but research is needed to determine how to correlate ephemeral phenomena (e.g. fake news) to tangible and observable metrics (e.g. voting patterns). More importantly, not only does a correlation exist, but is there a causal link?

"A key research gap is understanding the impact of fake news on real-life views and actions. This means identifying summary statistics that capture meaningful causal effects - for example, an article that has been viewed is not the same as an article that has been read, and an article that has been read is not the same an article that has influenced someone's opinion or voting preferences."

The **propagation of fake news** needs to be studied, especially across hybrid and heterogeneous propagation ecosystems. These need to be characterised and fake news epidemiology patterns through them need to be investigated, especially considering two axes: online vs offline and broadcast (e.g. traditional media) vs user-controlled (e.g. social media). Measurements, metrics and benchmarks are needed to be able to compare different misinformation distribution strategies.

"[…] there is a need to uncover the underlying epidemiology of fake news and disinformation. The final impact of a piece of content may not have a simple association with its initial spread online. For instance, a story may only get a few shares and direct views, but its message could subsequently be picked up and amplified by media sources who enable a 'broadcast' event, reaching a much wider audience. To understand the relationship between content and full outbreak dynamics, research is needed into the structure and magnitude of social influence online. What does the ecosystem actually look like? What type of interactions and sharing dynamics are most likely to result in widespread harmful impacts? Such research needs to be data-driven, and informed by multiple sources to enable fair comparisons across different platforms".

If we assume fake news, echo chambers and populism do indeed exert an influence, then we need to investigate what mechanisms might be available to address them. **Effective mechanisms are needed to address three elements of fake news:** *emergence*, *distribution* and *effects*. For each, interventions need to be proposed and evaluated for effectiveness.

We should investigate methods of **detecting and stopping misinformation at source**, rather than let it be marked as false afterwards, because the panel assert that once the news is out, it has more impact than subsequent flagging as false or correction. This is challenging in an Internet environment where speed to publish a story is a critical factor in getting readership and therefore revenue. As one of the panellists puts it:

"Misinformation tends to have a bigger effect in society than later corrections do […]. In social media research, it has been shown that hoaxes are shared more than corrections […]. Experiments by Facebook to let users flag misinformation have not succeeded so far, showing that in fact a piece of

information being flagged as potential misinformation triggers more shares rather than reduce it. While it's difficult to amplify the diffusion of corrections, more research is needed looking into ways for preventing the emergence and diffusion of misinformation."

There is too much focus on the western world in the current body of work, and **fake news propagation patterns, strategies and effects need to be evaluated in different countries and world regions.**

"[…] the empirical results should be validated by means of international comparative research. Most findings originate from the USA or single European countries. This does not necessarily mean that they can be generalized."

"[…] The extent to which fake news is prevalent across the world. Does it manifest in the same way in different countries? Does it have different socio-political impacts in different countries?"

There is already a lot of work in studying propaganda and different parts of society's reactions to it, so any new work clearly needs to be set within the body of that which already exists. Of specific interest is **how the new dissemination channels offered by the Internet and social media are contributing to the social effects of fake news and propaganda.** For example, because of social media citizens themselves are active distributors (and sometime creators) of content, and content can propagate through many different media types.

"[…] it may well be that the link between fake news outlets and classic media is crucial: fake news that is taken up by normal journalists and appears on traditional media. The interplay between social media and classic media is therefore important (cf. Chadwick's hybrid media system)."

Understanding of the **different actor types who spread fake news** is needed, coupled with **their motivations** for doing so. Examples of actor types identified so far include private citizens, populist leaders and professionals such as journalists and content publishers. Examples of motivations identified so far include deliberate strategic sharing of fake news with a specific goal in mind (for example commercial, reputational or political); and ad-hoc sharing based on novelty or interest. Motivations may be manifold, and trade-offs and balances that can be struck between different motivations should be investigated.

"Why are people sharing content that experts deem to be "fake"? What are they trying to achieve? How do they interpret the content?"

"[…] what are the key commercial and propagandistic drivers of fake news?"

Populism

The clear overall recommendation is that there is a need to investigate the **root causes, underlying forces, evolution, and dynamics** of **different types** of populism.

"[…] How have recent populist ideologies evolved over time, what are their ideological roots and the platforms where these ideologies have been elaborated and spread?"

We need to understand **how people are socialised into populist movements,** how populist leaders use different information channels and to what effect. The phenomenon of populism is well studied, but we specifically need to understand the **contribution of online and offline channels, broadcast media,**

interactive online communities, **fake news and echo chambers to populist recruitment**; both **individually** and **in conjunction**. What inter-relationships between these media types support populist recruitment? We also need to understand populist voters' relationship to different media types: which channels they use, their media literacy etc. What are the main sources of populist information? Is the contribution of online and interactive channels to populist engagement increasing?

> *"[…] Maybe even more importantly, we need to understand how individuals are socialized or socialize themselves into populist ideologies. How do they acquire, for example, a right-wing populist worldview? […]"*

> *"the "media" characteristics of populist voters (their media use, media literacy, trust in media etc.)"*

> *"Specifically, we do not know how populist voters use the media, what their main sources are, whether they are aware of filter bubbles and fake news etc."*

> *"[…] How critical is the internet to recent political developments? What is the contribution of the internet relative to cable TV, newspapers, and word of mouth? Would we be seeing similar developments in the absence of the internet?"*

Investigation into **measures to address populism** is also recommended. There are many possible measures to address populism, but a specific point made by the panel is to understand and assess the effectiveness of the different countermeasures currently employed by different societal actor types to address populist activity, and to learn from them. For this, a set of assessment criteria needs to be determined, and definitions of what constitutes "effective" in the different environments populated by the actors.

> *"[…] reactions to populism in society: How do other political actors, journalists, civil society actors address the challenges populism poses (in particular in their online communication - given that populist actors are often particularly active on social media)? What are their responses and alternative narratives, how do they reflect the causes and their own possible role in the rise of populism?"*

Echo Chambers

Investigation is needed to **characterise echo chambers** to: **describe** them, to find out **how they are working** and **understand how effective they are** at reinforcing entrenched beliefs. Specifically, are echo chambers **sets of behaviours** or (real or virtual) **places**, or a combination of these? We also need to understand the core narratives (e.g. discussions, arguments, sentiments language, phraseology etc) that lead to different types of echo chambers. Finally, Investigation is also needed to determine whether echo chambers are actually mythological.

> *"Research needs to focus on applying an operationalization of Echo Chambers to assess how they are working and the degree to which they are working."*

> *"This topic is an important one because a lot of claims are made about the existence, inter-dependence and impact of the three topics. This, however, begs the question: to what extent are these claims correct? Descriptive studies detailing to what extinct [sic: assume "extent"] echo chambers and fake news are present are particularly useful."*

"To contrast misinformation, we first need to smooth polarization. In this direction, it would be crucial to i) understand how core narratives behind different echo chambers are built and evolve and ii) be aware of the mechanisms underlying social platforms to investigate their impact on users' behavior."

"[…] The -i would say- myth of echo chambers is based on anecdotes and small groups. […]"

We need to understand **how echo chambers are supported using hybrid media systems** (both online and offline and using broadcast or social media). Opinion reinforcement methods and technologies need to be studied in this hybrid online and offline environment.

"To address the problem properly, we have to account for the socio-cognitive factors underlying the phenomenon. Confirmation bias has been shown to play a pivotal role in information consumption and diffusion on online social networks. Indeed, social media represent a new, hybrid system that relies on processes that feed and foster echo chambers and, thus, users' polarization. Such a scenario inevitably affects civic and political lives, and the dominance of few, increasingly powerful tech companies cannot be ignored."

"[…] we need more research on the boundary conditions of Echo Chambers, Fake News, and Populism. Under which circumstances do Echo Chambers form? When do Fake News spread? In which situation does Populism emerge?"

"I would add to this how they are evident and reinforced in offline environments, non-news contexts, and less overtly political […]."

We need to investigate **how techniques employed by major social media platform providers and selective filtration by search engine providers** (the so-called "Search Engine Manipulation Effect" – SEME) **influence polarisation.** We should investigate algorithmic selection of content and selective information exposure by platforms. Recommender systems are a case in point, because they can exacerbate filter bubbles by recommending similar content to that already consumed by a user. How do technologies like recommender systems influence political behaviour?

"[…] If biased filtering and ordering of this sort is occurring - and it is virtually certain that it is - we need to be concerned about it. If we ignore the power that Big Tech platforms have to shift opinions without people's knowledge, the democratic form of government will become little than an illusion, and human freedom itself will be substantially undermined."

"The phenomenon of (possible) echo chamber should also be seen in a broader context of algorithmic selection of content and recommender system. Such technologies do not only concern political content and journalistic news, but also a wide range of cultural and entertaining content. By studying the dynamics of recommender systems in other contexts (music, audiovisual entertainment, shopping etc.) and comparing it to politically relevant platforms and content, we can develop broader theoretical frameworks and a broader understanding of the effects of such technologies."

Research is needed to **determine distinctions and interplay between confirmation bias and critical analysis.** Some hypotheses assert that people scrutinise and question content that disagrees with their preconceptions while they are much less suspicious of content that agrees with them. Others imply that people are capable of rational critical analysis. What characterises the situations and people that determine whether confirmation bias or critical analysis takes precedence?

"When we discuss "fake news", it is important to ask how we define messages as true or false. I therefore suggest to take a step back and investigate how journalists, citizens and other relevant actors define truthful reporting and when they accept news as true. It is not so much the falsehood of some reports in the eye of the researcher or of social authorities that is important, but we should focus on what makes news trustworthy in general. Depending on their overall worldview, people believe and disbelieve a mixture of news that we, as researchers, would consider true and false (for example, supporters of populist parties and movements often believe and share news from alternative media, some of them misleading, and news from established outlets, in particular if they fit their ideology). What is interesting then is to ask what these worldviews are and how people make sense of reports and decide whether they are accurate."

"How biased are people's search for information and evaluation of information? People are often portrayed as being irredeemably biased in how they search for and evaluate information. I believe the data reveal a more complex picture: in some contexts at least, people can evaluate information that contradicts their opinions appropriately, and they can search for such information. What are the contexts that promote more objective and more biased information search and evaluation?"

"[…] It has been tempting to paint an overly negative picture in which most people are biased, share fake news that support their 'group', accept these news, and are influenced by them. I believe such a bleak vision is unwarranted given the data available. It would be interesting to understand the potential limits on the spread of fake news (if few people share them, if they have little effect on people, or if people aren't that biased in their searches)."

Motivations for people joining, participating in, staying and leaving echo chambers need to be investigated. What do people gain from contributing to polarized online communities? Issues concerning whether people know or care that they may be in an echo chamber or a filter bubble are also relevant: in what situations do people care that they may not be receiving both sides of a story (which may be uncomfortable and being truly objective requires significant effort) instead of just the side that they agree with?

"The interesting question is who ends up in an echo chamber, which attempts are made to get out by this person or to pull the person out by others and what is successful. What is the role of closeness of the presenter of alternate information, which sources do have an impact, which time window of being in the grey zone entering an echo chamber does till [sic – assume "will"] allow being pulled out."

"What do people gain from contributing to polarized online communities? When and how does this engagement address broader insecurities or cultural anxieties?"

Research

Understanding **how to assess the veracity of information** is needed with a view to providing methods for information verification and tools such as fact checkers in environments such as social media. At its root is the need to operationalise *"truth"* in the context of internet content. What constitutes misinformation? What factors determine reliable sources? What is the benchmark of truth that internet content should be assessed against?

"What's at stake is epistemological differences. We don't agree on what constitutes "truth." Understanding that is key rather than projecting epistemological frames."

"How do we define what is true and false, what do we and those advocating and implementing such technologies accepts [sic: assume "accept"] as criteria for the truth or falsehood of a message? And can technical systems apply these criteria or can they only be applied by agents that are socialized in human society or in a specific culture?"

Understanding **how people** (of different types, e.g. professionals, private citizens and others) **assess the truth in a piece of information they are presented with** is important. Psychological factors such as trust of sources, reputation preservation, confirmation bias and filter bubbles are well-studied but need to be combined with media literacy and new challenges due to the Internet, such as a proliferation of sources (more every day), easy and undetectable manipulation of information and uneven & unpredictable adherence to norms of objectivity. We need to assess the impact of citizens' media literacy skills – what skills have they been taught and how they are equipped to spot propaganda inside deluges of information from multiple sources of undetermined heritage.

"When we discuss "fake news", it is important to ask how we define messages as true or false. I therefore suggest to take a step back and investigate how journalists, citizens and other relevant actors define truthful reporting and when they accept news as true. It is not so much the falsehood of some reports in the eye of the researcher or of social authorities that is important, but we should focus on what makes news trustworthy in general."

Understanding **how to help people assess the truth of a news item** is needed, e.g. through investigation of methods such as education, interventions or verification tools and techniques. Media literacy education promoting critical evaluation of Internet-sourced information is strongly advocated starting at school (but should be available and encouraged for all ages), and studies are needed to evaluate the effectiveness of this education and to make recommendations for its improvement.

"How can we help people to properly evaluate the veracity of information they obtain online and through social media? What sorts of education, intervention, or algorithmic solutions are feasible?"

"[one] fundamental scientific challenge is how to support citizens in gathering trustworthy information to participate meaningfully in public debates and societal decision making"

"The art of analyzing propaganda needs to be revived. How to spot propaganda, how to analyze it, common themes, etc."

"Media literacy is often referred to as the central skill in the digital age to ensure the empowerment and participation of all citizens. Media literacy is also necessary to be able to cope with the current developments such as echo chambers, fake news and populist communication. However, research on media literacy in the political communication field is scarce. We do not know enough about citizens' media knowledge (are people able to distinguish reliable and non-reliable sources, are they aware of echo chambers, what do they know about journalistic routines and norms etc.) and its role in political communication."

"[…] social media literacy: How do social media literacy classes in school have an impact on people years later. Does this empower them in recognizing fake news and how does this depend on their social network etc?"

Exploration of diversity in terms of the information sources that people see is needed so that people get the option of exposure to diverse viewpoints, but this should be investigated considering the **motivations that determine whether people will read them** – given the previous discussion of echo chambers and confirmation bias with uneven assessment of information based on its agreement or disagreement with the recipient's worldview, how can people be encouraged to consider issues from multiple perspectives?

> *"Echo chambers are often the result of people's preferences to follow like-minded people (homophily) […] or read news outlets that reinforce their existing beliefs […]. This is indeed a difficult one to solve, but more research is needed exploring alternatives to diversify the information sources that we read, aiming to avoid biases produced by echo chambers."*

> *"What new journalistic models and mechanisms (i.e., ethics, codes of conduct, etc.) that encourage people to consider issues from multiple perspectives?"*

There are some general **warnings and caveats** made by the panel regarding potential solutions, and partisanship is the major theme throughout. Two types of partisanship are discussed, and both need to be understood and addressed. Firstly, there may be **inherent partisanship in a technical solution** – it may be biased in its operation. Secondly, there may be **partisan interests in the advocacy of a specific solution.**

> *"Technical systems and technical solutions to social problems are never neutral: They come at certain costs (monetary and other) which can be borne by different actors. And their implementation can favor different groups and disadvantage others. It is therefore important to investigate and reflect the underlying assumptions and interests as well as the consequences of the implementation of technical systems."*

> *"[…] who profits and loses if such technologies are being implemented (established news outlets, alternative media, civil society actors or ordinary citizens posting online, different political camps etc.)?"*

A key principle is that **collaborative, interdisciplinary research** is needed, and **cross-discipline collaboration needs to be improved. Funding** is needed to enable this interdisciplinary collaboration.

> *"The research will require a combination of expertise in social science, statistical inference, epidemiology, ethics and computer science."*

> *"As researchers, we need to implement a cross-methodological, interdisciplinary approach that takes advantage of both the question-framing capabilities of social sciences and the experimental and quantitative tools of hard sciences."*

> *"we need better ways of facilitating collaboration and cumulative knowledge development".*

Trust of the target community is essential in an experiment study. Trust may be facilitated by participatory research, where experimentation subjects are involved in the design of experiments, and it is asserted that this is also needed.

"The truly hard types of social science research that involve getting deeply involved with […] and building trust from the key communities. This is particularly tricky because academic epistemologies are seen as elite and we're part of the problem in many of these communities['] minds."

A **diverse population of subjects** for interviews and experiments is needed, including the general public and relevant professionals — there is a feeling amongst the panel that too much research is done using easily-available, but non-representative, populations such as US students. In addition, validation of models and experiments need to be conducted with real people representative of real populations, and in real environments, in addition to experiments in lab conditions.

"Too much of the research on this issue has been done in experimental labs with US undergraduate students."

"[…] the reception of fake news[.] It needs much more study to what extent fake news is actually being read and judges [sic – assume "judged"] valid, by how many and whom, how it spreads across and within social strata/groups/networks, and how this varies across system (i.e. much is based on the US context while the US is a atypical media and political system[)]. This all needs to be studied outside experimental settings as citizens judge news in a real-life setting not in a lab or primed environment."

Definitions and conceptual models for key terms are needed, with the caveat that while there is a need for adequate definitions, exhaustive, full-consensus definitions are likely to be difficult and unnecessary. Simply stating the definition as a point of reference is helpful, so that the audience understands the perspective from which the concept is being approached. We also need to acknowledge that there may be **different definitions for the same term or concept** and to understand the effects of using different definitions.

