The Political Subject in Participatory Culture

Investigating Post-Truth in the Digital Age

Lisa Karlberg

Master Thesis
May 15th, 2017
182 761 characters (with spaces), 64 normal pages
Supervisor: Alexander Carnera
MSc Business Administration and Philosophy
Copenhagen Business School

Abstract

The purpose of this thesis is to contribute towards a re-thinking of the nature of participatory culture, with the belief that such a move can be of great benefit to understanding the political subject in an era diagnosed with post-truth. This is accomplished by examining the writings of Hannah Arendt alongside theory within science and technology studies so as to provide an outline of the tension between the digital and the political subject, and then developing a stance on post-truth as inscribed in the fabric of participatory culture.

This is brought out concretely in diagnostic review of participatory culture, along with a study of recent academic work tackling misinformation. Deleuze and Guattari's concept of assemblage serves as a particularly beneficial way to guide the diagnostic of participatory culture. The hope is that such a self-reflection on participatory culture and its political valence can open up to new practices of being a political subject, and provide novel insight on the tendencies of post-truth.

Keywords: participatory culture; post-truth; the political subject; Arendt; schema; assemblage

Table of Contents

Introduction

Post-truth: ***adjective***

[Relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief.] The Oxford Dictionary, 2016

The awareness is widespread, facts are simply not what they used to be. Last year, Oxford Dictionary announced *post-truth* to be Word of the Year. The term implies that other forces are left to shape opinions of the public. Forces other than fact, that is. The term has been used for over a decade or so, yet its popularity in usage has skyrocketed these past months. Post-truth (also referred to as post-factualism) was first commonly used in the early years of 2000. Ralph Keyes wrote a book on the subject in 2004, and the American journalist Eric Alterman wrote about a "post-truth presidency" referring to post-9/11 statements by the Bush administration, as well as a "post-truth political environment". In 2010, the *Grist* columnist David Roberts defined it as "a political culture in which politics (public opinion and media narratives) have become almost entirely disconnected from policy (the substance of legislation)". Journalists and scholars have identified post-truth politics as apparent in many national arenas, in the USA, Britain, Australia, India as well as within regards to many arenas of debate, (Davies, 2016; Harsin, 2015; Sambrook, 2012). Paul Krugman, used it in 2011 with regards to what he saw in the rhetoric of the Romney versus Obama American presidential election. Since then the term has gained coverage with specific regards to American politics, with Donald Trump statements frequently being questioned for their objectivity, as well as during the Brexit referendum, explicitly with the case of the Vote Leave side consistently publishing that the EU membership cost UK £350 million per week, a claim marketed as net money or 'weekly fee'. The remark sprouted a discourse on post-truth, and the Institute for Fiscal Studies noted it as "absurd", (Giles, 2016). Assuming then that trend extends itself within Western democracies, it is likely to find possible an understanding of its significance through an understanding of its influences. The influences of the post-truth trend, that of not solely a simple contesting of truth but rendering it of a 'secondary' or later importance, are predominantly explained by the rise of social media, together with a growing distrust of facts offered by the establishment, and anti-elitist or populist movements, (Oxford Dictionaries, 2016). The next couple of paragraphs take a brief look at the influential landscape.

In risk of stating the obvious, an increasing amount of people are using social media platforms like Facebook, Twitter, Reddit and Instagram, as a source of news intake. According to a study done by the Pew Research Center, 62% of U.S adults get news on social media, (Gottfried and Shearer, 2016). Adults trust their friends' shared news and political information more than they do news delivered from other sources, (Echelon Insights, 2016). Social media is outstripping other news channels, and political scientists haven't had the time to fully understand the political implications. Social media are frequently connected with a loss of faith in facts. The often stated causes are in the mix of relevance algorithms, filter bubbles and echo chambers; an overexposure to a subjects perspective, and an underexposure to everything that is not, that is everything not deemed to fall under the reach of calculated 'preferences'. This belief of being the norm and of partaking in a general consensus then resulting in skepticism concerning other views. The proliferation of fake news and misinformation on social media relates to and is enabled by this echo phenomenon, contributing further to post-truth tendencies as skepticism grows, user trust pertaining to news-sources and facts getting tried repeatedly. Post-truth is also coupled to traditional media. Concerning journalism and reporting, Paul Krugman argued in 2011 that media impartiality had been taken too far. Krugman (2011) presumes an arena where one side in politics makes "wildly false claims", the media cover the story and balance it out with a statement from the opposition. The problem being that the offenses aren't comparable, one side might be called on their falsehood, the possibility of the media feeling a need to report balanced, would result in no real penalty for fraud. This false media balance leads to a certain political behavior of not sticking to facts, adding also the political subject's skepticism to fact.

Politics of many Western democracies are being disrupted with the rising support for populist leaders, (Inglehart & Norris, 2016). There are a variety of interpretations of populism, and just as many ideas as to which parties fall therein and which do not. Cas Mudde (2007) defines populist philosophy as "a loose set of ideas that share three core features: anti-establishment, authoritarianism, and nativism", an understanding prominent in the literature. The term populist might just be a tad strong (and plainly false in some Western democracies), but the polarized political landscape is seen as a major contributor to post-truth politics. Demagogues are an expected part of democracy, undoubtedly. But there is a right-wing anti-elitism spreading, harnessing anger towards politicians, experts and the left. An anger previously directed towards the top 1%, financial powers and large corporations. Here, post-truth terminology is coupled with deeper political movements, such as populism, and likened to terms such as anti-expert,

anti-elite, signifying truth as the workings of authorities, banal facts that prove nothing of how the day-to-day life of citizens actually is. As the pro-Brexit politician Michael Gove pointed out, "people in this country have had enough of experts," and this might be the case to some extent, (Mance, 2016). The country did at last vote ignoring the advice of their counsel. This could have been a strategic comment from the Leave side, but it is also attributed to an anti-elite populism, (Tett, 2016).

During the Trump campaign, what comedian Stephen Colbert calls "truthiness" is all that seemed to count – what *feels* to be right. Trump uses outrageous statements and sees a new outrage in reaction that is based upon the political correct attitude that makes people hope for someone who will say something down to earth and real, (Glaser, 2016). Pulitzer Prize winning PolitiFact has found that 70% of Donald Trump's statements branded as factual are "mostly false", "false", or "pants on fire false", (@politifact, 2017). Facts are losing their stature of laying a foundation for political consensus. Americans are in a study found to be more polarized than ever, (Gottfried et al., 2014). Relating to media, there is evidence that partisan media contributes to polarization. Though partisan media is certainly not anything new and was prevalent during many political campaigns, for instance during the 18th and 19th century, (Levendusky, 2013), with such high polarization, political camps are less likely to believe what the other is saying, once again drawing to talk of post-truth.

Populism regards ordinary people as "homogenous and inherently good or decent", as opposed to fraudulent elites, (Canovan, 1981). According to an Edelman survey conducted through 20 countries (2016), there is a rising confidence in "a person like me" corresponding with a surprisingly high trust in the digital. Trust remains high to peers, high to the digital, but low towards the elite. This illustrates a shift towards horizontal axes of trust. This shift in trust is illustrated well in the manner with which the crowd is used in digital technology[1]. This similarly portrays a disbelief (or at least disrespect) in experts, and a want of trusting the ordinary person. Concerning both political and other preferences, this can in once sense mean empowerment of ordinary people, but it could also give birth to groupthink, tribalism, as echo chambers testify. This rise of "a person like me" produces a post-truth era in which the peer outdoes the expert, (Barron, 2016). The mundane practice of digital tech and the internet is albeit paradoxical, when

[1] Crowdfunding, crowdsourcing, peer reviews, ratings, shared economy, etc.

it comes to privacy concerns most users are aware of the cookie-crawling, the data collecting that is inherently apart of the products they use such as Google and Facebook, though user activity remains high. Though, any signification of rise of trust in the digital has yet to be studied by scholars. Along with transitions in media, political and digital technology patterns, coincides another important driver of post-truth. Society is going through a radical transition, namely the developing into a society of data. In the big data era we are entering, there is possibility of a confusion to as the exact status of figures and knowledge, exacerbating the fear of abandonment of truth, suggesting any signification of rise of trust in the digital must be examined alongside an understanding of nature of data, (Davies, 2016).

And so, the post-truth trend is predominantly, and often mentioned in this landscape. Case in point, a quick Google n-gram view shows that the usage has doubled in frequency since it was first noted in 1988, (Books.google.com, 2017). Post-truth is an accentuated term today, seeing a peak in usage – this is what makes it interesting.

Post-truth in Participatory Culture

As concerning the modern political world, this introductory view of media, political and tech climates is to be kept in mind as a backdrop for the development of the paper. So it is, that the landscape enabling post-truth is none other than that which is the public sphere. As with any trend, it is sprung about in structures and systems that are dependent on relational tangents, of both space and time. What makes this discussion on post-truth of novel interest now, of separate nature to historic debates, is the techno-cultural sphere of the public. Granted, each time is more techno-culturally influenced than its precedent. This does not challenge the reality however, that individuals today actually live much part of their lives online, on the Internet, using/being the digital. As political subjects, much of attitude and deliberation is guided by the (no longer novel) 'digital public sphere'. And as with any technology, actors are continuously learning how to incorporate the product of the digital into routine. Actors for instance learn how to evolve the product, how to condition it for their purpose, how to capitalize on it. It is fairly safe to say that the techno-cultural sphere that is reality, exists as a technology part of mundane practice. The mundane practice should then be regarded too, for its association with the political subject and post-truth. The dynamics deeply rooted in the digital landscape, or digital public sphere, deem worthy as focus for a discussion concerning post-truth today. An outlining of digital culture might prove important for the understanding of any association and workings between the digital and the political. This paper is an investigation into a problematic that specifically surrounds digital culture and its agency in shaping post-truth tendencies.

This paper serves as a conceptual outline and diagnosis of participatory culture today, as well as an analysis of the technology shaping it. A critical take on how post-truth might be inscribed in participatory culture. As such, this is a thesis divided in two sections:

1) *a diagnosis of participatory culture,*
2) *a critical analysis of a technology and the agency shaping it.*

What to expect...

The tension at stake is the one developed between politics and the digital medium. Therefore, the assumption is drawn that there exist such things as facts, as truths, and as plain old lies. The reader is encouraged to share this pragmatic view throughout the paper. The introductory landscape drawn out considers media, politics and tech. Together these form the participatory culture of today. The aim of the paper is to highlight the simultaneous events that shape the landscape of our digital political sphere. Concurrently to claims of post-truth tendencies, we find a society (still) learning how to be digital, how to be in the private and public spheres that both present themselves on the digital medium, how to produce and consume information. Subjects are participating in digital culture as part of mundane societal practice. The parts of post-truth that are linked to digital culture are new to society, and thus it is imperative that the technology be accounted for. Hence, it is of interest to investigate any tension between what this thesis refers to as participatory culture, and the political subject. The intention is to clarify and outline selected currents and frictions of participatory culture and their political valence. The following is written as a critical take on current understandings of the political subject in today's techno-cultural reality. In summary, the following pages are an attempt to:

1) *understand what it means be a political subject,*
2) *gain insight into the techno-cultural setting of our reality that is participatory culture,*
3) *build awareness to whereas the spirit of post-truth is inscribed in participatory culture.*

Therefore, the thesis begins by two introductory theoretical chapters outlining the two main frames of theory, concerning the technology and political subject. Chapter 1 defines science and technology studies theory of structuration and schemas, in order to provide a frame from where to perceive participatory culture as a technology and get a grip of how it came to be and continues to be, by negotiation and dynamism of disparate actors and agency involved. Gilles Deleuze (1925-1995) and Félix Guattari's (1930-1992) concept of assemblage is brought forward as a supplement with which to grasp the technology.

Chapter 2 is an attempt to outline Hannah Arendt's (1906-1975) writing on modernity and the political subject. This is done in order to later see how her emphasis of the thinking subject and of the rise of the social present themselves today. The responsibility that follows from being a political subject and the sensibility that must be practiced, are factors that Arendt

stresses and that in this thesis are key, as the participatory culture hints at a distribution of the sensible.

In chapter 3, a diagnostic of techno-cultural modernity is presented. This section brings together the technology and the political subject. On the one hand, public relevance algorithms will be presented for their agency, embedded in our online practice. On the other, more explicit usage of social media and its being as a platform, will be examined to find evidence of how subjects are gaining political agency in the digital sphere. The diagnostic aims at providing an encompassing picture of techno-cultural reality, with a focus on the political subject and participatory culture as assemblage.

In chapter 4, a newly published research article serves as an item to review, and is brought up in order to show where the political valence of participatory culture is found and tackled with. The item is analyzed with structuration and schema theory. The schemas involved are found, described and shown to be central in the dynamism of technological development as well as to the political conversation. The research article is furthermore analyzed through the lens of presented concepts, in order to see in what way it might have agency on post-truth itself. The case aims at providing a brief complimentary, practical example of how schemas can be involved in shaping participatory culture.

A discussion follows considering the conceptual realities that have been brought to light through the diagnostic approach as well as the schema analysis. The two analyses will provide a backdrop from where to consider how their observed actors have agency in shaping participatory culture and eventual tension with the political subject. If all goes well, the importance of seeing the political valence of participatory culture will at this point be clear to the reader. As too, the dynamism and systematicity that embed our social practices. The thesis then asks as to what extent the goal has been met of diagnosing how the new spirit of post-truth gets inscribed in the fabric of participatory culture. By doing so, it is hoped that this deliberation will spark some creative lines for the reader's thoughts to follow.

Method

This is a philosophical, political and techno-cultural body of work. By proposing the nomenclature of participatory culture, the type of discourse that surrounds is fundamentally intrinsic to that of: technology, the management of technology, the social practices surrounding the technology, i.e. the participating/political subject, as well as the agency of actors involved. The main fields of interest lie within *philosophy:* as political, social and cultural, and within *economics:* as management of technology, media and a public sphere. The discourse links participatory culture to that of technology management and the political subject.

As mentioned, the thesis frames its discourse in the contexts of a diagnosis of participatory culture, and a schema study. Both analysis are intended to address the same line of inquiry. The first analysis is a diagnostic of the techno-cultural setting of today. This is done by presenting a perspective guided by a brief introductory section combining Walter Benjamin's (1936) essay "The Work of Art in the Age of Mechanical Reproduction" with Byung-Chul Han's (1959-) contemporary reflections on the digital, and a deeper briefing of Tarleton Gillespie's (1973-) reflections on public relevance algorithms. These three have been chosen for their disparate critical reflections on the digital: Benjamin's focus of the fading importance of authenticity and the new political motive of art; Han's focus albeit very much building on the former, on the lack of respect in the digital age due to a medium of affect communication; and Gillespie's focus on the algorithmic currents that build our informational flow. The aim is to create a novel way of perceiving participatory culture by reading Arendt's version of modernity and the political subject, alongside a contemporary look at digital modernity and the political subject. Analyzing participatory culture as Arendtian modernity, the diagnostic analysis is additionally guided by regarding participatory culture through Deleuze and Guattari's concept of assemblage. Assemblage has been chosen because of its focus of the process at the forefront, highly relevant to a discussion on participatory culture which is all but stable.

The empirical chosen serving as a case for the second part of the analysis is a technology advised by a research article published January this year in *Global Challenges.* It is titled "Inoculating the Public against Misinformation about Climate Change", written by researchers from Cambridge, Yale, and George Mason Universities. This analysis is guided by structuration and schema theory, and serves as a concrete study of the actors involved in shaping social practices. The article tackles the problem of an uninformed political subject and proposes a

technology to solve this issue. This technology is to the thesis considered an editorial logic. The article produces a discourse concerning participatory culture by investigating the management of information, by exposing a political reality or public sphere, and by examining and propagating the agency of the individual subject as a political agent part of a structural dynamic. The article additionally proves its validity by basing its query on one of the contributing factors to post-truth, namely misinformation. Its timely and current relevance marks how participatory culture has become part of a macro agenda, due to the as above stated encompassing discourse. The article and the agency behind it, i.e. the position of the researchers, acts as a valid agent to consider in itself, as its ontological status is that of an objective reality being concealed within politics. The abstract nature of the empirical being that the technology it suggests has not yet been implemented, slightly weakens its validity. However, this does not fully damage the examining of its agency of post-truth, as the recent nature of the article and its prestigious status (high ranking academics), hint at an ongoing conversation. Moreover, the investigation of this thesis is on post-truth tendency, making the article with its actors and agency part of this tendency.

The two analyses are meant to supplement one another. The contemporary diagnostic analysis focuses more on the individual, private political subject. The case study focuses more on the loci of power involved in technology management, i.e. public/private vested interests that make decisions shaping the technology. The aim is to ascertain the relevance of studying and further researching participatory culture, as it is a complex structure pertaining to multiple relations. It would have been beneficial to the thesis to investigate other editorial logics. For example, at a *fact-checking site* or a *search engine*. In these cases, it would be relevant to conduct interviews with actors (employees) to examine within which schema they produce their technology, i.e. product or editorial logic. It is of interest to this thesis to know from what discourse they make decisions.