"First, we need more definitional work. Although the disagreement among the scholars slowly decreases, there is still no scientific consensus on the definition of Echo Chambers, Fake News, and Populism. What exactly is an Echo Chamber? Does the term "Fake News" refer to political satire, propaganda, or both? Is Populism an ideology, style, strategy or something else entirely? What is the difference between nativism and populism?"

"Second, there is a lack of theory. There are some encouraging first steps but the conceptual models for the analysis of Echo Chambers, Fake News, and Populism are still underdeveloped. What are the underlying macro-level theories that may explain the phenomena?"

"I don't think full consensus is needed, but I agree that research and theorizing needs to be clear about how it uses these terms and situate conceptual frameworks relative to other approaches."

"On populism there is consensus basically. And in general, most important is that we are clear about definitions and understand how using different definitions lead[s] to different results. Once we understand, we actually have a better grasp of the phenomenon."

By contrast, there are those who claim that **definitions for populism are already well established,** so research is not necessary to further define the phenomena. There are different approaches to populism, and they all contribute to understanding the whole spectrum of populism.

"What we do not need is research trying to define populism. That would surely be a waste of time as 'complete libraries' have already been written about the topic."

"Minimal definitions suffice and specific ones tend to unproductively prejudge the central question of empirical investigation (e.g., Gould 1995). I wouldn't use the term 'complete libraries,' but I've also found and argued that different approaches to populism - as an ideology, as a rhetorical style or repertoire, or as a formal strategy (type of political organization or policy) aren't that incompatible with one another. They all provide insights into processes of populist mobilization."

Data is an important resource. **New and diverse datasets are needed** – it is asserted by the panel that there is too much reliance on existing benchmark datasets. **Funding** is needed for the purchase (or collection and cleaning) of large new data sets. Social media data is especially needed, and it is recommended that **social media operators make it easier to access their data**.

"Most research so far uses benchmark datasets. While this is good to start, there's a risk that the developed tools overfit the patterns of the benchmark datasets, and don't necessarily generalise to new events in the future and to realistic scenarios where actual people are involved".

A **directory of existing tools and methods** is proposed, that can act as a one-stop-shop so that researchers (and citizens) can access them and can understand what resources are available.

"[…] there are some tools out there already to help citizens identify fake accounts. They need to be cataloged, compared, reviewed and then recommendations for use must be created. Once a directory of what already exists is created, and a method for evaluating the value and limitation of the tools, it will be clearer what other tools researchers or citizens may need".

In addition to standard data gathering methods such as **surveys** or **interviews,** methods specifically observing peoples' response to fake news are needed. This is specifically likely to require tracking of content in hybrid media systems, so techniques to observe epidemiology within and (crucially) across different media domains (online and offline, via broadcast and social media) are needed. **Multiple research approaches and mixed-methods research** are also advocated in order to cross-check and validate evidence generated through different methods.

"The suggested research mainly relies on methods of social science. Data is typically collected via surveys, in-depth interviews and the analysis of online content. This requires human interviewers, coders etc. with expertise in social-scientific methodology. In some cases, technical solutions may be used to analyze larger amounts of content (automated content analysis)."

"I would argue that this assertion and many of those surrounding it suggest that multiple research approaches and mixed-methods research are needed in order to triangulate evidence".

Skills needed to address the inter-related challenges of fake news, echo chambers and populism include: **social science, ethnography, data gathering, qualitative** and **quantitative analysis, statistics;** and **hypothesis development** coupled with **experiment design.**

Societal Impacts

We need to test the overall hypothesis that fake news, echo chambers and populism have detrimental or destabilising effects on democracy. In addition we need to understand each of the

individual contributions, as well as their **effects in combination,** to the undermining of liberal democracy.

> *"[…] populism threatens liberal democracy."*

> *"There is indication that Echo Chambers, Fake News, and Populism may have very detrimental effects on society: Echo Chambers may lead to polarization, Fake News to disinformation, and Populism to political distrust. These phenomena may constitute severe risks to liberal democracy. Echo Chambers, Fake News, and Populism have the potential to undermine the achievements of Enlightenment. Therefore, they should be taken very seriously."*

> *"[…] A better assertion would be that we need to understand when these phenomena (fake news, echo chambers, populism) undermine liberal democratic principles, when they may actually be mobilized for its support, and how other non-digitally mediated versions of these phenomena have operated in democratic settings (e.g., Eliasoph 1998; Cowan 2014, etc.)."*

Individual and collective effects of fake news, echo chambers and populism on citizens need to be investigated. Two specific effects are mentioned by the panel. Firstly, **what factors determine citizens' susceptibility,** and what makes some citizens more susceptible than others? Secondly, we need to understand the **effects on "bystanders"** – citizens who see fake news or populist content etc, but do not actively engage with it. The populations of bystanders can be significant – often larger than the populations who directly engage. There will naturally be other effects and these need to be identified and studied as well.

> *"There is also reason to assume that these phenomena do not affect the population in a uniform manner. Some people may prefer to dwell in Echo Chambers, while others tend to avoid them. Some people may believe in Fake News, whereas others may ignore them or critically assess them. Some people are prone to populist messages but others resist or even combat them. What makes the difference? What are the moderating or mediating factors?"*

> *"[…] the 'prehistory,' socialization, identifications, or political common sense that makes certain groups of people and institutions susceptible to fake news accounts warrants its own scrutiny."*

> *"[…] bystander effects [-] We tend to focus on the impact of populist social media use, fake news and echo chambers in terms of the people engaging with it, but on social media many users read discussion without engaging with them. While the hardliners might take extreme positions and troll, actual discussions about their information being wrong or fake, might influence 'bystanders' but little is known about this."*

> *"[…] Our focus is too often on the extreme posts on social media, but we ignore what the discussion thread overall does with all does people not responding. This group is much bigger than the people engaging. To understanding [sic: assume "understand"] the impact of fake news on social media creating echo chambers, we need to understand the impact on this substantial group."*

We need to understand how opinions are formed and are influenced in the current digital age. Investigations are needed to understand the underlying cognitive and emotional processes that enable peoples' opinions to be influenced in the context of the **multitude of communication channels and media from the Internet** and related technologies, **in conjunction with more traditional media**

channels. This is possibly the major overarching question of the whole study, as all other questions can fit within it. How is the hybrid media system (online and offline, broadcast and social media) used to influence opinions, who uses it, what methods do they employ and what is the impact on society? What is the specific contribution of online and social media?

> *"[...] we need more research on how opinion forming works in the digital age (which role [is] play[ed by] social media, user-generated content compared to traditional media etc.) Specifically, we do not know how populist voters use the media, what their main sources are, whether they are aware of filter bubbles and fake news etc."*

In addition to fake news and echo chambers, the **social influences** of **search engine manipulation**, **search result filtration** and **search suggestion** mechanisms need to be investigated, as there is evidence that these mechanisms are powerful influencers of opinion and are driven by unknown algorithms in the control of large corporations. These mechanisms should be compared to echo chambers and fake news to examine their relative effects on populism and thence on liberal democracy.

> *"While there has already been a great deal of research on whether users of systems that algorithmically select content are mainly exposed to messages confirming their own attitudes ("echo chambers"), we still need systematic long-term studies that analyze the causes and effects of selective exposure to opinions online. In particular, the interplay between voluntary selective exposure (people actively choosing what they want to see) and technical selection should be explored in more detail."*

> *"First and foremost, we need to recognize and measure the unfortunate role that negativity bias is playing in the attention people are paying to "Echo Chambers, Fake News and Populism" on the internet - attention that may be distracting users, journalists and researchers from examining far more powerful sources of high-tech influence. To put this another way, we need to conduct comparative studies that quantify the actual impact of Echo Chambers, Fake News and Populism on opinions and behavior and that then examine at the impact that less visible sources of influence, such as SEME (the Search Engine Manipulation Effect [...] and SSE (the Search Suggestion Effect) are having on opinions and behavior."*

> *"Control over search results (SEME) is, in all likelihood, now determining the outcomes of upwards of 25% of the national elections in the world, as well as impacting the beliefs, attitudes, and opinions people form about everything they research on the internet - all without people being aware that their thinking is being shifted by algorithms. New research on the power that search suggestions have on opinions ([the "Search Suggestion Effect" -] SSE), to be published in 2018, shows that search suggestions can be used to shift a 50/50 split in opinions among people who are undecided on an issue into a 90/10 split, with no one aware they have been manipulated. People's exposure to biased content (so-called fake news stories, or content seen in so-called echo chambers) will have a net effect on opinions and behavior in a population only if major platforms are filtering and ordering that content in consistent ways that favor one viewpoint over another. If biased filtering and ordering of this sort is occurring - and it is virtually certain that it is - we need to be concerned about it. If we ignore the power that Big Tech platforms have to shift opinions without people's knowledge, the democratic form of government will become little [sic: assume "little more"] than an illusion, and human freedom itself will be substantially undermined."*

Conclusion

This document has summarised the results of a consultation with multidisciplinary experts into the related subjects of Echo Chambers, Fake News and Populism. The inter-relationships and societal impact of these themes can be unified under the umbrella term: *"opinion forming in the digital age"*, which is a phrase used by one of the expert panel and has determined the title of this report. This is apt because the root theme that has emerged from the study is that there are many factors at work in influencing opinions, and they are the result of psychological and social mechanisms, but crucially influenced by, and delivered via a *hybrid media system* following Andrew Chadwick's work[28], that mixes online and offline channels and broadcast and interactive social media. In this hybrid media system, there is not a distinction between "traditional" and "new", or "online" or "offline" media, but an ever-changing mix of different types of media, technologies and behaviours, some well-established and others very new, all of which can feature in shaping the opinions of people. Research is needed to investigate the relationships between different media types, how they interact and contribute to channelling information that influence peoples' opinions.

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[28] Chadwick, A., 2017. *The hybrid media system: Politics and power*. Oxford University Press.

Appendix — Methodology & Detailed Results

Methodology

Consultation Methodology

The consultation used the Delphi Method[29], a well-established pattern that aims to determine consensus or highlight differences from a panel of selected consultees. These properties make the Delphi Method ideally suited for the purposes of targeted consultations with experts with the intention of identifying consensuses for recommendations.

The Delphi Method arrives at consensus by iterative rounds of consultations with the expert panel. Initial statements made by participants are collated with other participants' statements and presented back to the panel for discussion and agreement or disagreement. This process happens over several rounds, with subsequent rounds refining the previous round's statements based on feedback from the panel so that a consensus is reached, or controversies highlighted. This consultation used three rounds:

- *Round 1*. A selected panel of experts were invited to participate based on their reputation in a field relevant to the core subject of this consultation. Round 1 was a web survey containing a background briefing note to set the scene, accompanied by two broad, open-ended questions to which participants made responses in free-form text.

- *Round 2*. Using the standard qualitative technique of thematic analysis[30], the collected corpus of responses from Round 1 were independently coded to generate assertions that were presented back to the participants. Broad themes were also identified from the corpus, which were used as groupings for the assertions. The participants evaluated each assertion, marking their agreement or disagreement (using a 5-point Likert scale[31]) and made comments in free-form text.

- *Round 3*. The results of Round 2 were collated. Those assertions that had significant majority sharing the same answer polarity (agree / disagree) were regarded as reaching consensus. The remainder, where opinion was more divided, were re-formulated into new assertions based on a thematic analysis of the comments and presented back to the panellists who could then agree / disagree and comment as before.

The Round 3 results that reached consensus were collated with those from Round 2 to determine the final consensus and disagreements of recognised experts in multiple relevant disciplines. The output recommendations of the consultation are a direct reflection of their views, therefore.

Expert Selection & Invitation

It was decided that a good target for the number of experts in the panel was 10-20, the reasoning for this range being a balance between adequate coverage of subjects and manageability. It was

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[29] Linstone, H.A. and Turoff, M. eds., 1975. The Delphi method: Techniques and applications (Vol. 29). Reading, MA: Addison-Wesley.

[30] Braun & Clarke (2006) DOI: 10.1191/1478088706qp063oa

[31] *"Strongly Agree"*, *"Agree"*, *"Disagree"* and *"Strongly Disagree"*, with an additional *"Not Relevant"* option.

acknowledged that experts are busy people and as a result we assumed a 10-20% response rate, so to achieve the desired expert numbers of 10-20 experts in the panel, we aimed to invite 80-100 experts.

In order to determine relevant subject fields of expertise and hence candidate experts for the panel, a "knowledge requirements" exercise was performed in the form of an exploratory literature survey. Starting point searches included the subject areas of *Populism*, *Fake News*, *Misinformation*, *Bias*, *Social Media* and *Echo Chambers*, and as other search terms presented themselves during the investigation, these were pursued. Key works and experts, as well as related search terms were found using standard tools and methods such as Google Scholar, Microsoft Academic, standard Google searches and following links from Wikipedia pages to gain a background into the theme, related themes, as well as influential people contributing important work within the theme.

The result of these investigations was a spreadsheet describing names of experts, their affiliation contact details, with notes on their specialisms. A total of 95 experts roughly evenly distributed across the subject areas above were invited to the consultation. Participants were therefore drawn from a purposive sample, based on their academic standing and reputation within a given area of expertise.

Ethical approval for the consultation was sought from the Faculty of Physical Science and Engineering at the University of Southampton and approved[32]. The application contained aspects such as disclosure of the purposes of the consultation, data protection, anonymity, risk assessment and consent.

A briefing note[33] was created, describing the background to the consultation via a literature survey[34], and in this, three key questions were asked to begin the consultation:

- *What research is needed to address issues in and around the Internet that Echo Chambers, Fake News and Populism raise?*
- *Why is the recommended research important?*
- *What types of resources (both human e.g. skills or expertise; and techniques & tools, e.g. surveys or computational resources) are needed for the research?*

The briefing note was sent to the 95 targeted experts, with a link to an online survey where they could make their responses.

Analysis

A total of 23 experts responded in detail to Round 1. This panel comprised experts in the following subject areas:

- Confirmation bias
- Echo chambers
- Fact checking
- Journalism & news

- Misinformation
- Populism
- Propagation / epidemiology of information & misinformation
- Search engine bias
- Social media

Round 1 responses were in the form of free-form text, answering the two questions posed in the briefing note. The aim of Round 1 analysis was to determine assertion statements from the textual responses that could be used as input for Round 2. Two researchers coded the original text independently, and a standard thematic analysis methodology (TA) was adopted. In an entirely inductive application of the technique, each respondent's textual answers were scrutinised for opinions, statements and recommendations. Where one of these was found, the relevant quotation from the text was recorded along with a summary to form a draft assertion. Many cases were found where different respondents expressed the same opinion, albeit worded differently. All concordant opinions were clustered into a single summary assertion, recording the associated quotations and how many participants expressed that opinion. Once the assertions were determined, broad themes were identified to serve as coarse-grained groups for the assertions, and to highlight the key issues.

The researchers met to discuss and agree the final set of themes and assertions. The overlap of interim themes was good (4 out of 6 themes were clearly the same). The union set of assertions from the independent analyses was discussed, and it was found that the majority of assertions appeared in both analyses (albeit in different forms). Each assertion was discussed and modified as necessary so that the final set of assertions was agreed by both researchers. Because of this agreement, no formal analysis of inter-coder reliability[35] was therefore felt necessary. The output of this analysis was a set of 74 draft assertions, which were presented back to the panellists, and they were invited to agree or disagree with them in Round 2.

Sixteen experts responded to Round 2, and the responses comprised agreements and disagreements with the assertion statements, expressed in the structured format of a 5-point Likert Scale (*"Strongly Disagree"*, *"Disagree"*, *"Agree"* and *"Strongly Agree"*, along with a *"Not Relevant"* option). Because of the response format, analysis of Round 2 was quantitative - counting the agreements and disagreements to each assertion. To determine whether consensus was reached, a simple metric was used that compared general agreement to general disagreement. The total "agreement" votes (*"Strongly Agree"* or *"Agree"*) were compared to the "disagreement" votes (*"Strongly Disagree"* or *"Disagree"*), and if either group had more than twice the number of votes than the other, consensus was deemed to have been achieved. Out of the Round 2 results, 48 assertions achieved consensus[36] (out of the original 74). No further assessment of these was needed by the experts, and they were set aside for final reporting (later in this document). Reviewing comments from participants, the remaining 23 that did not achieve consensus were re-formulated and were presented to the experts for further assessment in Round 3. Out of the 23 Round

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[35] Qualitative research methods reliability of analysis is checked initially by checking agreement between two researchers ("coders") who attempt to identify categories and themes ("codes"). See, for example, Howitt, D. (2013) *Introduction to Qualitative Research Methods in Psychology*

[36] One R2 assertion was found to be erroneous in its interpretation of the original source quotations, so was excluded from the analysis and results.

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2 assertions that did not reach consensus, 31 derived assertions were determined (some R2 assertions were split into more than one R3 assertion).

Fourteen experts responded to Round 3 and selected whether they agreed with each of the 31 assertions presented to them. Like Round 2, the experts could also make optional comments. Out of the set of 31 R3 assertions, 19 achieved consensus in Round 3.

The 48 assertions from Round 2 and the 19 that reached consensus from Round 3 were combined, making **a total of 67 consensus items** over the course of the consultation. These make up the results reported here, and represent recommendations based on the cross-disciplinary perspective of recognised experts.