It is not the aim to create a genealogy of post-modernism and what it has done with conceptions of knowledge or the political subject. Nor is it the aim to undermine current discourse on post-truth in saying that it has always existed. It is not a thesis investigating lying as a new political strategy. Nor is it, an investigation into populism, the demagogue and the power of the crowd. This thesis does not wish to contribute to a fetish of authenticity in politics. Opinions have always been made and people influenced. The way in which much politics is driven today

concerns not simply rhetoric, but PR, marketing, spin doctors and focus groups, adding to the sense of false authenticity to begin with. The intention is not to find a universal through examining interpretations. The intention rather, is to *deconceal*. The modern political reality should be interspectated in all its complexity. And so, this thesis aims to diagnose one current dynamic, to reveal processes between agents that have not been related before. In framing a diagnostic of the political subject in a techno-cultural setting, the goal is to gain novel insight on how agents within participatory culture relate in a structural dynamic. True to Arendtian doctrine, this thesis' approach aims at rendering an increased sensibility towards the public, actors and agency therein.

The thesis contributes to a body of literature concerned with the management of information technology in the public sphere, or with technology as public good; the technology here is that of online practice, with specific notes on public relevance algorithms and media platforms. The subject matter concerns the macro level elements involved in shaping societal practices - managing the flows of information in the public sphere that is our techno-cultural digital reality. The subject matter seeks to account for selected elements and their agency to show the validity of investigating the tension between the political subject and participatory culture. It is meant as a critical review on the underlying currents and loci of power that exist online. The internet, media platforms and the like are often noted as democratic, open to any spheres and any subject, an assumption this thesis does not attempt to undermine. The intent is to illustrate a setting wherein the spirit of post-truth is inscribed in participatory culture, and to examine private and public agency in the democratic participatory culture. In other words, a review of the management of the technology that shapes participatory culture. The thesis explores large-scale processes, contributing to contemporary diagnostics, as information is increasingly likened with technology. What processes, what actors, public or private, what structures are in place – and what agency do they have? These questions tangent the basis for this thesis and are helpful in framing a setting through which to read the following chapters exploring participatory culture.

Chapter 1
Structuration, Schemas and Assemblage

This thesis uses a theoretical background tied to science and technology studies (STS). It draws upon Anthony Giddens' (1984) concept of structuration in combination with Sewell's (1992) addition of cultural *schemas* as presented by Van Couvering (2007), as well as the well-rehearsed concept of social construction of technology (SCOT). Structuration theory with according schemas allows for an attempt at grasping Deleuze and Guattari's (1987) concept of *agencement,* or assemblage. The concept of assemblage is examined as a meaningful way to conceptualize the complexity and dynamics of participatory culture, represented by public relevance algorithms and media platforms that could lead up to post-truth.

Articles in digital communication, with regards to search engines in particular have adopted similar strategies. Van Couvering (2007) draws on structuration theory to suggest that the cultural schemas that frame the negotiation of the search engine end-product (relevance), are central to mobilizing resources for technological development. Mager (2012) uses SCOT tradition to examine how the search engine revenue model is negotiated and stabilized in a network of various actors. The approximate field of study in these two papers suggest structuration and schemas to hold a much valid theoretical background from which this thesis is able to: initially, gain an understanding of Deleuze and Guattari's post-modern concept of assemblage, albeit foremost, to examine how digital participatory culture relates to the political subject and how the societal implications of post-truth politics are come into being.

The key theoretical underpinning follows the perspective of technology as being an element in an interactive dynamic of both system and social action. The concept of structuration drawn up by Giddens accords both agency and structure equal importance in the creation and reproduction of social systems. This is the duality of structure and is as such opposed to methods in functionalism, systems theory and structuralism that give structure primacy over action, and a "pre-eminence of the whole over individual parts," (Giddens, 1984). On the other side of the spectra, methods like hermeneutics, constructivism and interpretative sociology accord "action and meaning […] primacy in explaining human conduct," (ibid, 1984). In structuration, the actions of subjects influence social systems, but are also in turn being influenced by them.

Many frameworks and terms have been developed to describe the agent/system dynamics of this theory. In STS, Bijker developed the technological frame of reference (Bijker,

1995); interpretative schemes (Giddens, 1984) and schemas (Sewell, 1992) were suggested from the field of social studies. Giddens (1984) uses the interpretative schemes as "modes of typification incorporated within the actor's stocks of knowledge". Interpretative schemes play a part in the governance of the locus of resources[2]. Thereby strengthening or at times altering structures, (Van Couvering, 2007). Adding to this, Sewell (1992) suggests that culture produces social structures, and that material objects need cultural schemas to create power or value. Cultural schemas can empower a resource by mobilizing that or other resources. For example money, or an embassy building, are not valuable by mere material existence. This leads Van Couvering (2007) to conclude that resources like money and technology "embody cultural schemas" (Sewell, 1992). Giddens terms "rule/resource sets" what Sewell sees as culture functioning to develop social structures.

Bijker (1995) furthered the concept of interpretative schemes, his technological frame refers to a constancy in "ways of thinking", it is the "shared cognitive frame that defines a relevant social group and constitutes members' common interpretation of an artifact". Of course, Bijker is well renowned for the SCOT theory. The SCOT theory came about in discourse challenging the idea of linear development of technology, that was, a linear trajectory from production to usage. It influentially demonstrates that "our technologies mirror our societies. It reproduces and embodies the complex interplay of professional, technical, economic, and political factors" (Bijker & Law, 1992). The SCOT theory was exemplified in the now well-known case of the social construction of the bicycle, showing that societal values are embedded in technology. The analysis traces the steps in the making of the technology that became the bicycle as we know it today, concluding that the technology had been negotiated, deliberated and constructed in a complex system of agents along with their respective interests, (Bijker & Law, 1987). The example laid out basic analytical groups for the SCOT analysis. One of these is the identification of "relevant social groups" along with their incentives or interest. In the case of the bicycle it is shown that the emancipation of women in the late nineteenth century had much to do with the compromise that became the technology, as women became principal users of the technology during that time. Another side of the compromise satisfied the racers, as they had an interest in fast technology, and too the public as they had an interest in safe technology.

[2] Giddens' (1984) notes resources as "media through which power is exercised, as a routine element of the instantiation of conduct in social reproduction."

Focusing on the economic aspect of the social groups in the agent/system dynamic, Carlson (1992) adds to SCOT a discussion concerning the factors of economic failure or success with regards to a technology. Carlson suggests that these aspects should be judged, or analyzed, in relation to the "frames of meaning" articulated to the technology, and how they fit or don't fit with societal, economic or cultural currents of that point of space and time. Carlson (1992) too illustrates his theory with an example, namely that of Edison's invention of the motion picture that was not market-ready, so to speak. In conformity with the theory, it failed because Edison's frame of meaning was that of a nineteenth century producer, whereas the movie audience and competitors belonged to a frame of the twentieth century consumer culture.

This thesis in investigating digital participatory culture finds essential the interactivity and dynamics of agent and structure. Though SCOT is fundamental for gaining an understanding of STS and that negotiations are in play at every technological development, it does not open up to an analysis of the dynamic system that duality brings. Returning to Giddens (1984) and Sewell's (1992) rules/resources dynamics or agent/structure relationship, Van Couvering (2007) implies a referential framework of a technological frame, which "is the way in which producers cognitively organize technology". Cognitively is here the keyword, as by ways of organizing, then, the technological frame helps the agents to mobilize other resources "around their interpretation", (as well as to interpret the technology and define it), (Van Couvering, 2007). By doing so, the technological frame can be put to strategic use. Van Couvering (2007) moves along to connect technological frames and their capacity of mobilizing to Potter and Wetherell's (1987) concept of *interpretative repertoires*. Interpretative repertoires are the variety of contexts and functions that an agent can choose to speak (read act) from, (Van Couvering, 2007). Different repertoires can thus be strategically deployed in disparate settings. The emphasis on strategic use makes interpretative repertoires more fitting than say, Bijker's technological frames given the empirical of this thesis.

Technological schema in Van Couvering's (2007) terminology, is thus a cultural schema (au Sewell) including "an important technological element, used to account for actions and strategically to mobilize forces". In accordance with the duality of structuration, the technological schema both "constrains and enables the agency of the actors", (Van Couvering, 2007).

The theoretical challenge in finding the systems and conditions in which participatory culture happens and is stabilized (in SCOT terminology), and/or de-stabilized, is in having a framework that is able to trace technological dynamics, socio-economic relations, and cultural processes. The referential frame of the technological schema makes for a good part of this challenge, particularly by that of the dual agency of actor, thereof counting for relational dynamics. Additionally, it allows for a take on the concept of *assemblage* that in turn supports the analysis in offering a frame in which the study of how participatory media can happen; the technological dynamic and process can be brought to the forefront.