Results Summary & Discussion

This section contains research priorities that have reached consensus from the consultation, divided into six themes. Some items are grouped together for discussion where they shared similar themes or recommendations.

 The following sections present the consultation's results in detail, grouped into a hierarchy of key themes. The assertion statements in each theme are presented in tabular form[37] with the votes in agreement and disagreement as well as the total votes cast for each assertion[38]. The order in which the assertion statements are presented corresponds to the strength of consensus amongst the panel, with the strongest consensus first. Following the table, each assertion is discussed. The discussion is centred the strength of the consensus and issues raised by comments made by the panellists.

Fake News & Misinformation

Deliberate Manipulation of Information & its Effects

An overarching theme concerns the need to study the deliberate manipulation of information and its constituent aspects. The assertions that indicate the constituent aspects are shown in Table 1. All assertions are strongly supported, with at most 1 vote against.

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[37] Each assertion has a numeric identifier, so each can be unambiguously identified. The format of the ID indicates which round an assertion reached consensus. If an assertion has an integer identifier, it reached consensus in Round 2. Round 3 assertions are derived from those that did not reach consensus and have decimal identifiers, for example assertion ID 3 did not reach consensus in Round 2, so it was replaced by assertion 3.1 in Round 3.

[38] The total votes for each assertion differs - in most cases this is because some panellists did not vote for all assertions. Some panellists marked an assertion as "Not Relevant", which counts as a vote, but does not count in either agreement or disagreement, so occasionally the total number of votes is different to the sum of the "agree" and "disagree" votes.

ID	C	V_T	V_+	V_-	V	Assertion
12	0.88	16	15	1	14	Research is needed to determine what the actual effects of fake news are on people, and on society.
30	0.87	15	14	1	13	We need to study deliberate manipulation of information: methods, effectiveness, costs and benefits for the manipulator, and its impact for web users generally must also be studied.
11	0.81	16	14	1	13	We need to understand how fake news is influenced by digital intermediaries (like Facebook, Google, Twitter and YouTube).

Assertion 12, concerning the need to study the societal effects of fake news derives from many comments in Round 1 from numerous participants:

"A key research gap is understanding the impact of fake news on real-life views and actions. This means identifying summary statistics that capture meaningful causal effects - for example, an article that has been viewed is not the same as an article that has been read, and an article that has been read is not the same an article that has influenced someone's opinion or voting preferences."

"Much research into online content focuses on establishing correlations between different factors, but it is much more important- albeit harder- to identify causal links, i.e. how did a specific action influence a specific outcome? To identify effective measures for reducing the harmful effects of certain content and platforms, it is first necessary to measure what the effects actually are. Certain types of online interactions- which are not always directly observable - may be responsible for a disproportionate amount of influence, and without a good understanding of these dynamics, it will be near impossible to design effective interventions."

"We need more audience research, both qualitative and quantitative. We have little understanding of exactly what people are seeing in their social feeds, how they make sense of that information, what they do with that information (both online in terms of liking, commenting or sharing and offline in terms of conversations as well as concrete actions like voting) and how they feel about the information they are consuming."

"A second line of research, related, would probe how people relate what they hear on the news (with news understood very broadly) to their own experience. Commentators have rejected the notion that conservatives are "duped" by Fox News. But there is some analytic ground between being "duped" and arriving at your opinions by way of your own experience. So I'm interested in how people make

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[39] The nomenclature for the column headings is as follows: **ID** is the assertion ID, **C** is the consensus score, V_T is the total votes cast for the assertion, V_+ is the count of votes agreeing with the assertion, V_- is the count of the votes disagreeing with the assertion, and **V** is the strength and polarity of the agreement / disagreement – i.e. the difference between V_+ and V_-. In general, the tables are ordered with the strongest consensus scores at the top. In some cases, the sum of the votes for and against an assertion do not add up to the total votes. These cases were where some participants had marked the assertion "not relevant".

sense of their own experience in terms of what they hear, read, and watch on the news. Again, this is a social activity, I suspect, so I would investigate the conversations that people have about stories they hear, read, or watch on the news. This could be done ethnographically, but could also take the form of interviews in which subjects recount conversations they had with friends, family, colleagues, acquaintances, and so on in which they referred to news stories."

"To better understand the role of fake news in shaping people's beliefs and actions."

"Do fake news have a real effect (e.g. on people's votes)? Again, this can be studied in the lab, but results from the lab should ideally be coupled with data from outside the lab (on voting patterns, etc.)."

"These questions, I believe, haven't received the necessary attention so far. It has been tempting to paint an overly negative picture in which most people are biased, share fake news that support their 'group', accept these news, and are influenced by them. I believe such a bleak vision is unwarranted given the data available. It would be interesting to understand the potential limits on the spread of fake news (if few people share them, if they have little effect on people, or if people aren't that biased in their searches)."

"What is the effect of fake news? Does it change minds? Change hearts? Does it influence the structure of political movements and affect who decides whether or not to take part?"

"People are not rational processors of information. It's not at all clear that feeding people fake news supporting some position will simply push them toward that position. There may be backfire effects, and people are often not responsive to data anyway. Research is needed to determine what the actual effects of fake news are on people, and on society. It may be, for instance, that the major impact of fake news is to titillate in order to entrench attitudes."

"Is fake news believed by people? If so, by whom and why? Does it influence people's thoughts, decisions and behaviours? Does it feed populism- if so how? Can this be addressed by improving people's media and digital literacy, or are other solutions more viable?"

"It is of vital importance to understand what contemporary fake news is, and what drives it, in order to know how to combat it. Contemporary fake news contributes to deception and misinformation running rife among closed online communities, with no hope of being corrected by facts because those inside the filter bubble are either not exposed to the facts, or choose not to believe them. This is democratically problematic: those trapped within the online filter bubble lose touch with reality, and those outside the filter bubble have little or no idea that this state of affairs is taking place. Ultimately, what is at stake is the common foundation of knowledge upon which democratic decisions are made. As such, understanding and combating this phenomenon is of vital societal importance."

Assertion 12 has one comment for and one comment against. The "against" participant's comment agrees that understanding the effects of fake news are important, but points out that much work has already been done:

True, but there is quite a lot of research already on this.

The single comment from one of the 12 participants agreeing concerns its relationship with another assertion, 7, which discusses assessment of the truth or otherwise of information. However, in the analysis of the whole corpus of assertions and comments, it was felt that assertion 12 discusses the social effects of fake news in general, whilst assertion 7 covers the specific case of whether fake news is believed or not. In the source comments from Round 1, there is a substantial theme regarding the verification of fake news, which will be covered separately. The comment makes a significant point regarding the forms that fake news can take influencing how it is disseminated and its own influence on the readers, indicating that investigation into correlations between types of fake news, its dissemination and how it is received would be useful.

> *How does this assertion differ substantively from assertion ID 7? The wording here is a bit clearer, but perhaps micro-level versus macro-levels of analyses need to be differentiated or some other element of the forms fake news can take and how this may impact their reception and/or influence. Additionally, the 'prehistory,' socialization, identifications, or political common sense that makes certain groups of people and institutions susceptible to fake news accounts warrants its own scrutiny.*

Assertion 30 covers overarching concept of the deliberate manipulation of information, the different methods that may be employed, assessment of the effectiveness of information manipulation, costs and benefits for the manipulator, and the effects of the manipulated information on (web) users. Even though assertion 30 specifically mentions impact on web users, the propagation of misinformation may be disseminated by offline channels and these should not be discounted.

Assertion 30 derives from several comments made by multiple participants in Round 1:

> *"Manipulated echo: The social success of false information on the web is in part due to various interest groups having an interest in some specific information being widespread and manipulating processes of transmission to that effect. In principle, such information may be true or false, but it is generally much easier to find false information (invented or just distorted) to suit one's interests. Such manipulation, their methods, effectiveness, costs and benefits for the manipulator, and for web users generally must of course be studied."*

> *"In the case of manipulation, it raises important right issues: Freedom of expression on the one hand - different democratic countries have different laws regarding the intentional diffusion of false information. Access to genuine information, which is recognized as a right only in limited ways, but which is, fairly obviously, a condition of a genuine democratic process. So, come to think of it, a more legal, philosophical and political-theory study of the problems of rights and duties of information in the Internet age should also be considered. It would need, to be of practical relevance, to be informed by the two kinds of studied mentioned above. These empirical studies together with this more political-theory study would be of direct relevance to the public debate on the future of democracy. Needless to say, they would also be of great social and cognitive science relevance."*

> *"Why people spread fake news? This includes for instance looking at participants' willingness to transmit fake news in laboratory settings, varying various attributes of the fake news and of the potential audiences. These results should ideally be correlated with observations of the actual success of various fake news."*

> *"[…] The multi-faceted nature of the phenomenon of contemporary fake news. Eg what are the key commercial and propagandistic drivers of fake news? To what extent is the spread of fake news*

influenced by the health of the wider public sphere (eg journalism and media)? How is fake news influenced by digital intermediaries (like Facebook, Google, Twitter and Youtube)? How is fake news influenced by digital advertising? What role is played by professional persuaders and the Public Relations industry?"

"It is of vital importance to understand what contemporary fake news is, and what drives it, in order to know how to combat it. Contemporary fake news contributes to deception and misinformation running rife among closed online communities, with no hope of being corrected by facts because those inside the filter bubble are either not exposed to the facts, or choose not to believe them. This is democratically problematic: those trapped within the online filter bubble lose touch with reality, and those outside the filter bubble have little or no idea that this state of affairs is taking place. Ultimately, what is at stake is the common foundation of knowledge upon which democratic decisions are made. As such, understanding and combating this phenomenon is of vital societal importance. Understanding the multi-faceted nature of contemporary fake news is important because without a proper diagnosis, society cannot formulate useful solutions. Understanding likely future iterations of fake news is important as (a) the contemporary fake news phenomenon took society by surprise; (b) technologies advance at a rapid rate; and (c) people adapt to, and use, new technologies in often unexpected ways."

There are no comments by the participant who disagreed with assertion 30, so the reasons for their disagreement are not known. A key comment from a participant who agreed with the assertion discusses the motivations for creating and disseminating misinformation, which is a common theme that will be discussed separately. The comment also discusses different influences on opinions from deliberate manipulation of information, and unintended "echo" where reinforcement of entrenched opinions may occur (an allusion to the related subject of echo chambers, discussed later). Finally, the different types of manipulator should be considered – private citizens, and professionals, each of which have different motivations.

"I think the difference between this assertion and assertion ID 2 could be made clearer. Both assertions address motivations or rationales for disseminating misinformation (or manipulating audiences or keeping secrets). Perhaps the two assertions can be more clearly disentangled in terms of axes of deliberate manipulation and unintended manipulation, and that of private individuals (i.e., individual actors) versus professionals (i.e., representatives of particular institutions). We might consider Christopher A. Bail's various approaches to investigating similarly thorny processes or issues of actors' intent, public enactment, and impacts."

Assertion 11 covers a specific case of how digital intermediaries influence fake news. This relates to phenomena such as filtering of information based on profiling users (e.g. filter bubbles) and the so-called "search engine manipulation effect". The actors that assertion 11 refers to are the actual operators of the channels themselves and how they may manipulate information for their own (most likely commercial) purposes. It also alludes to a wider point, which relates to the need to understand *who* is manipulating the information. Assertion 11 had one "not relevant" vote, and an associated comment:

I think this is worded wrong. You need to understand how adversaries leverage digital intermediaries. Active voice, not passive or you'll assume technological determinism.

The comment concerns different opposing actors and how they use the digital information channels. Here the actors are not necessarily the operators of the channels, but users of the channels who exploit the channels to suit their objectives. An example is populist actors' use of information channels, covered later in the populism section.

In summary, these assertions and their comments lead to several key research questions:
1. Who is creating misinformation and why are they doing it?
2. What are the effects of misinformation?
3. How is misinformation being spread?
4. Who is disseminating misinformation and why are they doing it?

Two of these questions (3 and4) have had further discussion amongst the experts in the consultation, and these are covered in more detail next.

Propagation of Fake News

A strongly-held opinion is that propagation of fake news needs understanding. Three assertions correspond to this theme, as shown in Table 2, and as can be seen, the assertions are strongly supported.

TABLE 2: PROPAGATION OF FAKE NEWS[40]

ID	C	V_T	V+	V-	V	Assertion
1	1.00	16	16	0	16	The spread of fake news needs investigation, especially within and across different social strata, groups and networks.
25	0.88	16	15	1	14	We need to understand the differences between the distribution strategies, causes and effects of fake news manifests in different countries and regions.
14	0.88	16	15	1	14	We need to investigate the interplay between social media and classic media in the propagation of fake news.

Assertion 1 makes the point that the propagation of fake news across heterogeneous networks needs to be understood, and support from the panel is unanimous. Assertion 1 itself derives from Round 1 comments regarding the epidemiology and ecosystems of fake news, for example:

"[…] there is a need to uncover the underlying epidemiology of fake news and disinformation. The final impact of a piece of content may not have a simple association with its initial spread online. For instance, a story may only get a few shares and direct views, but its message could subsequently be picked up and amplified by media sources who enable a 'broadcast' event, reaching a much wider audience. To understand the relationship between content and full outbreak dynamics, research is needed into the structure and magnitude of social influence online. What does the ecosystem actually look like? What type of interactions and sharing dynamics are most likely to result in widespread

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[40] The nomenclature for the column headings is as follows: ID is the assertion ID, V_T is the total votes cast for the assertion, V+ is the count of votes agreeing with the assertion, V- is the count of the votes disagreeing with the assertion, and V is the difference between V+ and V- - i.e. the overall agreement / disagreement.

harmful impacts? Such research needs to be data-driven, and informed by multiple sources to enable fair comparisons across different platforms".

The heterogeneity of the networks used for propagation is an important factor, as the news can be spread using any channel its disseminators choose. It can be inferred from this that some of the propagation is online and some is offline, and a key research question regards how to follow propagation of fake news in and across different channels, specifically incorporating online-to-offline and offline-to-online transitions.

Assertion 25 makes two related points. Firstly, assessment and comparison of different distribution strategies for misinformation is important. A mechanism to measure their effectiveness in terms of impacts is therefore needed so that different strategies can be compared. Secondly, propagation strategies and effects need to be assessed in different international contexts. This derives from statements made in Round 1 where concerns were raised that the study of fake news was too focused on the West, and not generalisable for all world regions:

"Regarding the geographical scope: more research outside the US and UK is needed."

"[…] the empirical results should be validated by means of international comparative research. Most findings originate from the USA or single European countries. This does not necessarily mean that they can be generalized."

"[…] The extent to which fake news is prevalent across the world. Does it manifest in the same way in different countries? Does it have different socio-political impacts in different countries?"

For Assertion 1, the comments (supporting the assertion) are:

"It all depends on how you define fake news, but I will assume generally to mean all sorts of disinfo and propaganda too"

"I would add to this: across different regional and national settings now that comparative research on media systems has gained more ground."

For Assertion 25, the comments (supporting the assertion) are:

"Especially checking whether the US is the exception or the rule…"

"I would cluster this assertion with assertion ID 1"

A different but related point concerning the type of dissemination is made by assertion 14, which calls for investigation of the interplay between classic media and social media, and derives from the Round 1 comment:

"[…] it may well be that the link between fake news outlets and classic media is crucial: fake news that is taken up by normal journalists and appears on traditional media. The interplay between social media and classic media is therefore important (cf. Chadwick's hybrid media system)."

Here, the distinction is not whether the channel is online or offline, as so-called "classic" media can use online channels, but who controls the dissemination – "classic" media is typically broadcast in nature

(whatever the channel), and controlled by a few disseminators, often professionals, such as journalists. Social media content dissemination is controlled by the users (and possibly to some extent by the operators of the platform – see above). The single comment for assertion 14 (supporting it) points out that fake news is disseminated over hybrid media systems, thus including non-digital-savvy audiences and advocates caution that "classic" (broadcast) media cannot be regarded as stable as it may have been in the past:

> *"As we know the institutional logics of "old" and "newer" media systems continue to be intertwined (i.e., hybrid), historical and comparative research not only helps to account for the propagation of fake news, but also make the findings accessible to audiences with different degrees of familiarity with these different logics and their institutional sources. The cutting-edge work that uses evidence from classic media also sets an important benchmark for the quality of new media evidence, including computational social science and other forms of "Big data" analyses. Importantly, though, we must be cautious of granting the role of traditional media framework too much stability. As Bennett and Livingstone (2018: 127)[41] recently note: "Despite growing signs that serious disruptions are occurring in public spheres in many democracies, most political communication and press politics research continues to study how authoritative information is framed by legacy media organizations and distributed to publics who use it to inform their engagement with political institutions such as parties and elections.""*

Bennett and Livingstone attribute this instability to growing distrust of citizens in their political establishments, and the resultant undermining of traditional media sources as they come into competition with alternatives that are exploited by (e.g.) populist leaders:

> *The spread of disinformation can be traced to growing legitimacy problems in many democracies. Declining citizen confidence in institutions undermines the credibility of official information in the news and opens publics to alternative information sources.[41]*

The populist leaders' uses of the different information channels will be covered in a later section.

Motivations for Spreading Fake News

Motivations of different actors for spreading fake news also should be investigated, as shown in Table 3.