The outlining of assemblage can benefit from STS and structuration theory's way of seeing the trajectory of technology as being non-linear and instead the result of multisided compromises and relations between agents, interests, culture and existing processes and norm. The concept of assemblage has been re-written in (plain) English by Marcus and Saka (2006), and their reading of the Deleuze and Guattari concept will be used for this thesis. According to the authors (2006), assemblage has been derived to "provide a structure-like surrogate to express certain prominent values of a modernist sensibility". With a focus on the ephemeral, the always emergent conditions of the present, the movement, the decentered, the external and heterogeneous – the concept of assemblage holds on to a nevertheless ordered social life, sustaining systematic and structure values. A "theory of the middle range" (ibid, 2006), the concept of assemblage, or *agencement* as coined originally in French[3], was developed in the works of Deleuze and Guattari, notably in the rhizome written *A Thousand Plateaus* from 1980, wherein they discuss dynamic system theory "which explores the various thresholds at which material systems self-organize", (Smith & Protevi, 2008). The concept can better be understood by seeing Deleuze and Guattari as process philosophers, to whom neither structure nor the end-product of processes have the same ontological status as processes themselves, (ibid, 2008).

Without trying to define Deleuzian ontology, it is important to highlight that he has stressed the emergence of difference within being. That is, a leaning towards a differential ontology. One might see this as Deleuze regarding philosophy and concepts for their differences and not in identity. Readings of Deleuze *Difference and Repetition* stress that repetition and difference in fact have logical and metaphysical primacy to any other concept of identity, (Hammer, 2007; Protevi, 2010; Smith & Protevi, 2008). This stresses that the *identity* of

[3] Assemblage has been used by various scholars, in a variety of ways. Read Phillips (2006) for an interesting overview of the implications the translation has had for the disparate usage of the *agencement* concept.

something is made by the ephemeral ties of relations in which it is found, and is of secondary prominence, while *difference* – the relations that puzzle together the identity, is primary. Identity exists due to a prior relation between differentials. Difference here can be understood as relation, rather than negation, as "negation is merely difference, pushed to its outermost limit", (Cisney, 2002). A helpful simplification might be to suggest, things are by differentiation. Assemblage then, seen through a differential or relational ontology if you will, can be seen as focusing on the difference, or process that makes the entity. In assemblage theory the parts of an entity are not rigid, but can be replaced with and overlap other (heterogeneous/external) entities, thereby impending systems through relations, (or differences to use that terminology).

Moving on, assemblage can be likened to the concept of collage, another well-used terminology emphasizing the ephemeral conditions of the present[4]. Marcus and Saka (2006) help further in the understanding of assemblage, by noting it as a resource with which to analyze the problematic of the heterogeneous within the temporary, all the while sustaining some concept of the structural[5]. Moving on, both time and space dimensions are of importance as they are inherently characterized with movement. To employ the concept is to do so with a kind of tension and reflexivity upon the undermining of structure (both time/space dimensions), yet withholding the status of the process and relationship, as well systematic understandings. The tension between at once denying the structure and at one enabling it is a tough balance, creating an almost "nervous condition for analytic reason", so this thesis deploys assemblage at own risk, (ibid, 2006). It follows, that what assemblage doesn't do, is stabilize its study for the sake of modelling, unlike structuration or schemas. Assemblage preserves the "modernist reality" of dynamics[6], (ibid, 2006).

The frames of reference in use with assemblage can denote for instance, a cultural, socio-economic or cognitive movement, i.e. a temporal span of emergence. They could also refer to "objective relations" such as structure formations, a system of relationships among disparate things, or a "describable product of emergent social conditions," (ibid, 2006). It can be attributed to the cognition or thinking of the analyst, or to the experience or mind of the subject, this tied to that of "becoming", closely linked to the always underlying concept of the

[4] Though not as popular due to the rock star status of Deleuze/Guattari productions.
[5] Indeed, the term itself in both French and English renders the picture of organization and structure quite seductive, yet it is nevertheless temporary.
[6] Marcus and Saka (2006) ironically note that assemblage is peculiarly subject to "by-product states" as continuous use of the concept would try to stabilize a state that is in itself elusive.

event. What is key to assemblage and of relevance to this thesis, is the understanding of the concept as that which designates the actualizations of causal processes that are operating in a system of intensities, (ibid, 2006). As such, assemblage is the result of an intersection of systems and is "productive of difference", that is, non-repetition. In assemblage, structures are seen as being differential, they are conditions that both enable and are transformation.
This being a study of the temporal, the material, the relational and the perceptual, fits assemblage together smoothly with the underpinning theory. This thesis is concerned with delineating the trajectory of becoming of techno-cultural formations, and aims at to investigate "the structural principles of order (and disorder) within the play of events and processes," (ibid, 2006), and thus sees fit to make use of assemblage. Drawing on this line of work, it is possible to elaborate how participatory culture by means of public relevance algorithms and media platforms is negotiated in a system of agents, interests, and practices within current frames of meaning, the post-truth tendencies in particular. It is possible (if all goes well) to evocate the emergence and heterogeneity in the inquiry of participatory culture, without having to make rigid or stabilize any final states.

The schema, placing the actor at the forefront, creates a frame from where actors can strategically account for their actions. The duality of its relation to the structure both constrains and enables the disparate actors and their agency. Assemblage, placing process at the forefront presents a dynamic system theory stressing the ephemeral and refined sensibility. The actions and agency of the political subject is apparent in both instances. The thesis will therefore now examine what it is to be a political subject with agency. This is specifically done through the workings of Hannah Arendt as she too stresses that of the sensible, reflexive subject in a vast plurality of actors.

Chapter 2
The Arendtian Political Subject, Reflexive and Sensible

Hannah Arendt's political and philosophical work provides many insights useful in trying to understand the nature of modern times. She is independent in her thinking and as such Arendt has proven difficult to categorize in any distinct school of thought, the traditional categories of conservatism, liberalism and socialism do not necessarily fit her political philosophy. This sincerely, as her main imperative is to stress the importance of just that, individual and autonomous thinking.

A refugee herself, her (non)citizenship is reflected in many of her works. The theme of the political agency of the subject finds itself most obviously in her renowned works *The Human Condition* and *The Origins of Totalitarianism.* Of great importance for this thesis is her participatory conception of citizenship and the exercise of political action, as they are central to her thinking on the political subject. She believes that an active engagement of citizens in public affairs provides them with public freedom, and a sense of effective agency. Participation and common deliberation are key to Arendt's conception of citizenship. *Plurality* is essential to our way of living together politically. As Judith Butler puts it, Arendt has an exilic perspective which she uses as a basis of a commitment for all refugees. She universalizes from her perspective as a Jewish refugee and this "universalization of that perspective leads to an extremely important prioritization of the right of the refugee", (Vita Activa, 2015). She coined the now somewhat clichéd concept of the banality of evil in her attempts to understand human thought. She analyses the human condition, and with it the nature of political life. The Arendtian understanding of politics is: an activity that takes place among a group of free equals, acting in public sphere facilitated through speech, (Schwarz, 2014). This is also the lens through which the thesis regards. Concerning the assumption of post-truth, Arendt stresses the risk inherent in being a political subject, the potential and threats that lie therein, in all of us. The weight and potential that we all assume in being political subjects is of great consequence. This thesis uses her line of thought to look at the need of being sensible to our surroundings - being attentive, participating and critical subjects. Arendt's political philosophy is followingly reconstructed along the themes of: (1) action, (2) the rise of the social, (3) the public sphere, (4) judging, and (5) opinion and fact.

Action

Arendt's theory of action is developed in her book The Human Condition (1958). Action as praxis, is no means to an end, nor instrumental. It is not about making a final product. The theory of action contains main qualities of freedom, plurality and disclosure. Freedom here signifies the capability all humans have by simply being born, namely the capacity to do the unexpected, to begin and to do something new. Action is embedded in natality, both in the act of birth as well as in the novel potential in all acts to come. Arendt accentuates that as man is capable of action, the unexpected is therefore to be expected from him. "Each man is unique, so that with each birth something uniquely new comes into the world", (Arendt, 1958). Acting is disclosing oneself. In political terms, Arendt ties this to revolution and uprising, an interruption of routine. It is the individual decision to break routine, take initiative and reinvent. Action, just like Arendt's politics, needs plurality. Action requires appearing in public, to a plurality of actors who can then uniquely judge the act. For Arendt, plurality corresponds with action, because it is due to the former that each enactment and judgment of others is able to be unique. "Action, the only activity that goes on directly between men without the intermediary of things or matter, corresponds to the human condition of plurality … this plurality is specifically the condition — not only the conditio sine qua non, but the conditio per quam — of all political life", (ibid, 1958)[7]. Arendt ties this too to the act of thinking with regards to following ideology. Ideology uses logic as foundation, whereas thinking is tied to spontaneity - again, the natality. Thinking is thus, the opposite of logic. Arendt is accordingly anti-ideologist as ideology sustains a logic. Unpredictability of a new event, and the act of doing the unexpected follows no logic. It is precisely this unpredictability Arendt sees as a "manifestation of freedom".

Similar to action, power too depends on aspects of freedom, plurality, and space. Power is attributed not as violence or as a force, but as en energy, generated among people, (Arendt, 1969). For Arendt, power is not exercised over humans but rather *of* humans, (Schwarz, 2013). Power being the "ability of humans to act in concert", (Arendt, 1969). It is generated momentarily, can never be conserved but remains ephemeral. It rises and disappears with the

[7] Actions reveal the distinction of *who* you really are. The disclosure of the identity of a subject are key aspects of action. As she writes, an individual entering the public sphere must face the question: "who are you?" (Arendt, 1958). In labor is disclosed what you are. The what explains your laborious achievements, what you can do, the who is your unique self.

gathering of people, (Schwarz, 2013). The energy that is power is relational, and takes place in-between subjects. The ability for individuals to engage in action, in bringing about the new in a collective - cooperative dynamism, speaks to the agency of individuals as an acknowledgment of power.

Modernity

Arendt's concept of the modern age is primarily explained through the rise of the *social*, of world alienation and of the victory of animal laborans over homo faber. Arendt portrays the modern age as an age of mass society, where the dichotomy public/private disperses with the rise of the social. The public realm of action and speech is restricted, and the private pursuit of economic interests is augmented. The anonymous labor of animal laborans replaces politics and action, and homogeneity is found in the place of plurality and freedom – this is how she describes modernity as the loss of the world.

The rise of the social refers to that of the general growth of the span of production and consumption, and the rise of the market economy and everything being open for exchange. The realm of the economy has extended itself to social capital, (Arendt, 1958). It is the invasion of privacy by society, the "socialization" of man; beginning and metaphorically continued with, expropriation. With the victory of animal laborans. Arendt fears that the standards of fabrication and speech are lost and triumphed are those of productivity, life and abundance. The rise of the social coincides with an instrumental view of politics. Arendt sees that we gain our self-identity and obtain an adequate sense of reality in an intersubjectively world of action and experience. The rise of the social pushes world alienation, meaning a loss of this intersubjective world, an "eclipse of the common public world". A process of "levelling people into uniformity" (Schwarz, 2014) mitigates differences. And so in modernity, the unpredictable action becomes less likely, and is overtaken by controlled and controllable behavior, (Arendt, 1958).

The Public Sphere

Arendt brings up the Greek polis in many of her writings, not only to refer to the institutions of the Greek city-states but also to signify a kind of public sphere of speech and action, (Arendt, 1958). She calls this the space of appearance, where "men make their appearance explicitly." The space, or the public realm, is not always in existence. Nor can any man be in it all the time.

“To be deprived of it means to be deprived of reality, which, humanly and politically speaking, is the same as appearance”, (ibid, 1958). The public realm is no definite place, it can very well disappear with the activities and subjects themselves. The space of appearance is with a gathering “potentially there, but only potentially, not necessarily and not forever.” It is a space of political freedom by speech, thought and persuasion. The public sphere contains the common world. This signifying the artifacts and institutions that provide the political context. The public sphere is key so that individuals can disclose themselves, share thinking, and establish solidarity, as she writes. Important to highlight is that it is constructed. Citizenship therefore, is received when entering the public realm. Politics are in fact, artificial and built. Political equality, is not due to “natural rights”. The world is a product built by human work, and not only for immediacy, but for a generations-long lasting structure, (Schwarz, 2013). Thereby Arendt stresses that political ties are solidary, not authentic or intimate, something that her contemporaries were appealing to. The *space* of the public sphere is also stressed. Key being that the space means active engagement and is not simply a sum of autonomous parts. Active in forums, in spheres, in circles where decisions are being taken and opinions discussed. Action is political in that it is about creating and re-inventing (natality) and not about producing an end product (non-instrumental). In coming together in human plurality, it is in the public sphere that the web of human relationships is “created and perpetuated”, (Schwarz, 2013). Arendt uses the illustration of a table, that which is literally placed in-between (inter-esse) people. The web of relations is constituted by that which happens in-between people, in “the widest architectural, geographical and theoretical sense”, (ibid, 2013).

In the Arendtian human condition public and private interests are separated. Political opinion as such can never be formed in the private realm, as it needs to be judged in public context, (d’Entreves, 2016). There is a distinction of roles that individuals play throughout their lives. At once the life spent in private, and simultaneously, the life spent among others. Hence, for Arendt, public interest is not the sum of all private interests, but rather refers to supra individual matters, a world bigger than and beyond our own. According to Arendt, participating in politics is done for the sake of just that - politics. In other words, one is not a participatory citizen in order to fulfill ones’ own private interest, but rather to strive for the values of political life such as freedom, justice and equality, (Arendt, 1977). As mentioned previously, nor is action instrumental. Arendtian politics, action or plurality is for the sake of itself, of reinventing.

The Theory of Judgement

Arendt explores the life of the mind, our capacity to think, our will and the meaning of opinion. In her essay "Truth and Politics", in *Between Past and Future*, she evaluates judgment and opinion with regards to the question of truth.

Arendt's theory of judgment is perceived as not fully developed (Beiner, 1982), and is considered to take two forms. In one form, she sees judgment as the "faculty of actors acting in the public realm" so as a feature of political life as such, judging being exercised so as to decide on how to act in public sphere. In the later one, judgment is more of a want of understanding the past. This form is accredited particularly to narratives of storytellers, where judging is a part of the life of the mind and can be used as a retrospective tool to understand tragedies of the present, (read crisis of totalitarianism). The first theory of judgment is then more tide to the actors in the vita activa, (Arendt, 1971), how to truly participate - and the second theory is from the perspective of the spectator or historian, judging the past with the hope to gain reconciliation. In order to gain an understanding, the common sense from before simply does not hold any longer, Arendt notes about the enigmas of her time. The accepted standards of judgment have changed since the totalitarian regimes. She describes the ability to understand the events connected specifically to Stalinism and Nazism. To Arendt, a whole new set of tools, standards and morals are needed - what has been done can simply not be assessed through the lens of common sense. A new framework of tradition is needed, this facilitated by the human capacity to begin anew. We are capable of action and as such, we are able to form new criteria for judgment. We must reinvent the destroyed standards of judgment and the conventional criteria for assessment. Arendt calls for the use of imagination. In using the imagination, the spectator produces the distance needed for impartial judgment, (ibid, 1971). The distance between the spectator and subject allows for a number of different perspectives, enabling sound judgment.

In *The Life of the Mind* Arendt connects judging and thinking[8]. Arendt's one view of thinking is as dialogue with oneself. Thinking is thereof connected to judging by preparing us for it.

[8] Written after the Eichmann trial as she realized that it was indeed his absence of thinking or "thoughtlessness" that shook her most. She writes, "might the problem of good and evil, our faculty for telling right from wrong, be connected with our faculty of thought?" (Arendt, 1978). This quote blatantly entails what is meant with the banality of evil, as she shows no mercy for the thoughtless subject likening it to evil whereas the good subject is one constantly in thought. Good and evil here, follow the same trajectory as thinker and non-thinker. Additionally, this work was supposed to cover more of the mental activities missed in The Human Condition.

Judging doesn't need a universal standard. Thinking, being an active mind so to speak, or using action to reinvent habits of the mind, is essentially practice for doing the same upon others – judging. For Arendt, the act of thinking is thus extra important in times of crisis, because individuals need to be able to undermine a majority opinion, and not let themselves be carried away by others' values. Thinking and judging there become key in shaping the individual. Following on the idea of thinking as a dialogue with oneself, Arendt sees this dialogue as producing a conscience as by-product. She notes Socrates' dictum "It is better to suffer wrong than to do wrong," signifying that we have a partner within ourselves (our conscience), whose presence we fear at the end of each day, (ibid, 1978). Rather have him on our side than not. In other words, being in harmony with oneself and being a whole is the preferred condition. As conscience is the by-product of thinking directed at oneself, similarly judgment is the by-product of thinking directed at the world. Both relate to the measurement of right and wrong and aim to reveal any dissonance. Moreover, Arendt sees judgment as enabling "the manifestation of the wind of thought" in the sphere of appearance, (ibid, 1978).

This conception of linking judging and thought seems to be relevant in times where conventional standards do not apply, and it is imperative for the individual to act autonomously, for instance when totalitarianism forces a reinvention of values - at a time of crisis. At the same time however, Arendt identifies another view of judgment which is not autonomous, but namely the ability to think from the standpoint of everybody else. This thinking representatively, she calls *enlarged mentality*[9]. It implies "reasoning about particulars in their relation to the universal," rather than the other way around, (d'Entreves, 2016). In aesthetics, this would mean that understanding beauty would be possible only through the experiencing of something of beauty, say a flower or sunset. The flower would be an example of beauty, and this would be called "exemplary validity", a notion which Arendt extends further, to all events. For example revolutions or uprisings contain the exemplary validity that extend them to the universal.