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[41] Bennett, W.L. and Livingston, S., 2018. The disinformation order: Disruptive communication and the decline of democratic institutions. *European Journal of Communication*, 33(2), pp.122-139. https://doi.org/10.1177/0267323118760317

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TABLE 3: MOTIVATIONS FOR SPREADING FAKE NEWS

ID	C	V_T	V+	V-	V	Assertion
33.2	0.85	13	12	1	11	We need to understand how fake news is commercialised and how people make money from it.
2	0.75	16	14	2	12	We need to understand peoples' motivations for spreading fake news, and the factors that motivate people to share information. This includes private individuals (e.g. citizens) and professionals (e.g. journalists)
3.1	0.62	13	10	2	8	We need to understand the commercial and editorial motivations of journalists when publishing unverified news that may attract traffic

The key summarising assertion in this group is the broadly-supported assertion 2, regarding the need to understand peoples' motivations for spreading fake news. Assertion 2 derives from Round 1 comments describing the need to understand why people share fake news:

"Why are people sharing content that experts deem to be "fake"? What are they trying to achieve? How do they interpret the content?"

"Why people spread fake news? This includes for instance looking at participants' willingness to transmit fake news in laboratory settings, varying various attributes of the fake news and of the potential audiences. These results should ideally be correlated with observations of the actual success of various fake news."

"Ethnographic analysis of communities involved in propagating/consuming the fake news ecology"

"These questions, I believe, haven't received the necessary attention so far. It has been tempting to paint an overly negative picture in which most people are biased, share fake news that support their 'group', accept these news, and are influenced by them. I believe such a bleak vision is unwarranted given the data available. It would be interesting to understand the potential limits on the spread of fake news (if few people share them, if they have little effect on people, or if people aren't that biased in their searches)."

Further Round 1 comments describe different examples of motivations for sharing fake news:

"One is into people's relationship to the "news" they read, like, and share. Earlier research on rumors suggested that people who shared rumors did not necessarily fully believe them. Rather, to share the rumor was solidify the bonds of the group; to not question the rumor was to demonstrate one's commitment to the group. I suspect that people have a similarly social relationship to fake news. Certain fake news stories are, as Gary Alan Fine said of rumors, "too good to be false." So one line of research would expand our investigation of who believes fake news and what fake news they believe to ask just what believing actually means."

"Spontaneous echo: individual web users share information that they find plausible and relevant. They may do not to manipulate others but, at the same time altruistically to inform others and selfishly to enhance their own reputation. Reputation is secured by the relevance of what is propagated and jeopardized by its manifest falseness. A problem is that there is much more plausible and false information that would be relevant if true than plausible, true, and relevant information (for reasons

that are in broad terms fairly obvious, but would deserve a study in detail). Hence, in good faith, people are likely to propagate a lot of false and relevant information that they believe or at least find believable."

"[…] (2)classic media play such a big role. political parties actually tell us in interviews that the [sic — assume "they] use social media to get their face in the newspaper or on the television. Fake news works the same way. Still journalist do not seem to realize this and keep spreading false information (regardless of whether they contest it). Classic media are a crucial linkage between populism, social media and the population."

There are no comments from participants who voted against the assertions, so the reasons for opposition are not known. The single comment for this assertion points to a similarity between this assertion and assertion 30 (which has been chosen as the overarching summary assertion for the study of fake news):

This reads a very similar to assertion ID 30, with the exception that assertion ID 30 more explicitly adds commercial and advocacy motivations/intents.

Assertion 30 is broad in its scope and covers methods, effectiveness, motivations, effects and impact of deliberate manipulation of information, whereas assertion 2's scope focuses specifically on the motivations for spreading fake news.

Assertion 2 also makes the key point that fake news can be spread by different types of actor and cites examples of private citizens and professionals such as journalists. The different actors are very likely to have different motivations — the private citizen's motivations are personal to them, and can include interest, novelty, popularity-seeking and political; whereas the professional's motivations are commercial concerns, for example which content will bring more readers to their site (assertion 3.1). Clearly, the types of actor are not limited to the private citizen and professional — another recent relevant example is the populist actor who has political reasons for sharing fake news. This will be covered in the section on populism.

Assertion 3.1 explicitly addresses the motivations of journalists for spreading fake news. It has its origin in comments made in Round 1:

"Classic media's motivation and ethical positions in spreading fake news […] Over and over again my colleagues and me stress -also against journalists- that repeating, paying attention to, and covering fake news actually further spreads it, and that provided 'both sides' if one side is fake is not neutral or objective but severely biased. Still media keep doing this. The motivations, insights, ethicial positions etc of journalists needs to be studied in much more detail."

"Classic media play such a big role. political parties actually tell us in interviews that the [sic — assume "they"] use social media to get their face in the newspaper or on the television. Fake news works the same way. Still journalist do not seem to realize this and keep spreading false information (regardless of whether they contest it). Classic media are a crucial linkage between populism, social media and the population."

From these comments assertion 3 was determined "*We need to educate journalists how to identify fake news and to warn them of the dangers of spreading it*". This did not reach consensus in Round 2 — it was highly controversial, with similar numbers agreeing and disagreeing. There were no Round 2 comments

agreeing, and comments from the disagreeing side included the following allusion to commercial drivers for disseminating fake news.

"Many of them know how to identify fake news. There are more important issues, such as editorial/business interests, that lead journalists to having to publish fake news that may attract traffic. Or when a news story isn't yet verified, it's easier to publish it referring to third parties as the source of the news (according to the police, according to sources, etc.), get traffic/clicks, then post a correction if needed. Supported by data in this study: http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0150989"

Assertion 3 was reformulated into three new assertions covering different aspects of the source comments, of which 3.1 is relevant here, covering the commercial and editorial motivations of journalists when publishing unverified news that may attract traffic. This was tested in Round 3 and is moderately supported, but has no comments from participants.

A more general point regarding the need to understand commercialisation of fake news is made in assertion 33.2, which is strongly supported. Assertion 33.2 has its origins in several Round 1 comments regarding commercial concerns driving fake news:

"[…] what is the role of digital advertising in driving fake news? We're beginning to see some movement in this area (e.g. Unilever pulling many online ads), but for brand safety reasons the ad industry has self-interest in policing its behavioural and programmatic advertising networks to identify and cut off advertisers that support fake news sites. Advertisers - even the most disreputable - are unlikely to want their advertising associated with content that, by its very nature (i.e. fake news), cannot be trusted. Are advertisers taking up this challenge? What blocks this answer, if anything?"

"A key driver of fake news is the commercial angle- namely the revenue that can be created via digital advertising. Understanding how ordinary people make money from fake news, and to what extent, and how, advertisers are taking steps to address this, will form an important part of the overall picture of how to prevent fake news."

"The multi-faceted nature of the phenomenon of contemporary fake news. Eg what are the key commercial and propagandistic drivers of fake news? To what extent is the spread of fake news influenced by the health of the wider public sphere (eg journalism and media)? How is fake news influenced by digital intermediaries (like Facebook, Google, Twitter and Youtube)? How is fake news influenced by digital advertising? What role is played by professional persuaders and the Public Relations industry?"

"It is of vital importance to understand what contemporary fake news is, and what drives it, in order to know how to combat it. Contemporary fake news contributes to deception and misinformation running rife among closed online communities, with no hope of being corrected by facts because those inside the filter bubble are either not exposed to the facts, or choose not to believe them. This is democratically problematic: those trapped within the online filter bubble lose touch with reality, and those outside the filter bubble have little or no idea that this state of affairs is taking place. Ultimately, what is at stake is the common foundation of knowledge upon which democratic decisions are made. As such, understanding and combating this phenomenon is of vital societal importance."

From these comments, an assertion 3, covering *"[…] the interplay between fake news and advertising […]"*. This did not reach consensus in Round 2, and the single comment (in support) highlighted a distinction between advertising and commercial drivers in general:

> *"This assertion seems connected to assertions 28, 14, and 30. This suggests that comparing research on advertising and fake news might provide new analytic purchase on the dissemination of fake news. However, it seems important that this commercial angle maintain attention to dynamics in traditional media-advertising relations, tabloid media, and historical contexts in general."*

Given this comment, the assertion 33 was split into two, 33.1 regarding advertising and 33.2 covering the general commercial drivers behind fake news. These were tested in Round 3 and assertion 33.2 received strong support. The Round 3 comments for 33.2 are all in support:

> *"There isn't much research on the economic benefits of sharing fake news, or perhaps more widely the motivation of producing fake news, which would be an interesting avenue."*

> *"Agree with the caveat that this assertion combined with assertion 33.1 would be preferable. The phrasing of 33.1 allows for competing hypotheses including the notion that profit motives/outcomes might outweigh reputational concerns. Or that political/partisan concerns might outweigh profit and reputation concerns, et cetera. If they are going to be grouped together as facets of an overarching issue, then I don't disagree with examining this facet."*

The first comment is in clear support of the need to research motivations, economic and otherwise, in the dissemination of fake news. The second comment recommends combination with assertion 33.1, which did not reach consensus and recommended testing a hypothesis that advertisers do not wish to be tarnished by association with websites that publish fake news, thus removing a potential revenue stream from the purveyor of fake news.

Addressing Propaganda & Fake News

Some general proposals to address fake news are discussed in Table 4.

TABLE 4: PROPAGANDA AND FAKE NEWS SOLUTIONS

ID	C	V_T	V+	V-	V	Assertion
20	0.73	15	13	2	11	We need to investigate mechanisms to address the emergence, distribution and effects of fake news, and evaluate their impact.
4	0.60	15	12	3	9	We need to determine a set of safe-computing practices for users of social media, e.g. making citizens aware that they help propagate fake news and propaganda when they share news stories and videos from questionable sources.

Assertion 20 is a general call-to-arms describing the need to address different aspects of fake news. It derives from many Round 1 comments, from multiple participants:

> *"Research is also needed into how to evaluate the impact of specific interventions. If content ranking algorithms are updated, what effect does it have on the tangible effect of fake or misleading content. Ideas from vaccination evaluation are likely to be relevant here, as removing content will have a*

direct effect (i.e. preventing a person from seeing it) as well as an indirect effect (preventing them spreading it to others after seeing it)."

"Misinformation tends to have a bigger effect in society than later corrections do [5]. In social media research, it has been shown that hoaxes are shared more than corrections [6]. Experiments by Facebook to let users flag misinformation have not succeeded so far, showing that in fact a piece of information being flagged as potential misinformation triggers more shares rather than reduce it. While it's difficult to amplify the diffusion of corrections, more research is needed looking into ways for preventing the emergence and diffusion of misinformation."

"Research done so far has she [sic – assume "shed"] light on these important phenomena in society. However, prevention and/or resolution of those issues has been underexplored."

"[…] Figuring out how to change discourse and foster trust would require social scientists and psychologists to study groups of people, on and offline, to try out interventions and evaluate their effectiveness"

"[…] Is fake news believed by people? If so, by whom and why? Does it influence people's thoughts, decisions and behaviours? Does it feed populism- if so how? Can this be addressed by improving people's media and digital literacy, or are other solutions more viable?"

"It is of vital importance to understand what contemporary fake news is, and what drives it, in order to know how to combat it. Contemporary fake news contributes to deception and misinformation running rife among closed online communities, with no hope of being corrected by facts because those inside the filter bubble are either not exposed to the facts, or choose not to believe them. This is democratically problematic: those trapped within the online filter bubble lose touch with reality, and those outside the filter bubble have little or no idea that this state of affairs is taking place. Ultimately, what is at stake is the common foundation of knowledge upon which democratic decisions are made. As such, understanding and combating this phenomenon is of vital societal importance."

"Understanding the multi-faceted nature of contemporary fake news is important because without a proper diagnosis, society cannot formulate useful solutions."

"Understanding likely future iterations of fake news is important as (a) the contemporary fake news phenomenon took society by surprise; (b) technologies advance at a rapid rate; and (c) people adapt to, and use, new technologies in often unexpected ways"

"[…] To what extent can, and should, state intelligence agencies be involved in combatting propagandistic fake news instigated by other nation"

Assertion 20 is broadly supported. The only comments are from participants supporting the assertion, so the reasons for objection are not known. The supporting comments are:

"Don't do this before you know more about how people spread and consume the content."

"The supporting statements connect to assertion ID 4. The use of the term "mechanisms" here reads a bit like click-bait because process-based, relational accounts are needed (e.g., Tilly 2001). If this

assertion were to be combined with assertion 4 as practical ways (i.e., processes) of reducing misinformation, then I would strongly agree."

Assertion 4, advocating determination of a set of safe-computing practices for users of social media, is moderately supported. It derives from two comments by the same Round 1 participant:

"We need to establish a set of evidence-based safe-computing practices for users of social media. This includes making citizens aware that they help propagate fake news and propaganda when they share news stories and videos from questionable sources."

"In the name of free speech, we have allowed conspiracy theories and propaganda to proliferate on social media, believing that the inherent craziness of these messages would limit their distribution. We were wrong. We need to educate the public about the nature, content, motivations and methods of distribution of fake news and propaganda on social media. As researchers, we need to understand very clearly how propaganda travels through social media by developing very straightforward methods and demanding access to data that influences public opinion."

Round 2 comments for the assertion indicate that this educational approach is a step in the right direction but will not be enough on its own.

"Training people will definitely help, but this will never be enough. Most people won't spend time verifying news before sharing."

"Approaches to educating the public here, enforcing safe computing practices, and gaining data access can still be made clearer, and possibly include expanding the real news ecosystem through public media structures. From my reading, this ties to assertion ID 20."

Comments against allude to resistance in the population it is intended to help:

"I've never seen a version of this that isn't condescending. And I think that if you investigate assertions 1 and 2 and 7, you'll realize this doesn't make sense"

"This is the wrong level to attack the issue."

Populism

The overarching assertion for populism is assertion 9.1. It covers the joint need to understand the root causes of populism and how populist leaders use information channels and tactics such as fake news and echo chambers to support their cause. As such, it is a unifying statement relating populism to other aspects of the consultation, which is the main reason it is chosen as the overarching assertion for the populism section. The assertion is shown in Table 5 along with the related assertion 16.1, which covers the underlying forces, dynamics, evolution and varieties of populism.

TABLE 5: POPULISM: ROOT CAUSES, INTERDEPENDENCIES & UNDERLYING FACTORS

ID	C	V_T	V+	V-	V	Assertion
9.1	1.00	12	12	0	12	Understanding the root causes of populism, how populist leaders use digital media, echo chambers and fake news are all important and the interdependencies between these phenomena need to be investigated.
16.1	0.70	10	8	1	7	The underlying forces, evolution, and dynamics of varieties of populism merit further interdisciplinary efforts at comparability and coherence.

The derivation of 9.1 warrants mention because its history involved controversy. In Round 1, the statement:

"I think echo chambers and fake news is less important than seeking to find out how populists use digital media. Research should address the latter, and the root causes of populism."

led to assertion 9: *"Understanding the root causes of populism and how populist leaders use digital media is more important than studying echo chambers and fake news"*. Assertion 9 was voted by the panel in Round 2, and the result was amongst the most controversial in the consultation, with 4 votes for and 7 votes against. In addition, 1 person marked the assertion as "not relevant" and overall there was a low turnout for this assertion with 4 participants not voting at all. In Round 2, there were no comments supporting the assertion, and two against:

"They're both important."

"As currently worded, this assertion suggests the two problems (of populism and mediated misinformation) are not intertwined when a great deal of scholarship strongly suggests otherwise (see Bennett & Livingston 2018; Brubaker 2017; Polletta & Callahan 2017) - and suggest that echo chamber and fake news phenomena are among the "root causes" of populism."

There was also a comment from the participant that marked the assertion as "not relevant":

"Don't structure this as a trade-off. There is value in understanding how populist leaders engage in this, but I would argue that that's above already. Or that this should be integrated with the above."

Because of this opposition, the sense of assertion 9 was adjusted to highlight the need to investigate the root causes of populism and how they are interdependent with populist leaders' use of digital media, fake news and echo chambers. This resulted in assertion 9.1, which was tested in Round 3 and is unanimously supported with no comments.

Assertion 16.1 covering the "underlying forces, evolution, and dynamics of varieties of populism" is broadly supported. It has its origins in Round 1 comments:

"[…] concerning populism, I would encourage research on the two following aspects. First, the long-term causes of its rise and the role of the media, in particular online platforms, in this process. How have recent populist ideologies evolved over time, what are their ideological roots and the platforms where these ideologies have been elaborated and spread?"

"[…] we need more research on the boundary conditions of Echo Chambers, Fake News, and Populism. Under which circumstances do Echo Chambers form? When do Fake News spread? In which situation does Populism emerge?"

These comments were summarised in the Round 2 assertion 16 covering the evolution of populism: *"We need to understand how have recent populist ideologies evolved over time, what are their ideological roots and the platforms where these ideologies have been elaborated and spread"*. This did not reach consensus, and comments respectively for, against and "not relevant" were as follows:

"As I think ideology can be investigated as a discursive phenomenon (e.g. Eagleton 1999), the underlying forces, evolution, and dynamics of varieties of populism merit further interdisciplinary efforts at comparability and coherence."

"Misinformation has become more prominent in public discourse, but it's always been there. Not sure why there's a belief that it's a recent phenomenon."

"This seems far too vague and expansive"

As a result of these comments, the assertion was tightened into 16.1, which was tested in Round 3 and is broadly supported. There are no comments against the assertion, and two comments supporting it:

"I would probably strongly agree but I don't really know what an "effort at comparability and coherence" is."