And so for Arendt, political judgment depends on representative thinking. The ability to think from the standpoint of everybody else is in her terms acquired, as well as tried, in the public forum. With training and experience, we test our ideas and opinions on each other. Collective opinion formation is then made when every perspective has been examined, and "it

[9] She draws this from Kant, whom in the *Critique of Judgment* distinguishes *determinant* from *reflective* judgment. Determinant judgment, refers to in general – when the universal law or standard is known, and the particular is determined through that universal. Reflective judgment is when the particular is known and the universal must be found. The later means that you can move from particular to universal without having to pass by established (determinate) concepts.

is flooded and made transparent by the full light of human comprehension", (Arendt, 1968). Arendt writes, "Political thought is representative. I form an opinion by considering a given issue from different viewpoints, by making present to my mind the standpoints of those who are absent; that is, I represent them … The more people's standpoints I have present in my mind while I am pondering a given issue, and the better I can imagine how I would feel and think if I were in their place, the stronger will be my capacity for representative thinking and the more valid my final conclusions, my opinion", (ibid, 1968). It is of interest here to highlight the notion of validity of an opinion, as well as opinion is here different from truth, since in forming opinion, others are needed – while truth is independent and stable. Following, Arendt, uses political thought and opinion interchangeably.

Validity

It is the representative nature of opinion and judgment that to Arendt marks their validity. The idea that opinion should be measured by standard of truth seemed to her as useless, as truth leaves no freedom for the mind and is a such anti-political. Political life is about debate and diversity, plurality. Arendt is not against the idea of finding absolute truths or standards of knowledge. She points out however, that applying those kinds of standards on human affairs or on public life would take away its plurality and nature of relativity. Arendt writes, "The trouble is that factual truth, like all other truth, peremptorily claims to be acknowledged and precludes a debate, and debate constitutes the very essence of political life. The modes of thought and communication that deal with truth, if seen from the political perspective, are necessarily domineering; they don't take into account other people's opinions, and taking these into account is the hallmark of all strictly political thinking" (ibid, 1968). The models that deal with truth are simply of another character, and leave no room for political subjects to pass judgment. An enlarged mentality would not be needed, nor would an imagination. Politics with only truth would in fact then not need discourse or rhetoric, but "strict demonstration", (Arendt, 1968).
Nevertheless, Arendt sees a need for factual truth, the distinction between rational and factual is used for the sake of convenience, without going into muscular debunking. Regarding post-truth politics, the theme surrounds the manner in which politics can fracture truth, and is thus more political than philosophic. Truth must quite simply be understood in the sense "which men commonly understand it". Factual truths, unlike those of reason – are both vulnerable and constitute the very texture of the political realm, (Arendt, 1967). "Facts are more fragile things

than axioms" writes Arendt, and notes that once they are lost, no rational effort will bring them back.

Fact and opinion are reliant one another. Opinions must be based on factual truth, and there must exist free access to facts in order for these to be valid. The political debate would be useless should it be based on falsehood or deliberate deception, (Arendt, 1968). The genuine debate's main assumption is that that factual truth and a convention of telling truth are in existence. Political life (read Western democracy) needs these elements to stabilize it. Rational truth is the antagonist of sound opinion, because this type of truth doesn't allow for argumentation. Opinion for Arendt is the deliberation that is political life. A distinction between rational and factual truth is thus found in its effect on opinion and political life. Factual truth "is always related to other people: it concerns events and circumstances in which many are involved; it is established by witnesses and depends upon testimony … It is political by nature." And so it follows, that "facts and opinions, though they must be kept apart, are not antagonistic to each other; they belong to the same realm. Facts inform opinions, and opinions, inspired by different interests and passions, can differ widely and still be legitimate as long as they respect factual truth. "Freedom of opinion is a farce unless factual information is guaranteed and the facts themselves are not in dispute. In other words, factual truth informs political thought just as rational truth informs philosophical speculation", (ibid, 1968).

Truth and Politics

Arendt clarifies that lies indeed, have always been tools amongst demagogues, politicians, and even tradesmen. Lies have been regarded as necessary. Truthfulness has not typically been counted among political virtues, (ibid, 1967). She enquires about the consequences of this. What does it mean for the dignity of the political realm? Similarly, what does it mean for the dignity of truth? If truth is meaningless in the public realm, then what does it matter? "Is not impotent truth just as despicable as power that gives no heed to truth?", (ibid, 1967). These are uncomfortable questions, but current matters forces thoughts about these so as to not reside to easy fallbacks of arguments of perspective, or the impossibility of determining facts without interpretations. The question of facts existing independent of opinion is perplex and has been treated in all sciences. But as Arendt notes, "they are no argument against the existence of factual matter, nor can they serve as a justification for blurring the dividing lines between fact,

opinion, and interpretation, or as an excuse for the historian to manipulate facts as he pleases", (ibid, 1967).

A disturbing trend Arendt sees is that unwelcomed truths are (consciously or unconsciously) transformed into opinion. The themes of her contemporary discourse regarded Germany's support of Hitler, or France's collapse before the German arms in 1940. She sees the discourse as if it were "not a matter of historical record but a matter of opinion". This is important because the value of fact is at stake. It is not just simple tension between two waves of thought. Arendt even calls this a "political problem of the first order", (1967). With the exposure of truth to the marketplace, as with many notions in the rise of the social, it is so evidently in everybody's grasp. It will be countered not with lies and falsehood as Arendt states, but by opinion. With the blurring of truth and opinion, suspicion arises that it may be inherent to politics to deny any truth. Similarly, Arendt supposes that to alienate another's truth (factual statements) or call it out of this world will drive the same suspicion over the intent of the political realm.

Opinion-holders do find it easy to discredit factual truth just as another opinion, this because it is no more self-evident, (Arendt, 1967). Facts indeed need gatekeepers, experts and established testimonies by witnesses – which to Arendt are "notoriously unreliable". And it must be taken into account that each and every fact is brought into the world for a purpose, the supplier always has a narrative in mind, no matter how objective. Adding on, in case of a dispute over a fact, and no witness can be invoked, the settlement is usually derived by majority, (ibid, 1967). This is, in the same way opinion disputes are settled. Needless to say, this is risky as a majority might as well bare false witness, consciously or unconsciously. So as stated earlier, factual truth is vulnerable.

This brings forward the discussion to the act of lying. Arendt asks, "for why shouldn't a liar stick to his lies with great courage, especially in politics, where he might be motivated by patriotism or some other kind of legitimate group partiality?", (ibid, 1967). Factual truth is namely the direct opposite of the lie, or the direct falsehood. There may exist mistakes and errors, but when it comes to facts, the opposite is a direct attempt to change the record, (ibid, 1967). One can view the lie as an action, an attempt at beginning anew. Arendt applies the same characteristic to the notion of not insisting on the clear-cut truth of one's statement, but simmering it into and displaying it as an "opinion" – to which then it is expressed innocently that the individual has a constitutional right. "This is frequently done by subversive groups, and in a politically immature public the resulting confusion can be considerable", (Arendt, 1967).

Relating back to action, the simple stating of truths and facts leads to no action whatsoever. Lying does. Arendt explains that in communities which are engaged in organized lying on a universal as well as particular level, instead - the truthteller has begun to act. Because the liar has a multitude of alternatives and is free to be creative in his "facts" in order to fit expectations or fashion, "the chances are that he will be more persuasive than the truthteller", his exposure and argument probably even sounding more logical, (ibid, 1967). Persuasive to the extent of self-deception. Today though, in an online world with immediate communication, no country can produce a foolproof image, as even Arendt admits of her time of writing. But the underlying significance is that "under fully democratic conditions, deception without self-deception is well-nigh impossible", (ibid, 1967). Cynicism and refusal to trust in any, even well-established truths, has frequently been pointed out as a secure way of long-term image making, or brainwashing in Arendtian terms. The spreading of apathy towards politics is at risk.

For Arendt, facts are stubborn and represent stability. Politics and its inherent contingency can never be a substitute. Facts themselves are at the same time marked by their vulnerability, (ibid, 1967). They are not transient character - they sustain, unlike political power that groups for a cause only to ungroup with the evolution of that cause. Arendt sees that politics must find itself between, and navigate the path of either taking fact as a law or development which man cannot prevent nor do anything about, or - risk looking past them and writing them out of the script in denial.

Arendt's view on active engagement and the plurality that is the condition of political life seem increasingly important with the growth of a participatory culture online. Her perspective on the rise of the social and the mass society that is modernity seem all the more applicable on current techno-cultural social practices. The actions of thinking and judging today find themselves in the plurality of the online public sphere, where the enlarged mentality has the potential to be more encompassing than ever before. Arendtian perspective on the matter of truth; may it concern deliberate lying or that of staging fact as opinion, is highly relevant on the techno-cultural agenda today as it is one characterized by accusations of misinformation and a destabilization of traditional gatekeepers and expert agency.