"Don't think this should entirely separated from assertion 9.1 below. The key disagreements noted for the round 2 assumption seem to be about treating populism historically, noncomparatively, and as fully distinct from related phenomenon (i.e. misinformation, other moblization, etc.). We need to better link the precursors to the present."

The second comment highlights assertion 16.1's relationship with 9.1 and supports the need to consider populism interdependently with the related phenomena such as fake news and echo chambers, which can be used to mobilise support for populist causes.

Several separate points have been made regarding populism, and these are discussed next.

Addressing the Challenges of Populism

Assertion 10 covers understanding how different actors address the challenges that populism poses. This is strongly supported, with 12 votes for, no votes against and 1 marking it as not relevant.

TABLE 6: ADDRESSING CHALLENGES OF POPULISM

ID	C	V_T	V_+	V_-	V	Assertion
10	0.92	13	12	0	12	We need to understand how political actors, journalists, civil society actors address the challenges populism poses.

Assertion 10 was derived from a Round 1 comment:

"Second, reactions to populism in society: How do other political actors, journalists, civil society actors address the challenges populism poses (in particular in their online communication - given that populist

actors are often particularly active on social media)? What are their responses and alternative narratives, how do they reflect the causes and their own possible role in the rise of populism?"

The interpretation of assertion 10 is that there is a need to understand the different countermeasures employed by different societal actor types to address populist activity. For example, surveys may be undertaken targeting different the different actors. Extending this, it would be very helpful to assess the effectiveness of these countermeasures. For this, a set of assessment criteria needs to be determined, and definitions of what constitutes "effective" in the different environments populated by the actors.

There is one comment supporting assertion 10, acknowledging that much work has already been done to investigate approaches to address mobilised movements and to understand the dynamics of how the movements were formed, but stresses the need to continue this work in the light of high profile and high impact recent populist cases:

"This is a classic question in more relational and cultural approaches to the dynamics of contention and/or movement mobilization. Despite being a classic question for scholars of political communication and social movements, among others, the resurgence of populism as well as the resonance of populist positions continue to merit further scrutiny and interdisciplinary dialogue."

The participant who marked the assertion as "not relevant" commented:

"I agree that this is important but it will go faaaaar beyond this issue."

Given the brevity of the comment, it is difficult to interpret, but a working interpretation can be that it is not sufficient to rely on case-based assessments of how different actor types address populism. Clearly, there are other mechanisms to address populism than studying what other actors do, and these need to be investigated.

Recruitment to Populist Movements

Assertion 21 covers the need to understand how individuals are recruited or motivated to join populist movements.

TABLE 7: POPULIST RECRUITMENT

ID	C	V_T	V+	V-	V	Assertion
21	0.92	13	12	0	12	We need to understand how individuals are socialized or socialize themselves into populist ideologies.

Assertion 21 is derived from a Round 1 comment:

"[…] Maybe even more importantly, we need to understand how individuals are socialized or socialize themselves into populist ideologies. How do they acquire, for example, a right-wing populist worldview? […]"

This quotation is part of a larger comment regarding the evolution of populist ideologies and the contribution online communities play. The resulting assertion 21 concentrates on the recruitment aspects, as other aspects are covered in separate assertions. This is strongly supported, with 12 votes for, no votes against and 1 marking it as not relevant.

The single participant that marked the assertion as not relevant commented:

"Too vague and expansive"

Clearly we need to understand populist mobilisation but this fact is already well-known, and much work has already been done on this question because populism itself is not new and the tactics for mobilisation of people into populist movements has been well studied. Given the context of the overarching assertion 9.1 that mentions the need to consider the interdependence between populism, fake news, echo chambers and the populist leaders' use of information channels; as well as the wider context of the source quotation, which mentions the contribution of online communities to populist mobilisation, a useful recommendation based on assertion 21 would be to qualify it by focusing on how people are socialised into populist movements via the interplay between hybrid media, fake news and echo chambers.

Populists' Use of Information Channels

Populists' use of information channels is a theme arising from the consultation, with two related assertions, as shown in Table 8.

TABLE 8: POPULISTS' USE OF INFORMATION CHANNELS

ID	C	VT	V+	V-	V	Assertion
15	0.85	13	12	1	11	We need to understand what is the contribution to populism of the internet and online communities relative to other media such as cable TV, newspapers, and word of mouth.
22	0.55	11	8	2	6	Differences between the engagement methods, tools and platforms used by populist leaders compared to other political actors need to be investigated.

By far the strongest assertion in this group is 15, which concerns the need to understand how the new digital media compares to more traditional channels when used to support populist causes. Assertion 15 derives from comments made in Round 1:

"[…] concerning populism, I would encourage research on the two following aspects. First, the long-term causes of its rise and the role of the media, in particular online platforms, in this process. How have recent populist ideologies evolved over time, what are their ideological roots and the platforms where these ideologies have been elaborated and spread? Maybe even more importantly, we need to understand how individuals are socialized or socialize themselves into populist ideologies. How do they acquire, for example, a right-wing populist worldview? What role do online media and communities play in this process? In order to address such questions, biographical and longitudinal research is needed."

"the "media" characteristics of populist voters (their media use, media literacy, trust in media etc.)"

"Specifically, we do not know how populist voters use the media, what their main sources are, whether they are aware of filter bubbles and fake news etc."

"[…] How critical is the internet to recent political developments? What is the contribution of the internet relative to cable TV, newspapers, and word of mouth? Would we be seeing similar developments in the absence of the internet?"

"1. It's my understanding that there's no solid evidence that the internet played a significant role in the 2016 US election. Only about 14% of Americans got their news from the internet while almost 60% got it from cable TV. Moreover, the most polarized group in America is the group that use the internet the least (the elderly). While there has clearly been growing resentment and polarization of attitudes towards politicians and people from different political camps, it's not at all clear what's behind it. Resentment and polarization in America have been growing since the mid-'90s and the Republican "contract with America." The internet echo chamber may well have made really important contributions, but we shouldn't jump to that conclusion but rather do a detailed critical analysis based on data."

Assertion 15 has two comments, both from participants supporting it:

"This all depends on scope"

"This is an important line of inquiry - especially when one is willing to synthesize emerging research on digital communication with the "best of" pre-Internet communication processes. I would rephrase it as investigating the influence of different media institutional hierarchies (institutional orders or cultural fields) of communicative credibility on the dynamics of populism - an area of research I find particularly compelling. This question opens important doors to understanding the relationships between people's everyday experiences, communication about certain issues in social life, and their evaluations of mediated representations of contention."

There are no comments from the single participant who disagreed with the assertion, so the objection is not known.

Instead of contrasting online channels to more traditional channels as used by populist leaders, assertion 22 contrasts populist leaders' tools and methods against other political actors. This assertion is much less strongly supported, only just exceeding the consensus threshold. There are two comments, one from a participant who voted against the assertion and another from a participant who voted the assertion as "not relevant". The single comment from a participant disagreeing with the assertion is:

"I think this assertion supplements others and that the role of populist leaders and their varied use of media s is already focused on in the literature."

The comment from the participant who marked the assertion as "not relevant" is:

"This is the same as #9"

These comments indicate that assertion 22 is largely redundant, because there is much work already done regarding populist leaders' uses of media in general, and that the assertion is like another that has already been covered.

Echo Chambers

Characterisation of Echo Chambers

Characterisation of echo chambers is a theme emerging from the consultation and is broadly supported by the panel. Three assertions contribute to understanding how echo chambers form, how to characterise

and operationalise them, and whether they are real or mythological. The assertions are shown in Table 9.

ID	C	V_T	V+	V-	V	Assertion
37	0.75	12	10	1	9	We need to understand how to identify echo chambers.
36	0.55	11	8	2	6	Research needs to investigate whether echo chambers are real, with significant impact, or myths based on anecdotes and small groups.
34	0.54	13	10	3	7	We need to understand under what circumstances echo chambers form.

Assertion 37, concerning the identification of echo chambers, is broadly supported with 10 votes for, 1 against and 1 "not relevant". It is derived from several comments from Round 1:

> "Research needs to focus on applying an operationalization of Echo Chambers to assess how they are working and the degree to which they are working. My collaborators and I created an operationalization that was published in Nature Climate Change (Jasny, Waggle, & Fisher, 2015). It breaks echo chambers into their constituent components and then measures how they affect information diffusion through the US Climate Policy Network. the methodology can be easily applied to Echo Chambers, Fake News, and Populism-related issues on the Internet and would provide much more detail about how they are working exactly (and the degree to which they are working)."

> "This topic is an important one because a lot of claims are made about the existence, inter-dependence and impact of the three topics. This, however, begs the question: to what extent are these claims correct? Descriptive studies detailing to what extinct [sic: assume "extent"] echo chambers and fake news are present are particularly useful."

> "If the three are related, than [sic – assume "then"] the foundations of our contemporary democracy is in danger. Not that we should then expect immediate democratic breakdowns, but rather that the democratic foundations are eroded (to the point of collapse)."

There are no comments for assertion 37, so the opposition is not known, but it is clear that there is a need to investigate how to characterise and recognise echo chambers, the impact digital media has on closed & polarised communities and how they are interdependent with fake news and populism.

Assertion 36, concerned with the reality of echo chambers, is borderline supported (8 votes for, 2 against and 1 "not relevant). It is derived from several Round 1 comments:

> "[…] The -i would say- myth of echo chambers is based on anecdotes and small groups. The interesting question is who ends up in an echo chamber, which attempts are made to get out by this person or to pull the person out by others and what is successful. What is the role of closeness of the presenter of alternate information, which sources do have an impact, which time window of being in the grey zone entering an echo chamber does till [sic – assume "will"] allow being pulled out."

> "[…] It is one thing to know how echochambers work, it is another to understand who enters such a echo chamber and how. Understanding this helps to prevent people entering and keeping echo chambers just a small part of the house called democracy."

There are no comments for assertion 36, so the objections are not known.

Assertion 34, discussing the underlying factors that influence formation of echo chambers, has a borderline consensus score (10 votes for, 3 against). It is derived from several Round 1 comments:

"To address the problem properly, we have to account for the socio-cognitive factors underlying the phenomenon. Confirmation bias has been shown to play a pivotal role in information consumption and diffusion on online social networks. Indeed, social media represent a new, hybrid system that relies on processes that feed and foster echo chambers and, thus, users' polarization. Such a scenario inevitably affects civic and political lives, and the dominance of few, increasingly powerful tech companies cannot be ignored. To contrast misinformation, we first need to smooth polarization. In this direction, it would be crucial to i) understand how core narratives behind different echo chambers are built and evolve and ii) be aware of the mechanisms underlying social platforms to investigate their impact on users' behavior."

"[...] we need more research on the boundary conditions of Echo Chambers, Fake News, and Populism. Under which circumstances do Echo Chambers form? When do Fake News spread? In which situation does Populism emerge?"

There is a single comment supporting assertion 34, which concerns the hybrid media system discussed previously in the Fake News section, reinforcing the need to consider the online and offline environments, social and broadcast media together in a hybrid information ecosystem:

I would add to this how they are evident and reinforced in offline environments, non-news contexts, and less overtly political ones, with assertions 37 and 49 in mind.

Comments disagreeing with assertion 34 are:

"I'm not sure that this makes sense, depending on how you define echo chambers"

"Echo chambers are dynamic entities. The right question is a much broader one about the dynamics of information consumption."

Confirmation Bias

Participants discussed different aspects of confirmation bias, and influences on opinions that are based on the individual's pre-existing beliefs and actions. The group of relevant assertions is shown in Table 10.

ID	C	V_T	V+	V-	V	Assertion
27.2	0.70	10	8	1	7	We should investigate the influence of each actor's worldview on how they decide whether a news report is accurate.
49	0.56	9	6	1	5	We need to study the dynamics of recommender systems in other contexts and compare this to politically relevant platforms and content, so as to develop broader theoretical frameworks and a broader understanding of the effects of such technologies.
48.1	0.55	11	8	2	6	Rather than studying the individual in isolation, we need to study how an individual's knowledge interacts with the knowledge of his or her community and how this gives rise to attitudes about complex issues both at the individual level and the level of the community.

Assertion 27.2 covers an individual's internal bias when evaluating a piece of information. Its origin is a statement in Round 1:

> "When we discuss "fake news", it is important to ask how we define messages as true or false. I therefore suggest to take a step back and investigate how journalists, citizens and other relevant actors define truthful reporting and when they accept news as true. It is not so much the falsehood of some reports in the eye of the researcher or of social authorities that is important, but we should focus on what makes news trustworthy in general. Depending on their overall worldview, people believe and disbelieve a mixture of news that we, as researchers, would consider true and false (for example, supporters of populist parties and movements often believe and share news from alternative media, some of them misleading, and news from established outlets, in particular if they fit their ideology). What is interesting then is to ask what these worldviews are and how people make sense of reports and decide whether they are accurate."

This was summarised into a Round 2 assertion: "27 We should focus on understanding what makes news trustworthy in general". This did not reach consensus in Round 2, and the comments against indicate that the main reason is that the summary does not contribute any new knowledge:

> "Quite a lot of research exists on this already."

> "This assertion is heavily covered by other assertions and fails to offer any update to a standard subject of study."

As a result, the assertion was refined based on the original quotation and split into two. The relevant derived assertion is 27.2, specifically concerned with the influence of the reader's world view on their belief of a news item, which is broadly supported. There are no comments for nor against – the only comment is from the participant who marked the assertion as "not relevant", alluding to difficulties in measuring unstable and inconsistent preferences in citizens:

> "Worldviews are rarely internally coherent or consistent."

Assertion 49, concerning algorithmic technologies such as recommender systems, which can support confirmation bias by making recommendations in line with a citizen's stated or measured preferences

and their influences on polarised opinion, has moderate consensus. It is derived from a comment in Round 1:

> *"The phenomenon of (possible) echo chamber should also be seen in a broader context of algorithmic selection of content and recommender system. Such technologies do not only concern political content and journalistic news, but also a wide range of cultural and entertaining content. By studying the dynamics of recommender systems in other contexts (music, audiovisual entertainment, shopping etc.) and comparing it to politically relevant platforms and content, we can develop broader theoretical frameworks and a broader understanding of the effects of such technologies."*

There is a single comment for assertion 49, in support:

> *"see comment for ID 34"*

The comment for assertion 34 has been already covered, and the comment's essence is that opinion reinforcement methods and technologies need to be studied, and crucially in a hybrid online and offline environment.

Assertion 48.1 covers comparison of an individual's knowledge with the knowledge of a community, and how both types of knowledge interact. Its origin is in several comments from Round 1:

> *"Furthermore, populist online communication by ordinary citizens should be analyzed in the context of other online practices in order to understand how populist worldviews are integrated into people's overall worldview and way of living as revealed on online platforms."*

> *"Rather than studying the individual in isolation, we need to study how an individual's knowledge interacts with the knowledge of his or her community and how this gives rise to attitudes about complex issues both at the individual level and the level of the community."*

> *"Interventions designed to change attitudes in line with scientific evidence rarely have much effect. To design better interventions, we need a deeper understanding of the underlying cognition. Public opposition to potentially welfare enhancing scientific and technological innovations is a major impediment to their adoption. Misplaced partisan conflict around policy issues is a major impediment to developing good social policy. I see this as the most important challenge facing contemporary behavioral research."*

> *"Moreover, public discourse today is unsettling. We rarely venture outside of our communities of like-minded positions, and when we do the results are usually unproductive or counterproductive. A deeper understanding of how individual and community knowledge and attitudes evolve and harden has the potential to inform interventions to improve discourse."*

These comments were summarised into the Round 2 assertion: *"48. We need to compare individual opinion forming vs communal opinion forming".* This did not reach consensus, with 10 votes cast, 6 for, 2 against and 2 not relevant. There were two comments, one against and one supporting a vote of "not relevant". The "against" vote pointed out that this assertion was redundant:

> *"This can be subsumed under assertion 43 or 40."*

The "not relevant" comment claimed that the work proposed was not directly related to the main themes:

"Interesting, but tangential"

It was decided that assertion 48 was too general and sweeping, so a specific focus of the original Round 1 text was returned to for the derived assertion 48.1.

Assertion 48.1 has borderline consensus threshold, with 11 votes cast, 8 for, 2 against and 2 "not relevant". There are no comments, so the objections are not known.

Motivations for Participation in Echo Chambers

Two related assertions covering the motivations for citizens' participation to and exit from echo chambers are shown in Table 11. Both are unanimously supported.

TABLE 11: ECHO CHAMBERS MOTIVATIONS

ID	C	V_T	$V+$	$V-$	V	Assertion
52	1.00	11	11	0	11	Motivations and strategies for leaving echo chambers need to be investigated.
40	0.90	10	9	0	9	We need to understand what people gain from contributing to polarised online communities.

Assertion 52 covers the need to investigate peoples' motivations and strategies for leaving echo chambers. This derives from a comment from Round 1:

"The interesting question is who ends up in an echo chamber, which attempts are made to get out by this person or to pull the person out by others and what is successful. What is the role of closeness of the presenter of alternate information, which sources do have an impact, which time window of being in the grey zone entering an echo chamber does till [sic – assume "will"] allow being pulled out."

The only comment (in support) is:

"Would add this as a counterpoint/subpoint to assertion 34." [understanding how echo chambers form]

A related question is whether the individual knows they are in an echo chamber, so may not be in a position to make a decision whether they want to leave or not.

Assertion 40 covers the motivations for people to participate in echo chambers. It derives from Round 1 comments:

"What do people gain from contributing to polarized online communities? When and how does this engagement address broader insecurities or cultural anxieties?"

"Participating in polarized engagement makes people feel like they matter, like they have a voice. Far right groups believe that they're engaged in resistance to hegemonic liberal society. Leftist groups see themselves as staging a resistance to populist movements."

There is one comment to assertion 40:

This is a tentative agreement because the assertion is already covered in assertions 24 and 31, among others. Also, this assertion's supporting quotations already point to the fact that a good amount is known about why people engage in contention. The more interesting questions, in my view, concern where and how and why actual polarization or "culture wars" are constructed when we know that public opinion (especially as aggregated individual attitudes, beliefs, and worldviews) are rarely cohesive or coherent. And versus the conditions in which the boundaries of certain group memberships, territories, and symbols of belonging become fixed, inflexible, or staunchly binary (e.g., in wars, genocides, in total institutions, in the gated ghettoes of the affluent or those of the disadvantaged)?

Truth & Veracity & Verification

A commonly-occurring solution theme regards truth, veracity and verification of information.

TABLE 12: TRUTH, VERACITY & VERIFICATION

ID	C	V$_T$	V+	V-	V	Assertion
7	1.00	15	15	0	15	Fake news needs more investigation into the extent it is being read and judged valid, by how many, whom and why
6	1.00	14	14	0	14	We need to understand how to help people to properly evaluate the veracity of information they obtain online and through social media. What sorts of education, intervention, or algorithmic solutions are feasible?
27.1	0.67	12	10	2	8	We should investigate how journalists, citizens and other relevant actors define truthful reporting and how they decide whether to accept news as true.
41.3	0.64	11	9	2	7	The internet and social media create new challenges for information consumers to vet the veracity of information (e.g., proliferation of sources, easy and undetectable manipulation of information, relatively fewer professional gatekeepers, uneven adherence to journalist norms of objectivity, etc.). Research is needed into understanding the challenges and investigation of solutions.
5	0.54	13	10	3	7	We need to understand how to instil norms in a society to encourage discourse based on truth.

Assertion 7, covering the extent to which fake news is believed is unanimously supported. It derives from several Round 1comments, made by two participants:

"It needs much more study to what extent fake news is actually being read and judges [sic – assume "judged"] valid, by how many and whom [...]"

"We know it exists, but know little about to what extent it is recognized (type 1 and type 2 errors) and how this varies between and among groups of people. Which markers are used. Only if we know this, we can really assess the size of the problem/danger."

"[...] Is fake news believed by people? If so, by whom and why? Does it influence people's thoughts, decisions and behaviours? Does it feed populism- if so how? Can this be addressed by improving people's media and digital literacy, or are other solutions more viable?"

"It is of vital importance to understand what contemporary fake news is, and what drives it, in order to know how to combat it. Contemporary fake news contributes to deception and misinformation

running rife among closed online communities, with no hope of being corrected by facts because those inside the filter bubble are either not exposed to the facts, or choose not to believe them. This is democratically problematic: those trapped within the online filter bubble lose touch with reality, and those outside the filter bubble have little or no idea that this state of affairs is taking place. Ultimately, what is at stake is the common foundation of knowledge upon which democratic decisions are made. As such, understanding and combating this phenomenon is of vital societal importance."

The only comment for assertion 7 is in support and points out its similarity with another assertion that concerns the societal effects of fake news: *"This (assertion ID 7) reads as very similar to assertion ID 12"*, but this assertion's emphasis on belief.

Assertion 6, discussing the need to find ways to help people evaluate the truth of information is also unanimously supported. It is derived from many Round 1 comments, made independently by 7 participants:

"How do we define what is true and false, what do we and those advocating and implementing such technologies accepts as criteria for the truth or falsehood of a message? And can technical systems apply these criteria or can they only be applied by agents that are socialized in human society or in a specific culture?"

"How biased are people's search for information and evaluation of information? People are often portrayed as being irredeemably biased in how they search for and evaluate information. I believe the data reveal a more complex picture: in some contexts at least, people can evaluate information that contradicts their opinions appropriately, and they can search for such information. What are the contexts that promote more objective and more biased information search and evaluation?"

"These questions, I believe, haven't received the necessary attention so far. It has been tempting to paint an overly negative picture in which most people are biased, share fake news that support their 'group', accept these news, and are influenced by them. I believe such a bleak vision is unwarranted given the data available. It would be interesting to understand the potential limits on the spread of fake news (if few people share them, if they have little effect on people, or if people aren't that biased in their searches)."

"How can we help people to properly evaluate the veracity of information they obtain online and through social media? What sorts of education, intervention, or algorithmic solutions are feasible?"

"The internet presents and structures information in a way that can make it difficult for people to evaluate the veracity or credibility of information. Although information evaluation was always important, and is certainly not a new problem, the internet and social media create new challenges for information consumers to vet information (e.g., proliferation of sources, easy and undetectable manipulation of information, relatively fewer professional gatekeepers, uneven adherence to journalist norms of objectivity, etc.)."

"citizens' media literacy (detection of fake news) [is needed]"

"Media literacy is often referred to as the central skill in the digital age to ensure the empowerment and participation of all citizens. Media literacy is also necessary to be able to cope with the current developments such as echo chambers, fake news and populist communication. However, research on

media literacy in the political communication field is scarce. We do not know enough about citizens' media knowledge (are people able to distinguish reliable and non-reliable sources, are they aware of echo chambers, what do they know about journalistic routines and norms etc.) and its role in political communication."

"[…] social media literacy: How do social media literacy classes in school have an impact on people years later. Does this empower them in recognizing fake news and how does this depend on their social network etc?"

"[…] In school teacher pay attention to web literacy but we know little about the effects of such classes ore project let alone about the long term effect. Such training could be fundamental for the future generations dealing with all the information they can choose from nowadays."

"The art of analyzing propaganda needs to be revived. How to spot propaganda, how to analyze it, common themes, etc."

"In the name of free speech, we have allowed conspiracy theories and propaganda to proliferate on social media, believing that the inherent craziness of these messages would limit their distribution. We were wrong. We need to educate the public about the nature, content, motivations and methods of distribution of fake news and propaganda on social media. As researchers, we need to understand very clearly how propaganda travels through social media by developing very straightforward methods and demanding access to data that influences public opinion."

"fundamental scientific challenge is how to support citizens in gathering trustworthy information to participate meaningfully in public debates and societal decision making"

This is clearly an important recommendation. The only comment is in support and refers to the relationship between this and other assertions: *"See comment to assertion 5. When combined with assertion 4, 5, and 20, I strongly agree"*. [For reference, assertion 4 covers safe computing practices, assertion 5 covers promotion of norms in society that value truth, and assertion 20 covers investigation of mechanisms to address the emergence, distribution and effects of fake news. The comment to assertion 5 is discussed later in this section.]

Assertion 27.1 covers the need to understand how professionals, private citizens and others decide whether to believe a piece of information. It is strongly supported and is derived from a Round 1 assertion that did not reach consensus in Round 2. Its origin lies in the Round 1 comment:

"When we discuss "fake news", it is important to ask how we define messages as true or false. I therefore suggest to take a step back and investigate how journalists, citizens and other relevant actors define truthful reporting and when they accept news as true. It is not so much the falsehood of some reports in the eye of the researcher or of social authorities that is important, but we should focus on what makes news trustworthy in general. Depending on their overall worldview, people believe and disbelieve a mixture of news that we, as researchers, would consider true and false (for example, supporters of populist parties and movements often believe and share news from alternative media, some of them misleading, and news from established outlets, in particular if they fit their ideology). What is interesting then is to ask what these worldviews are and how people make sense of reports and decide whether they are accurate."

This was summarised into assertion 27 concerning the need to understand what makes news trustworthy in general. This did not reach consensus in Round 2, the main comments against pointing out that there is a lot of work already done in this field: *"Quite a lot of research exists on this already"*, and *"This assertion is heavily covered by other assertions and fails to offer any update to a standard subject of study"*. Considering these comments, the assertion was reformulated to concentrate on understanding how the different recipient groups evaluate the information they encounter and how they define truthful reporting. This resulted in assertion 27.1, which is strongly supported in Round 3. There are two comments for 27.1, one agreeing and one against. The comment agreeing pointed out a similar caveat to the original objections reflecting the amount of work already done: *"Agreed, though there is a body of work already on this"*. The comment against alludes to the "definition" aspect of the assertion: *"Definitions are overrated"*.

Assertion 41.3 covers the specific new challenges to information verification caused by the Internet. It derives from a Round 1 assertion that did not reach consensus in Round 2, whose origins are discussed in the next section. Assertion 41.3 has moderate consensus in support, and there are no comments.

Assertion 5, discussing the need to instil norms that value truth in society, has borderline supporting consensus. There are two comments. One is for the assertion, covering the crossover with other related assertions and making the point that engagement outside academia is necessary:

> *"Very much like assertion 4, 20, and 6, the need for social scientists to engage in debates and influence thinking beyond academia should not be overlooked. The legitimacy of academia also relies on making sure that inaccurate sources, outlets, or institutions perpetuating false information are more readily and easily questioned by non-experts. See comments to assertions 4 and 20."*

The other comment is against the assertion and discusses the difficulties in the meanings of "truth":

> *"What's at stake is epistemological differences. We don't agree on what constitutes "truth." Understanding that is key rather than projecting epistemological frames […]"*

Diversity of Information Sources

The need for investigation into how to present people with a diversity of information sources is a theme that emerged in Round 3, based on Round 2 evaluation. There are two assertions, one of which is broadly supported, and the other is moderately supported.

TABLE 13: DIVERSITY OF INFORMATION SOURCES & PERSPECTIVES

ID	C	V_T	$V+$	$V-$	V	Assertion
41.1	0.70	10	8	1	7	Research is needed exploring alternatives to diversify the information sources that we read, aiming to avoid biases produced by echo chambers.
41.2	0.58	12	9	2	7	We should investigate new journalistic models and mechanisms (i.e., ethics, codes of conduct, etc.) that encourage people to consider issues from multiple perspectives.

Both assertions derive from the same assertion (41) that did not reach consensus in Round 2. Assertion 41's origins are in several Round 1 comments made by two participants:

"Echo chambers are often the result of people's preferences to follow like-minded people (homophily) […] or read news outlets that reinforce their existing beliefs […]. This is indeed a difficult one to solve, but more research is needed exploring alternatives to diversify the information sources that we read, aiming to avoid biases produced by echo chambers."

"Research done so far has she [sic — assume "shed"] light on these important phenomena in society. However, prevention and/or resolution of those issues has been underexplored."

"What new journalistic models and mechanisms (i.e., ethics, codes of conduct, etc.) that encourage people to consider issues from multiple perspectives?"

"The internet presents and structures information in a way that can make it difficult for people to evaluate the veracity or credibility of information. Although information evaluation was always important, and is certainly not a new problem, the internet and social media create new challenges for information consumers to vet information (e.g., proliferation of sources, easy and undetectable manipulation of information, relatively fewer professional gatekeepers, uneven adherence to journalist norms of objectivity, etc.)."

From these comments, Assertion 41was proposed: "More research is needed exploring alternatives to diversify the information sources that we read. We need to determine and evaluate new journalistic models and mechanisms (i.e., ethics, codes of conduct, etc.) that encourage people to consider issues from multiple perspectives." This was tested in Round 2 and did not reach consensus, with a consensus score of zero, meaning that there were equal numbers of votes for and against. The Round 2 comments indicated a lack of focus in assertion 41, and expressing scepticism regarding the ability of people to evaluate issues from multiple perspectives:

"This has too many things baked In, including things I think are the wrong frame"

"I don't think people are capable of evaluating issues from multiple perspectives. It's more important to provide unbiased facts that separate news from editorializing."

"Covered in other assertions."

A further concern in assertion 41 was that it failed to consider the Internet's contribution to challenges faced by information consumers. Because of these comments, assertion 41 was split into three derived assertions, two concentrating on different aspects of diversity (41.1 and 41.2), and a third covering the Internet-specific challenges faced by recipients of information (41.3, covered previously).

Assertion 41.1 is broadly supported and covers diversification of information sources available to information consumers. There are no comments, either for or against.

A key question is that while it is fine to give people alternative and diverse information sources, how can they be encouraged to evaluate issues from multiple perspectives? This is the subject of assertion 41.2, which has moderate support, but no comments.

The consultation resulted in a set of principles that the participants asserted should guide the research. These are covered in Table 14.

TABLE 14: RESEARCH PRINCIPLES

ID	C	V_T	V+	V-	V	Assertion
56	1.00	13	13	0	13	Interdisciplinary research involving different disciplines collaborating is needed
57	1.00	6	6	0	6	Participatory research is needed
74	0.67	6	5	1	4	Trust of the target community is needed to perform experiments
50	0.64	11	9	2	7	Research is all focused on the technical aspects, but we need to understand peoples' experiences. We need to get to the root of the societal problems rather than looking for technical solutions.
13	0.60	15	12	3	9	The impact of fake news and the influence of social media needs to be studied in real environments, not lab conditions or experiments.
69	0.60	10	8	2	6	Models and tools to predict and address misinformation propagation are needed, and should be tested in real scenarios with real people

Assertion 56, advocating interdisciplinary research, is unanimously supported with a strong turnout. This is unsurprising, as it is derived from numerous quotations by different participants in Round 1:

"The research will require a combination of expertise in social science, statistical inference, epidemiology, ethics and computer science."

"As researchers, we need to implement a cross-methodological, interdisciplinary approach that takes advantage of both the question-framing capabilities of social sciences and the experimental and quantitative tools of hard sciences."

"Psychologists, political scientists, computer scientists, network scientists, statisticians [are all needed]."

"I believe the expertise exists in the research community both in the social sciences and computer and information sciences to carry out good studies. Research funding is needed for all, especially interdisciplinary efforts that can tackle multifaceted solutions to this very complex and difficult issue."

"The proposed research requires a combination of expertise in the social sciences and a profound knowledge of the Internet. Therefore, the research questions can only be successfully pursued through an interdisciplinary approach. Communication science, political science, psychology, sociology, and computer science should collaborate in order to answer them."

"I think that to address these challenges we have to approach the problem in a data-driven way but with a strong collaboration among disciplines to have a non-reductionist view. Complex systems approach, on my opinion, until now is the field that is more prolific in providing evidence."

"Often studies coming from other fields are not able to moodle [sic – assume "model"] data and models in an unbiased way (doing data-science is not a matter for journalists)."

The only comment reinforces the assertion and goes on to ask how this objective of interdisciplinary collaboration can be achieved:

"we need better ways of facilitating collaboration and cumulative knowledge development".

Assertion 57, covering participatory research, where the objectives are determined with the cooperation of the target group under study, is also unanimously supported, although with a much smaller turnout. Clearly this is strongly coupled with assertion 74, which asserts that the target community's trust is needed for experiments. Assertion 57 derives from a simple statement in Round 1 stating that participatory research is needed and assertion 74 derives from the Round 1 comment:

"The truly hard types of social science research that involve getting deeply involved with the and building trust from the key communities. This is particularly tricky because academic epistemologies are seen as elite and we're part of the problem in many of these communities minds."

Assertion 57 has no comments, and assertion 74 has one comment disagreeing that does not object to gaining the trust of the target community, but it doubts whether experiments are needed at all: *"I do agree that trust is needed before experiments are performed, I just do not think we need those experiments that much".*

Assertion 50, covering the need to concentrate on the roots of societal problems rather than concentrating on technical solutions, is broadly supported. It derives from a single comment in Round 1:

"The problem is not the technology; it's what the technology reveals about the state of our society. Technology mirrors and magnifies the good, bad, and ugly. If we want to address the problems we're facing, we need to start by getting at how people are experiencing what's happening, not by projecting our ideas of what's happening onto people based on seeing macro data.

The fix will also require getting to the root of the problem and no research is really there right now. It's all focused on the tech layer."

There are two comments, one for: *"Would combine with assertion 73"* (assertion 73 concerns the need to access diverse spectrum of candidates is needed for study purposes) and one against: *"overly general".*

Assertions 13 and 69 are both moderately supported and make similar points regarding experiments and testing of models – that they both need the participation of real scenarios with real people, in addition to experiments conducted in laboratory conditions.

Assertion 13 derives from several comments from two Round 1 participants:

"Part of the problem is the difficult to accessing user level data from the platforms, but we will need to find other ways to measure these phenomena."

"We have so little of it and policy recommendations are being made off the back of what we ca research (e.g. disproportionate emphasis on Twitter data because of their open API when the reach

and impact of Twitter on citizens is much smaller and fabricated news websites because we can measure click rates.)

Too much of the research on this issue has been done in experimental labs with US undergraduate students."

"[…] the reception of fake news[.] It needs much more study to what extent fake news is actually being read and judges [sic – assume "judged"] valid, by how many and whom, how it spreads across and within social strata/groups/networks, and how this varies across system (i.e. much is based on the US context while the US is a atypical media and political system. This all needs to be studied outside experimental settings as citizens judge news in a real-life setting not in a lab or primed environment."