This line of thinking brings us to the next chapter in which the digital and participatory culture is mapped out and deliberated. Participatory culture as part of the public realm and political reality, will in the following pages be defined and segmented for the sake of deeper acknowledging any political valence.

Chapter 3
Diagnostic, Techno-cultural Modernity

This chapter is written as a conceptual map of the techno-cultural, specifically with regards to features that may have political valence on human knowledge practices. Techno-cultural dimensions of participatory culture, such as 1) public relevance algorithms and 2) media platforms, are subsequently brought into discussion for their indications of political ramification. These form a diagnosis on participatory culture.

The speed at which the technologies of the digital medium are changing is quite impressive; what with algorithmic tools developing continuously, with social platforms and software ever-changing models, with governmental regulations changing the web, and of course with consumer behavior altering the technologies – this list is momentary and provisional. It is not exhaustive. The dimensions have been chosen because they are the most important when it comes to seeking to understand the existing tools of knowledge and discourse that build the digital medium and any role they might play in shaping post-truth tendencies. Please note, this is not a chapter on technological determinism of how 'the Internet shapes us', as "warm human and institutional choices lie behind these cold mechanisms", as Gillespie (2014) so quaintly puts it. It is a conceptual map of our digital participatory culture as a means of understanding the influence it may have on our discourse practices. A representation of the techno-cultural modern politic is albeit firstly introduced by a short introduction of Benjamin's (1936) essay "The Work of Art in the Age of Mechanical Reproduction", together with Han's (2013) theory of symmetry in the digital age. This is done in order to provide a backdrop from which to read the depiction of how online modernity, or participatory culture is. Participatory culture is depicted both by its technologic and social dimensions. More precisely, it is considered for both its technologic structure by means of public relevance algorithms, as well as for its cultural significance as media platforms, the two considerations needless to say, overlap, interrelate and together shape an ephemeral structure. These aspects have been chosen to represent participatory culture as they are central to the problematic concerning the active political subject.

The Work of Art in the Age of Mechanical Reproduction

Walter Benjamin's 1936 essay "The Work of Art in the Age of Mechanical Reproduction" has been, and remains a key voice in the discourse of aesthetic and political criticism. The essay proposes a take on the role of technology, specifically its role in being able to reproduce art in such multitude and manners that leave consequence for our experiencing of the original. The essay relates the media, technology, politics and art – four dimensions inherent to digital culture.

The essay proposes the following. With a manual reproduction of art, the replica keeps some sort of general dependence on the original. In mechanical reproduction, the replica becomes independent, (Benjamin, 1936). With a mechanical replica, Benjamin (1936) means that focus can be shifted. Elements can be zoomed in on, saturations can be adjusted, pieces juxtaposed – all conveying aspects that were prior unseen. In manual reproduction, this kind of liberation is not possible. The essay illustrates this theory by comparing the replication of a painting by either: manual reproduction in painting once more, or by mechanical reproduction, photography. The mechanical replica is also independent in that it can find itself in new situations and with new audiences, for new purposes, in a way the manual replica would not. The photograph thereby in sorts becomes closer and closer to becoming its own work of art, wherein the original gradually loses its authority over the replica. Benjamin explains this loss of authority through a loss of authenticity. Authenticity in the artwork due to aspects such as historical testimony and heritage, cult value, and unique character, are threatened with the mechanical replica. Adding to this loss of authenticity, Benjamin suggests that mechanical replication kills the aura of a work. To Benjamin, aura is an experience which decays with the weakening of authenticity and shortening of distance between the replica and the original. The work of art in the age of mechanical reproduction contributes to a "sense of the universal equality of things", (ibid, 1936). The essay suggests that it marks a sense so overarching that the aura is rendered indifferent, from even the most unique object, all by means of reproduction. The essay further relates the sense of universal equality outside the realm of artwork, the contemporary use of statistics entering even theoretical disciplines, to Benjamin's dismay. The painter in Benjamin's theory, upholds in his painting a natural distance from reality while the cameraman jumps right into it. He explains, "there is a tremendous difference between pictures they obtain. That of the painter is a total one, that of the cameraman consists of multiple fragments", (ibid, 1936). This penetration and saturation of reality is compared to Dadaist art

with juxtaposed shots. An illustration as such shows well also how Benjamin nevertheless sees technology and mechanical reproduction as allowing for new experimental possibilities, once more drawing to the idea of the replica being a liberation – enabling new visions. This idea of new ways of assembly and experimentation is not to be shunned[10]. As well as picture, painting and photography, the essay compares theater and film to describe the mass consumption of art. The way film entered the lives of "consumers who constitute the market" to be seen on screen, suggests that the entire audience takes on the role of the critic, something that the theater prior to film would not allow due to its cultic nature of experience, (ibid, 1936). Benjamin's public is that of a critic and "tester". At his time of writing, Benjamin saw evidence of this with the growing number of letters and send-ins to local news, noting "everybody is a writer", theorizing the dichotomy writer/audience as dispersing and literary license as common property. With mechanical reproduction, the authenticity prior asked for in art is rendered useless. What is the point of asking for the authentic print from a photographic negative?, Benjamin (1936) asks. And so even the criteria of authenticity fades. "The total function of art is reversed" (ibid, 1936). "This process both affects and is the effect of changing social conditions in which all previously unique and sacred institutions have become equal." (ibid, 1936). He continues, rather than being based on ritual, art is now being based on another practice – politics.

Symmetry in Digital Culture

Philosopher Byung-Chul Han writes about the digital era and the communication technologies in play today. "In the Swarm" (2013) is a work concerning the digital medium and individuals being reprogrammed by it without reflecting upon, nor understanding the potential implications of digitization. Han suggests that these are times of a radical paradigm shift. Han brings to light the influence that digital culture has on our behavior, our capacity to discern, our thinking, of being together. As subjects, we are today both blinded by acceptance and drunk in awe by digital culture, (ibid, 2013). Modernity implies a loss of respect. Beginning with considering the etymology of the term respect – Han relates it to beholding with regard. Both terms relate to a *distance* between subject and object, or audience and artist. The distance inherent to this etymology distinguishes the terms respectare and spectare, the distance lacking in spectare

[10] At the time of Benjamin's writing came about a movement, *l'art pour l'art* as doctrine against the disappearing of cult and aura of art. It was a theology of art, a de-instrumentalization if you will. This movement gave birth to an even more "purist" one, where even nomenclature and classification of art became blasphemous.

branching into the term spectacle. The spectacle in Han's theory is that of a crisis. He argues, a society lacking in respect, thus lacking in the pathos of distance needed for sound betrayal, will lead to a spectacle. Digital communication breaks down any distanced portrayal. The lack of respect in digital culture brings about this crisis in society, (ibid, 2013).

The fault in distance in digital communication leads to a dissolving of the public and private, (ibid, 2013). Communication is privatized by moving the production of information from the public to the private, by practically letting anybody communicate online. Han uses the definition of the private sphere as, "that zone of space, of time in which I am not a picture, an object. It is my *political* right to be a subject which I must protect", (Barthes, 1981)[11]. He argues then, that there exists no private sphere in modernity as there is no space where "I am not a picture", individuals are constantly objects of observation, (ibid, 2013). The lack of respect further develops as digital technology allows for anonymity. To Han, respect and anonymity are mutually exclusive. Similarly, the lack of respect finds itself in the dimension of time. The immediacy possible in digital culture evolves it towards a medium of affect communication. The symmetrical allowance for producing information and communicating has removed the previous hierarchy. Subjects are now sender and receiver, producer and consumer at the same time. This reasoning allows the theory that the symmetry has negative effects on power. Power-communication typically silences brawl and alarm, creating a calm needed for leeway of action, (ibid, 2013). Authority in communication eases the entropy that is found in the blizzard of all communication. For Han, power insinuates asymmetry and is therefore nowhere to be found in the digital culture. Respect can on the other hand be, both balanced and symmetrical. And yet, reciprocal respect no longer exists in digital culture, (ibid, 2013).

An online and digital society is lacking the pathos of distance is thus, under crisis. Han (2013) suggests a reexamination and understanding of who and what the sovereign is today. The theory suggests authority as that which has the power to silence the motion of the digital culture, of silencing the "storm of the web," (ibid, 2013). That which controls the silence, with the ability to render subjects quiet, controlling the frequencies of the web.