Assertion 69 derives from comments from two Round 1 participants:

"A diverse set of studies is needed. Development of tools to prevent the emergence and/or mitigate the diffusion of inaccurate and biased information is definitely needed. But these tools need to be tested in real scenarios, with real people."

"1. To figure out the role of the internet, one would need historians, demographers, social scientists, and statisticians. The process would require searching large databases and building models of information transmission to get a handle on how ideas have changed over the years. Computational resources would be required to run some of the more computationally-intensive models that come out of machine learning."

There are two comments – one for, pointing out that both lab and field work is needed and implying that either on its own is not likely to be sufficient: *"We need both laboratory and field work"*, and one against, asserting that experiments with real people are already happening so its advocacy is not needed: *"This has been done in real scenarios thanks to platforms like social media. It was done in labs in the 20th century, though this has changed in the last decade"*.

Definitions

The extent to which definitions are necessary is discussed in three assertions, shown in Table 15.

ID	C	V_T	V+	V-	V	Assertion
18	0.91	11	10	0	10	We do not need research trying to define populism, as "complete libraries" have already been written about the topic.
47.2	0.82	11	10	1	9	We need to be clear about definitions and understand how using different definitions lead to different results. Once we understand, we actually have a better grasp of the phenomenon.
47.1	0.67	12	10	2	8	Clarity in definitions of key terms describing fake news, echo chambers and populism is important, but full consensus over meanings is likely to be difficult to achieve and unnecessary effort.

Assertion 18 covers populism specifically, is unanimous and asserts that the definitions for populism are already well established. It derives from a Round 1 comment:

"What we do not need is research trying to define populism. That would surely be a waste of time as 'complete libraries' have already been written about the topic. There is an emerging consensus that distinguishes between an ideational approach (thin-centered ideology) and a communication approach (political style). The piece cited in the preparation document by Engesser et al. (2017) is particularly useful I find. The two do not exclude each other and their co-existence is actually worthwhile to examine. The study by Engesser et al (2017) is a good starting point in particular: it posits theoretical ideas that still need to be empirically assessed and linked to fake news and echo chambers."

A comment for assertion 18 supports this and adds there can be different defined understandings of populism, and that they all contribute to overall understanding:

"Minimal definitions suffice and specific ones tend to unproductively prejudge the central question of empirical investigation (e.g., Gould 1995). I wouldn't use the term 'complete libraries,' but I've also found and argued that different approaches to populism - as an ideology, as a rhetorical style or repertoire, or as a formal strategy (type of political organization or policy) aren't that incompatible with one another. They all provide insights into processes of populist mobilization."

Assertions 47.1 and 47.2 derive from assertion 47, which did not reach consensus in Round 2. The origin is in multiple comments from the same respondent to Round 1:

"First, we need more definitional work. Although the disagreement among the scholars slowly decreases, there is still no scientific consensus on the definition of Echo Chambers, Fake News, and Populism. What exactly is an Echo Chamber? Does the term "Fake News" refer to political satire, propaganda, or both? Is Populism an ideology, style, strategy or something else entirely? What is the difference between nativism and populism?"

"Second, there is a lack of theory. There are some encouraging first steps but the conceptual models for the analysis of Echo Chambers, Fake News, and Populism are still underdeveloped. What are the underlying macro-level theories that may explain the phenomena?"

From these comments, assertion 47, "*We need to achieve consensus on the definitions and meanings of key terms such as echo chambers, fake news and populism, and conceptual models for their analysis*" was determined and tested in Round 2, but did not reach consensus, and with the overall balance of opinion against, with 3 votes for and 6 against. The key reason for the opposition in Round 2 concerned the need to achieve adequate definitions but exhaustive, full-consensus definitions is likely to be difficult and unnecessary. The single Round 2 comment in support of assertion 47 concurs:

"And that will be cutting some gordian knots and move on"

There were two comments opposing assertion 47 also concur:

"I don't think full consensus is needed, but I agree that research and theorizing needs to be clear about how it uses these terms and situate conceptual frameworks relative to other approaches."

"On populism there is consensus basically. And in general, most important is that we are clear about definitions and understand how using different definitions lead to different results. Once we understand, we actually have a better grasp of the phenomenon."

In addition, the second comment above supports the comment for assertion 18, stating that consensus regarding the definition of populism has already been achieved.

As a result of the opposition to assertion 47 in Round 2, assertions 47.1 and 47.2 were derived and evaluated in Round 3. Assertion 47.1 concerns the need for adequate but not exhaustive definitions; and received broad support. Assertion 47.2 concerns the need to understand the effects of using different definitions; and received strong support. There is only one comment, opposing 47.1 and supporting the previous assertion that populism's definitions are already well established: *"It collapsed three concepts. I think this holds for echo chamber and fake news; for populism it does not as the literature has arrived at a consensus."*

Resources Needed

The panel commented on the resources needed for research, and the assertions are given in Table 16. All have reached strong consensus and have strong support.

ID	C	V$_T$	V+	V-	V	Assertion
58	1.00	8	8	0	8	New and diverse datasets of misinformation propagation and reaction are needed - most research so far uses benchmark datasets
70	1.00	8	8	0	8	A directory of existing tools to understand and address fake news and echo chambers needs to be compiled and maintained, for the use of researchers and citizens
73.1	0.90	10	9	0	9	Access to a diverse spectrum of candidates is needed for study purposes.
8	0.87	15	14	1	13	We need social media data and the operators of the social platforms must make it easier to access more of their data
71	0.80	10	9	1	8	Funding is needed for interdisciplinary experiments
72	0.80	10	9	1	8	Funding to collect or purchase large data samples is needed

Assertion 58 highlights the need for new and diverse datasets for information propagation and reaction because much research uses the same datasets. This is derived from a Round 1 comment:

> "*Most research so far uses benchmark datasets. While this is good to start, there's a risk that the developed tools overfit the patterns of the benchmark datasets, and don't necessarily generalise to new events in the future and to realistic scenarios where actual people are involved*".

Therefore, to encourage genuine real-world applicability, new and diverse datasets are required.

Assertion 70 proposes a directory of tools and is unanimously supported. It derives from a Round 1 comment:

> "*[...] there are some tools out there already to help citizens identify fake accounts. They need to be cataloged, compared, reviewed and then recommendations for use must be created. Once a directory of what already exists is created, and a method for evaluating the value and limitation of the tools, it will be clearer what other tools researchers or citizens may need*".

There are no comments for this assertion.

Assertion 73.1 highlights a need for a diverse population of experiment subject candidates and is strongly supported. Its origin is in the Round 1 comment:

> "*Researchers must be willing to engage with, and interview, elite actors within the technology and advertising arenas. High-level skills in elite interviewing will be needed, as well as an excellent network of contacts in these domains*".

Assertion 73 concerning contacts to provide interview candidates was derived from this and tested in Round 2, but did not reach consensus and was opposed with 3 votes for and 4 against. The only Round 2 comment was in support: "*Especially for elite actors that are hard to gain access to. I would add that we need funding to train and identify translators, community workers, and other non-academic professionals who are trusted by community members/subjects and potentially better able to engage with vulnerable populations (as hinted at in assertion 74)*" but this gave no indication regarding the opposition. Given the strong opposition to assertion 73, the decision was taken to generalise it into 73.1, which emphasised the

need for diversity in the population of prospective experiment and interview candidates. Assertion 73.1 has strong support and shares a theme of diversity with assertion 58.

Assertion 8 covers the need for social media platforms to open more of their data for the purposes of research; and is strongly supported with a high turnout. There are two comments, both making a similar point regarding the need to protect the privacy of the social media platform users. One comment supports the assertion but provides the caveat of privacy: *"Not accessible to anyone, but to academics/researchers through agreements. This is being done to some extent by e.g. Twitter through agreements with academics, but should be broadened without prioritising some academic institutions over others"*. The other comment is the single vote against: *"Until we have good questions, our obsession with getting data makes no sense. Cuz privacy"*.

Assertions 71 and 72 are both strongly supported and cover the need for funding, each concentrating on the need for funding to support a specific need: assertion 71 indicates that funding is needed to support interdisciplinary experiments, and assertion 72 relates to the need for new and diverse data sets by indicating that funding is needed for their purchase. Assertion 71 derives from a Round 1 comment: *"I believe the expertise exists in the research community both in the social sciences and computer and information sciences to carry out good studies. Research funding is needed for all, especially interdisciplinary efforts that can tackle multifaceted solutions to this very complex and difficult issue"*. The only comment for assertion 71 is in support, pointing out that the finance may be needed to bring together existing work in separate fields: *"However, I would also add that the three issues hinge on work within many already interdisciplinary subfields (e.g., social movements, the sociology of talk/narrative, deliberative democracy, the sociology of news, etc.), which means that : 1) funding should also be directed at projects that bridge scholarly categories even when they're not comprised of large interdisciplinary teams. And 2) work synthesizing insights from existing interdisciplinary traditions should be brought to bear on these topics"*. Assertion 72 derives from a Round 1 comment: *"Money for collecting large data samples (e.g. from nationally representative samples), to conduct laboratory experiments, potentially to acquire proprietary data sets (e.g. from social media)"*. The only comment for assertion 72 is against it, pointing out a relationship with assertion 8 in that data should be easier to access in general: *"I think other assertions capture the need to make datasets less proprietary. However, I would agree with this assertion in certain cases, especially when the data can then be shared or made more accessible to multiple researchers"*.

Research Techniques Needed

The panellists mentioned several research techniques and methods. Two, covering surveys and interviews are unanimously supported, and one covering the need for methods to observe the response to fake news is broadly supported. The assertions are shown in Table 17, and all are based on a significant consensus already shown in Round 1's free-form independent responses.

ID	C	V_T	V+	V-	V	Assertion
53	1.00	11	11	0	11	Surveys are needed, some large scale
54	1.00	10	10	0	10	Interviews are needed
55	0.69	13	11	2	9	Methods observing peoples' response to fake news are needed

Assertion 53 derives from many Round 1 comments from different respondents. The panellists recommend many resources & techniques that are appropriate, and the common theme between all the Round 1 quotations below is that they mention surveys.

"The suggested research mainly relies on methods of social science. Data is typically collected via surveys, in-depth interviews and the analysis of online content. This requires human interviewers, coders etc. with expertise in social-scientific methodology. In some cases, technical solutions may be used to analyze larger amounts of content (automated content analysis)."

"The proposed research requires a survey that is developed specifically to understand who is involved in the network being studied for Echo Chambers (so it must be bounded). The survey must have a decent response rate with a sample that makes sense to be defensible (MTurk will not do). Those data must be analyzed by a scholar with strong quantitative skills--specifically one who is trained in computational methods that include advanced social network analysis including ERGM."

"There are multiple possible ways to address these research questions. There is a lack of panel surveys, observational and online tracking methods."

"(1) social media data, cross national, survey data on news reception, survey and social media experiments, much more focus on the role of images of news content; tracking of clicks; connection between news consumption and internet searches at individual level."

"(3) social media experiments, large survey research, interviews with politicians; mobile app surveying; tracking effect"

"(4) surveys to capture effect among non users of social media; experiments (the rather classic ones); analyses of who keeps reading discussion also linked to the alter connection via which a discussion in found"

"(6) data scraping with a plan; development of networks of people, linked to panel survey on opinions."

Assertion 53 is unanimously supported, and there is a single quote in favour: *"All methods must be deployed".*

Assertion 54 derives from a similar amount of independent comment in Round 1. Some of the quotations are shared with assertion 53 because they mention different methods, but the common theme here is the need for interviews.

"Researchers must be willing to engage with, and interview, elite actors within the technology and advertising arenas. High-level skills in elite interviewing will be needed, as well as an excellent network of contacts in these domains."

"The suggested research mainly relies on methods of social science. Data is typically collected via surveys, in-depth interviews and the analysis of online content. This requires human interviewers, coders etc. with expertise in social-scientific methodology. In some cases, technical solutions may be used to analyze larger amounts of content (automated content analysis)."

"Social network analysts. Ethnographers. Qualitative interviewers. Participatory research"

"Interviewers and/or ethnographers."

"(2) in-depth interviews, content analysis of media sources"

"(3) social media experiments, large survey research, interviews with politicians; mobile app surveying; tracking effect"

"(5) evaluation research of programmes, based on (panel) surveys, interviews, and social media behaviour data"

Assertion 54 is also unanimously supported and has no comments.

Assertion 55 derives from three comments from different participants in Round 1. These quotations are also shared with assertions 53 and 54 but here the common theme is the need to observe the response to fake news.

"There are multiple possible ways to address these research questions. There is a lack of panel surveys, observational and online tracking methods."

"(1) social media data, cross national, survey data on news reception, survey and social media experiments, much more focus on the role of images of news content; tracking of clicks; connection between news consumption and internet searches at individual level."

"2. Figuring out how people respond to fake news would require psychologists to design and run experimenters, and designers to find and create real and fake news."

Assertion 55 is broadly supported and has one comment in favour, supporting the need for multiple and mixed approaches:

"I would argue that this assertion and many of those surrounding it suggest that multiple research approaches and mixed-methods research are needed in order to triangulate evidence".

Research Skills Needed

The panel mentioned several different skills and expertise needed for the research.

TABLE 18: RESEARCH SKILLS NEEDED

ID	C	V_T	V+	V-	V	Assertion
61	1.00	13	13	0	13	Social science skills are needed
63	1.00	10	10	0	10	Ethnographic skills are needed
65	1.00	11	11	0	11	Data gathering skills are needed
66	1.00	11	11	0	11	Qualitative analysis skills are needed
67	1.00	13	13	0	13	Quantitative analysis skills are needed
62	0.82	11	10	1	9	Statisticians are needed
64	0.80	10	9	1	8	Skills in hypothesis development and experiment design & analysis are needed
60	0.60	5	1	4	-3	Demographers are needed

The upper part of the table describes different skills needed, and assertions 61, 63, 65, 66 and 67 are unanimous. Worth noting is that in Round 1's free-text answers, qualitative analysis skills were the most strongly supported, with 7 participants mentioning it. Assertion 62 has one opponent, and their comment indicates only mild opposition due to repetition: *"Subsumed under ID 56"* (assertion 56 covers the need for interdisciplinary teams working together).

Assertion 64 concerning hypothesis development, experiment design and analysis skills, is strongly supported, and has significant comments, both from supporters. The first refers to the "Search Suggestion Effect" (SSE) that is an additional line of study, and the second adds further support to the recurring theme of mixed skills and methods. The Search Suggestion Effect is covered in a later assertion (32), in the "Societal Impacts" section.

"That's what I do. That's why I'm trying to shift your focus. SSE alone can turn a 50/50 split among undecided voters into a 90/10 split after just one search - without anyone aware of the manipulation and without leaving a paper trail for authorities to trace. According to Facebook's own published data, a single targeted message sent by Facebook to supporters of just one candidate on the morning of Election Day in a national election in the U.S. will likely cause an additional 450,000 people to vote for that candidate who otherwise would have stayed home - an effect we call the Targeted Messaging Effect (TME). The effects of targeted display ads or of fake news stories are miniscule by comparison."

"This assertion captures many of the others on the various skill sets that need to be brought to bear on questions of populism, fake news, and echo chambers. Integrative research strategies and methods should reduce the need for any either-or assertions about "the best" methodological approaches (e.g., quantitative v. qualitative)."

Assertion 60 is uncommon in that there is moderate consensus (albeit allow turnout), but the consensus opposes the sentiment of the assertion. The assertion concerns the need for demographers, and the consensus opposes this, indicating that demographers are not needed. There is only one comment, in opposition, and alludes to the skill being subsumed into another assertion: *"Subsumed under ID 56"*, but given this lack of evidence, it is not clear why demographers are not needed.

Caveats & Warnings

Some participants mentioned caveats and warnings related to prospective solutions. These are shown in Table 19.

ID	C	V_T	$V+$	$V-$	V	Assertion
39.1	1.00	14	14	0	14	We need to understand whether a technical solution to fake news has the potential for partisan or discriminatory ends - can it unfairly benefit or disadvantage specific groups or sectors of society?
38.1	0.77	13	11	1	10	When technical solutions to the problem of fake news are proposed we need to understand who advocates which types of solution for what reason, and what are the interests involved in such decisions.

Assertion 39.1 is unanimously supported. Its origin lies in two comments in Round 1 from the same participant, both concerning the need to be aware of the possibilities for bias and discrimination introduced by any tool or solution:

> *"It is tempting (and maybe inavoidable to some degree) to turn to technical solutions of the problem of fake news (and maybe also echo chambers). Social researchers (and scholars from neighboring discipline) should then ask two related sets of questions. The first one concerns the social dynamics behind the implementation of such technical solutions and their social consequences: Who advocates which types of solution for what reason, what are the interests involved in such decisions, what are the arguments brought up in public discourses? And who profits and loses if such technologies are being implemented (established news outlets, alternative media, civil society actors or ordinary citizens posting online, different political camps etc.)?"*

> *"Technical systems and technical solutions to social problems are never neutral: They come at certain costs (monetary and other) which can be borne by different actors. And their implementation can favor different groups and disadvantage others. It is therefore important to investigate and reflect the underlying assumptions and interests as well as the consequences of the implementation of technical systems."*

These comments were summarised into assertion 39: *"We need to understand who are the societal winners and losers if technical solutions for the problem of fake news technologies are implemented".* This was tested in Round 2 and did not reach consensus. There were two Round 2 comments, one for and one against. The supporting comment highlighted the need for specific understanding of the different impacts of solutions to fake news:

> *"As with assertion 38, assertion 39 is not as clear as it should be. However, the emphasis on enduring questions of how disinformation in media systems maintains, reproduces, or subverts of inequalities is very important. With some additional specification, how the current problem of fake news and different approaches to solving it ('technical,' market, deliberative, etc.) variously impact different groups in society and influence the bases of institutional authority merits additional attention."*

The single "against" comment objected to the "winners and losers" analogy:

> *"I assume this is code for partisan considerations, but the idea that there are winners and losers is disturbing to me. This is about democracy, not a sports game"*

Considering these comments, assertion 39.1 was determined, specifically targeting unfair advantage, partisanship or discrimination. Assertion 39.1 is unanimously supported, and has one comment, highlighting its relationship with algorithmic bias: "*Ongoing research on algorithmic biases should be of help here, though this is still in its infancy*".

Assertion 38.1 covers the vested interests in advocacy of a solution and is derived from assertion 38, which did not reach consensus in Round 2. Assertion 38 shared its origins with assertion 39, but concentrated on a specific aspect of a Round 1 comment:

> "*[...] Who advocates which types of solution for what reason, what are the interests involved in such decisions, what are the arguments brought up in public discourses? And who profits and loses if such technologies are being implemented (established news outlets, alternative media, civil society actors or ordinary citizens posting online, different political camps etc.)?*

This was summarised into assertion 38: "**We need to understand the reasons behind the advocacy of different technical solutions to the problem of fake news**". This was tested in Round 2 and did not reach consensus. There were two Round 2 comments – one opposing the assertion and one marking it as "not relevant". The comment opposing assertion 38 was concerned with its lack of clarity without further detail:

> "*Remaining neutral on this assertion as it is currently presented would be easier because the assertion is unclear. What exactly is meant by "technical solutions" here? Is it about computational algorithms, fact-checking apps that send people to competing views or somehow authorized sources, new websites for leaking classified information, or codified regulations and policy implementation? As such, it's hard to get a handle on the subject of this strand of research inquiry. With some additional specification, further inquiry into meta-level debates about how to handle fake news and the speakers attached to these debates could be very important.*"

The comment marking assertion 38 as "not relevant" also pointed to its lack of clarity and that it is too broad in scope:

> "*I don't understand what this means at all. Meaning why people advocate for media literacy? This frame, as it's stated, seems way to broad and meaningless.*"

Considering these comments, the assertion was rephrased to concentrate on the advocates of a proposed solution and their interests. The result is 38.1, which is broadly supported, with a single vote against, a single vote marking it as not relevant, and no comments.

Societal Impacts

There are several assertions that discuss societal impacts in general and apply to each of the three subject areas of fake news, echo chambers and populism.

The Undermining of Liberal Democracy

Assertions 23.1 and 23.2 cover the negative impact of fake news, populism and echo chambers on liberal democracy.

ID	C	V_T	V_+	V_-	V	Assertion
23.1	0.77	13	11	1	10	Research is needed to test the hypothesis that echo chambers, fake news and populism undermine liberal democracy.
23.2	0.77	13	11	1	10	We need to understand when and how fake news, echo chambers, populism undermine liberal democratic principles, when they may actually be mobilized for its support, and how other non-digitally mediated versions of these phenomena have operated in democratic settings.

Both assertions derive from assertion 23, which has its roots in Round 1 comments. There are two comments from different participants, in answer to the "why is the research needed" gateway question:

"Because populism threatens liberal democracy."

"There is indication that Echo Chambers, Fake News, and Populism may have very detrimental effects on society: Echo Chambers may lead to polarization, Fake News to disinformation, and Populism to political distrust. These phenomena may constitute severe risks to liberal democracy. Echo Chambers, Fake News, and Populism have the potential to undermine the achievements of Enlightenment. Therefore, they should be taken very seriously."

These were summarised as assertion 23: "Echo chambers, fake news and populism undermine liberal democracy", which was tested in Round 2 and did not achieve consensus, with 7 votes for, 3 votes against and a single vote marking it as "not relevant". Two comments disagreed with the assertion:

"This is an empirical question and a problematic one because it prejudges populism as inherently counter-democratic when we know this is not necesarily the case (e.g., Mudde & Rovira Kaltwasser 2012; and classic works on social movements: McCarthy & Zald 1977; Tilly 1978). A better assertion would be that we need to understand when these phenomena (fake news, echo chambers, populism) undermine liberal democratic principles, when they may actually be mobilized for its support, and how other non-digitally mediated versions of these phenomena have operated in democratic settings (e.g., Eliasoph 1998; Cowan 2014, etc.)."

"This is a claim that says little about (future) research; no clue what it's function is here."

Taking the advice of the comments, assertion 23 was split into two: to firstly confirm whether there is a hypothesis that fake news, echo chambers and populism undermine liberal democracy; and secondly in what ways, using the first of the comments above as the source.

Both assertions have broad consensus, each having 11 votes for, 1 vote against and 1 "not relevant". There is a single comment for assertion 23.1, in opposition, and implying that echo chambers may not necessarily undermine liberal democracy because they have existed for a long time one form or another:

"We've always had echo chambers. We are homophilic by nature, and we prefer to interact with like-minded people, we are friends with like-minded people, etc. It's hard to force somebody to be a friend of somebody who thinks very differently."

General effects on citizens have been raised in two assertions, in addition to the others already discussed that are more specific to one of the three main themes of the consultation. The general assertions are shown in Table 21 and reflect two separate points regarding susceptibility and effects on non-participants.

TABLE 21: EFFECTS ON CITIZENS

ID	C	V_T	V+	V-	V	Assertion
24	1.00	14	14	0	14	We need to understand the factors that affect citizens' susceptibility to populist content, fake news and echo chambers, and what makes some people more susceptible than others.
31	0.90	10	9	0	9	Investigation is needed into the effects of fake news and populist content on those who may see it but do not actively engage with it. How are these bystanders influenced?

Assertion 24 covers the general factors that affect citizens' susceptibility to misinformation and populist content. It derives from a Round 1 comment:

"There is also reason to assume that these phenomena do not affect the population in a uniform manner. Some people may prefer to dwell in Echo Chambers, while others tend to avoid them. Some people may believe in Fake News, whereas others may ignore them or critically assess them. Some people are prone to populist messages but others resist or even combat them. What makes the difference? What are the moderating or mediating factors?"

Assertion 24 is unanimously supported. Its comments are:

"This is included above"

"As I noted for assertion 12 and reinforce in agreeing with assertion 21: the 'prehistory,' socialization, identifications, or political common sense that makes certain groups of people and institutions susceptible to fake news accounts warrants its own scrutiny."

Assertion 31 covers influence on "bystanders". It derives from two Round 1 comments, both from the same participant:

"[…] bystander effects [-] We tend to focus on the impact of populist social media use, fake news and echo chambers in terms of the people engaging with it, but on social media many users read discussion without engaging with them. While the hardliners might take extreme positions and troll, actual discussions about their information being wrong or fake, might influence 'bystanders' but little is known about this."

"[…] Our focus is too often on the extreme posts on social media, but we ignore what the discussion thread overall does with all does people not responding. This group is much bigger than the people engaging. To understanding the impact of fake news on social media creating echo chambers, we need to understand the impact on this substantial group."

Assertion 31 has unanimous support. Its single comment relates it to bystanders and effects on recipients in general:

"This assertion is the "negative case" compliment to assertion 24 and, therefore, mutually necessary to buttress efforts at explaining what factors matter more in relation to one another in terms of people's susceptibility to fake news or messages that claim to speak for some majority of "the public.""

Opinion Forming in the Digital Age

Assertion 43.1 specifically refers to opinion forming in the digital age, and assertion 32 covers a specific example of this.

TABLE 22: OPINION FORMING IN THE DIGITAL AGE

ID	C	V_T	V_+	V_-	V	Assertion
43.2	1.00	12	12	0	12	We need more research on how opinion forming works in the digital age (e.g. the contribution of social media, user-generated content compared to traditional media etc.) Specifically, we do not know how populist voters use the media, what their main sources are, whether they are aware of filter bubbles and fake news etc.
32	0.69	13	11	2	9	We need to compare fake news and echo chambers with less visible forms of influence, such as the search engine manipulation effect.

Assertion 43.1 derives from assertion 43, which itself derives from several comments made by three participants in Round 1:

"In particular, longitudinal studies should investigate the development of opinions and other dispositions over time among users of different platforms."

"opinion formation in the digital age (the role of different sources)"

"Based on this, we need more research on how opinion forming works in the digital age (which role play social media, user-generated content compared to traditional media etc.) Specifically, we do not know how populist voters use the media, what their main sources are, whether they are aware of filter bubbles and fake news etc."

"Contemporary public discourse is marked by polarization and extremism around complex issues that individuals do not understand deeply. How can people maintain such strong beliefs when they know so little about the underlying issues? The psychology is not well understood. Much of research in cognitive science and psychology has focused on individual-level biases like confirmation bias, hindsight bias etc. These phenomena only give a partial explanation for the polarization and extremism we see around almost every issue. We need more research that grapples with the fundamental fact that individuals know relatively little and that most of our positions on issues are based on knowledge that exists outside of our heads."

"Interventions designed to change attitudes in line with scientific evidence rarely have much effect. To design better interventions, we need a deeper understanding of the underlying cognition. Public opposition to potentially welfare enhancing scientific and technological innovations is a major

impediment to their adoption. Misplaced partisan conflict around policy issues is a major impediment to developing good social policy. I see this as the most important challenge facing contemporary behavioral research. Moreover, public discourse today is unsettling. We rarely venture outside of our communities of like-minded positions, and when we do the results are usually unproductive or counterproductive. A deeper understanding of how individual and community knowledge and attitudes evolve and harden has the potential to inform interventions to improve discourse."

From the comments, the assertion 43 was derived: "We need to understand how opinions are formed, both from a historical perspective and in the current digital age, especially looking at the knowledge used when people form the opinions". This was tested in Round 2 but did not reach consensus. There were two Round 2 comments. One was in support of the assertion: *"Although approached in other assertions, this is an ongoing puzzle because of its focus on the natural tension between public opinion and reliable information in political systems".* Another comment marked the assertion as "not relevant" because of existing research: *"There's a ton of research out there".*

Assertion 32 advocates comparison of deliberate information manipulation with other mechanisms of influence in the digital age, such as the Search Engine Manipulation Effect (SEME), where, search engines tune search results for users based on unknown algorithms, and the Search Suggestion Effect (SSE) where suggestions made in a browser search bar based on the user's input can influence their opinions. The assertion derives from several Round 1 assertions from two different respondents, advocating that effects such as the SEME are powerful influencers on opinion forming unique to the Internet that need to be studied in their own right and compared to fake news, echo chambers and populism:

"While there has already been a great deal of research on whether users of systems that algorithmically select content are mainly exposed to messages confirming their own attitudes ("echo chambers"), we still need systematic long-term studies that analyze the causes and effects of selective exposure to opinions online. In particular, the interplay between voluntary selective exposure (people actively choosing what they want to see) and technical selection should be explored in more detail."

"First and foremost, we need to recognize and measure the unfortunate role that negativity bias is playing in the attention people are paying to "Echo Chambers, Fake News and Populism" on the internet - attention that may be distracting users, journalists and researchers from examining far more powerful sources of high-tech influence. To put this another way, we need to conduct comparative studies that quantify the actual impact of Echo Chambers, Fake News and Populism on opinions and behavior and that then examine at the impact that less visible sources of influence, such as SEME (the Search Engine Manipulation Effect, http://bit.ly/1REqzEY http://bit.ly/2xY4nB5) and SSE (the Search Suggestion Effect) are having on opinions and behavior."

"Control over search results (SEME) is, in all likelihood, now determining the outcomes of upwards of 25% of the national elections in the world, as well as impacting the beliefs, attitudes, and opinions people form about everything they research on the internet - all without people being aware that their thinking is being shifted by algorithms. New research on the power that search suggestions have on opinions (SSE), to be published in 2018, shows that search suggestions can be used to shift a 50/50 split in opinions among people who are undecided on an issue into a 90/10 split, with no one aware they have been manipulated. People's exposure to biased content (so-called fake news stories, or content seen in so-called echo chambers) will have a net effect on opinions and behavior in a population only if major platforms are filtering and ordering that content in consistent ways that favor

one viewpoint over another. If biased filtering and ordering of this sort is occurring - and it is virtually certain that it is - we need to be concerned about it. If we ignore the power that Big Tech platforms have to shift opinions without people's knowledge, the democratic form of government will become little than an illusion, and human freedom itself will be substantially undermined."

Assertion 32 is broadly supported, and has two comments, both in favour:

"I repeat, emphatically, that the manipulations you are focusing on - all of which are competitive, visible, and subject to confirmation bias - are trivial in their impact compared with the impact that SEME, SSE and other recently discovered manipulations have on every aspect of human thinking, decision making, emotions, and behavior. SEME, SSE and similar effects are invisible to people and nearly impossible for authorities to track, which makes them especially dangerous. Worse still, the very few people who can detect such manipulations tend to shift even farther in the direction specified by the manipulations, so simply recognizing such manipulations doesn't protect people from their impact. In this regard, your survey - although well intended - is misleading and possibly even harmful. You are misdirecting researchers and policy makers in way that is especially advantageous to companies like Facebook and Google. You are urging people to focus on content, but content is no longer important. The only thing that matters now is the filtering and ordering of content, and, for most people in the world, all of the filtering and ordering is done by just two companies. Filtering and ordering determines what content people will actually see, how or whether fake news stories will spread, and what people will ultimately believe."

"This can be subsumed under assertion 15: we need to understand the relative contributions of digitally mediated communications relative to other media such as cable TV, newspapers, and word of mouth on populist mobilization. The idea that "filter bubbles" are less visible or palpable than echo chambers and fake news is an empirical question. If anything, this assertion points to the need for sophisticated research strategies in order to ensure that findings aren't unintentionally biased by ""less visible"" forms of influence."

Deliberate vs Unintended or Spontaneous Influence

A theme that cuts across the spectrum of consultation themes (and may be possibly used to classify them) is the distinction between deliberate misinformation, intended to manipulate recipients with a specific goal in mind, and the so-called "spontaneous echo", which is less strategically guided, may be unintentional or wilfully submitted to by the recipient (e.g. sharing information that supports their agenda or joining a sympathetic echo chamber). The distinction is covered in two assertions, shown in Table 23.

ID	C	V$_T$	V+	V-	V	Assertion
45.1	0.55	11	7	1	6	A legal, philosophical and political-theory study of the problems of rights and duties of information in the Internet age should be considered, and informed by studies into firstly manipulated echo (various groups having an interest in some specific information being widespread and manipulating processes of transmission to that effect); and spontaneous echo (individual web users share information that they find plausible and relevant with the side effect of influencing others' opinions).

Assertion 45.1 is borderline supported. Its origin derives from two related comment from the same participant in Round 1:

"Here are two important issues, each worth studying in its own right:

1) Manipulated echo: The social success of false information on the web is in part due to various interest groups having an interest in some specific information being widespread and manipulating processes of transmission to that effect. In principle, such information may be true or false, but it is generally much easier to find false information (invented or just distorted) to suit one's interests. Such manipulation, their methods, effectiveness, costs and benefits for the manipulator, and for web users generally must of course be studied.

2) Spontaneous echo: individual web users share information that they find plausible and relevant. They may do not to manipulate others but, at the same time altruistically to inform others and selfishly to enhance their own reputation. Reputation is secured by the relevance of what is propagated and jeopardized by its manifest falseness. A problem is that there is much more plausible and false information that would be relevant if true than plausible, true, and relevant information (for reasons that are in broad terms fairly obvious, but would deserve a study in detail). Hence, in good faith, people are likely to propagate a lot of false and relevant information that they believe or at least find believable.

The ways to fight the propagation of false information should be studied both for the case of manipulated and for that of spontaneous echoing. They are likely to be not wholly but importantly different in the two cases.

"In the case of manipulation, it raises important right issues: Freedom of expression on the one hand - different democratic countries have different laws regarding the intentional diffusion of false information. Access to genuine information, which is recognized as a right only in limited ways, but which is, fairly obviously, a condition of a genuine democratic process. So, come to think of it, a more legal, philosophical and political-theory study of the problems of rights and duties of information in the Internet age should also be considered. It would need, to be of practical relevance, to be informed by the two kinds of studied [sic – assume "studies"] mentioned above. These empirical studies together with this more political-theory study would be of direct relevance to the public debate on the future of democracy. Needless to say, they would also be of great social and cognitive science relevance."

This was summarised into the assertion 45: "A legal, philosophical and political-theory study of the problems of rights and duties of information in the Internet age is needed", which was tested in Round 2

and did not achieve consensus, with a very low consensus – 5 votes for, 4 against and 1 not relevant. There was one comment from the single participant who marked the assertion as "not relevant": *"Too all-encompassing".* To revise the assertion, the original Round 1 quotations were returned to, and the assertion 45.1 resulting includes the distinction between manipulated and spontaneous echo.

Assertion 45.1 achieved borderline support (*7 votes for, 1 against, and 3 not relevant*), with the only comment from one of the agreeing participants expressing a caveat to their agreement: *"Seems a little broad".*