While Benjamin provides the base for a discourse on *art* and its potential instrumentalization to politics, almost guiding the reader through the process of a photographs timeline, Han builds on Benjamins take, focusing deeper on *communication*. Having reviewed two more or less

[11] Roland Barthes defined this space of the private in his work on photography, *Camera Lucida*. Barthes theory is substantially more critical than that of Benjamin, though written 45 years later.

abstract depictions of techno-cultural reality, the following take on how subjects participate and act, is an attempt at a more detailed outline of the digital sphere. It is divided into two parts, the first depicting the structure of algorithms, the second depicting the structure of media platforms.

Algorithms: A Communication Technology

Algorithms play an increasingly bigger role in choosing what information is selected for us online. This information deemed relevant to us is a crucial element of our participation in public discourse. Algorithms such as those in search engines, in recommendation systems or in 'trending' functions, help us navigate the web and create familiar milieus in the public spaces we frequent. They are, according to Tarleton Gillespie of Cornell University and Microsoft Research (2014), "a key logic governing the flows of information on which we depend", thereby constituting a new information logic. Gillespie calls them *public relevance algorithms* when their computation concerns *all* information, not just mathematics, but even human discourse and knowledge from traces of our activity and expression online. Henceforth this latter terminology of public relevance is what is meant with the term *algorithm*. The algorithm as such, is then a deciding factor of what is participatory culture. The algorithm seeks to portray to us that which is most relevant, and exclude the rest. Algorithms hold "the power to enable and assign meaningfulness, managing how information is perceived by users, the 'distribution of the sensible'", (Langlois, 2012). Algorithms must be examined as a key component of our information environment, political undertones made apparent, as they by deciding what topics spread and to whom, indeed have role in the development of a discourse. Comparable to media technologies like broadcasting and publishing, algorithms are a communication technology, being "the scientific instruments of a society at large", (Gitelman, 2008). Guided by Gillespie, following is a review of selected dimensions to algorithms that deem a political valent undertone, and how they feature in our information structure.

The Database

Algorithms are connected to databases. Data collectors, cleaners, and providers are often regarded by the market as being the same as the producers of an algorithm, (Gillespie, 2014). Similarly, users regard them as the same. Algorithms and data can nonetheless be treated as two distinct players: for a problem to be solved, or results be provided from a sequence or set of rules, information must be first collected - then managed in a database. Understanding the

policies of inclusion of such databases in information systems requires attention. Attention should even be rendered to the practices involved (as with statistics), so as to understand how "an information provider thinks" about the collection it decides to undertake, (Gillespie, 2014). "Raw data is an oxymoron" (Gitelman, 2013). At the moment it is handled, it is exposed to subjectivity. Information going into any database must be made into data and formalized, this so an algorithm can function on automatic. Database architectures are today flexible. They are relational and object-oriented, data points can have multiple associations with other data points, and categories can evolve and change. There are sociological implications of these architectures, and the overarching usage of relational databases creates a relational ontology, where the structural design no longer holds the power of expression, instead it is rather the *query*, (Rieder, 2012). Regarding database categorization, it is in itself a political/subjective intervention. As too, is the exclusion or inclusion of information or data, in which case the algorithm may be seen as automatic, and the system of inclusion the one which determines the result of a query. The design of sequences controls the inclusion of data. Additionally, the information being retrieved from *big data* makes it all the more messy. Big data is, "at its core about predictions", (Mayer-Schönberger & Cukier, 2013). Using big data is about inferring probabilities, about anticipating. The sample is big enough, the bits of information in multitude, however error in measurement has been sacrificed, rendering datasets completed with approximate (not exact) information to begin with, (Mayer-Schönberger & Cukier, 2013). This has implications for algorithms claiming accuracy and objectivity.

Predictive Nature

Algorithms are nifty because they rely on information other than the specifics concerning the query. Sites want to be able to anticipate their users, i.e. maintain relevance. They use knowledge about the user and the different categories it belongs to – both from historic, momentary, as well as predictive data, coming together in a "second index", (Stalder and Mayer, 2009). As Gillespie (2014) puts it, "digital providers are not just providing information to users, they are also providing users to their algorithms." In anticipating the user identity, algorithms have access only to what they are able to - they only have so much. The digital user identity enabled through consumer profiling has been called a "digital dossier" (Solove, 2004) or "algorithmic identity" (Cheney-Lippold, 2011), it is an ongoing cataloguing of information. Amazon for example might have access to geo-location, previous purchases, links followed,

activity, etc. "Shadow bodies" are formed as created online identities. But user identity amounts to more than that – the span of information is sufficient, but imperfect.

Criteria for Relevance

The dimension of objectivity also finds itself in the question of relevance. Search engines, recommendation systems, and newsfeeds amongst others, all display to a certain user the result that deems to be categorically optimal for them. For instance, to decide what indexing a particular subject obtains, Google examines over 200 signals for every query[12]. There exists however, no metric for what is relevant[13]. The criteria to as to what algorithms find relevant therefore rests upon factors such as user satisfaction and of majority (popularity). This is legitimate, as results are branded as just so – 'relevant', and it is difficult to accuse any site or algorithm of bias, as any neutral metric of relevance is unavailable, (and it is uncertain if there even exists an unbiased way of judging relevance). The criteria with which results are chosen relevant are not only best kept a secret for many digital players in order to keep their competitive advantage, but also in order to prevent individual subjects from 'gaming the system' so as to keep the relevance 'neutral', providing an optimal product. How criteria are measured or proportioned against each other is often unstated. Users are unaware if the criteria are skewed towards a commercial interest or political interest, and are left to their skepticism. Platform design is now often multidimensional with both commercial and social territories, often incorporating links and apps from third party sites. Users are likewise unaware of any embedded assumptions and judgments made, even at the level of the designers, (Gillespie, 2014). The plot thickens when social and political finds itself on the same platform, with private and corporate actors participating on the same media as for example the landscape of Twitter or the Facebook News Feed. These interweave both criteria and results of the different natures. To blueprint the architecture of criteria requires an understanding of the economic incentives and relationships together with the judgments and assumptions made.

Certainly not all, but many algorithm providers articulate their product as impartial. This is a sort of certification as a reliable socio-technical actor lending results with credibility, (Gillespie,

[12] Google and Bing had a beef regarding the amount of signals and parameters used. Sullivan, D. November 11, 2010 writes an entertaining read on searchengineland.com. Today the number is probably much higher.
[13] I like to think that measurement of relevance follows same logic as right-wrong, popular-eccentric, or good-evil, as such with fluid metrics, often decided on popular vote.

2014). The articulation of an algorithm is, according to Gillespie (2014), just as crucial as its material design or economic obligations. It is up to each provider to articulate and brand its algorithm or software as it chooses. It is then up to users and competitors to investigate the legitimacy of their claim. For starters, a lot is said in the name. If a list is initially articulated as 'trending' and then changes to 'results', this influences what it should be understood to measure. Algorithmic impartiality is an important claim for a provider. To gain a technical reputation, ridding oneself of questions of bias, moderation, editing, human error, or manipulation, is especially important when the information database is volatile and ever-changing. More so, when the providers want to rid itself of content and result responsibility, a behavior common amongst platform owners. Simultaneously, it is greatly credited to highlight the populism of the criteria an algorithm uses, as Google's PageRank does. Google essentially claims that their algorithm is a kind of proxy for the public opinion that exists online, leading it to render users "better" results – which suggests user satisfaction as more important than accuracy and objectivity, (van Couvering, 2007). So, an interesting nature of algorithmic use is that it can on the one hand be accredited to giving neutral, objectively sound information, and on the other hand offer precise and in detail accurate information of exact relevance for various users. Therein lies a sort of paradox of algorithms, at once articulated as neutral, but also catered to preferences. It is important to consider how an algorithm articulates itself. In understanding the role of an algorithm and its implications, the tension between the technical accuracy and the social popular should be considered.

Inscribed with Practice

Algorithms that are designed to help users navigate through a specific site, say Pinterest, are built on the archive that Pinterest has. An archive built by users. If users do not act in line with the algorithm in making it part of their practice, then the algorithm fails. Algorithms are, "built to be embedded into practice", (Gillespie, 2014). This implies that simply looking at the "effect" that algorithms have on users might not suffice, but important too is an understanding of the multidimensional involvement and mix of algorithms into practice, and the potential social tactics taken up by users, (ibid, 2014). Algorithms have an effect on how users seek out information, how they evaluate the measurement of relevance. Gillespie (2014) adds, algorithms are nestled into peoples' daily lives and impact the perception of knowledge and the public discourse.

As users incorporate usage in their daily routine, it is for obvious reasons difficult to know if people change their worldview in order to adapt to the knowledge logic of algorithms. Although, there are suggestions that the processes of algorithms lead "users to internalize their norms and priorities", (Bucher, 2012). Algorithms have the potential to confirm users sense of self, and on Facebook, "participatory subjectivity" is encouraged in users, (Bucher, 2012). Capitalism has been found to be an intrinsic part in the workings of search engines, (Mager, 2012; Van Couvering, 2010), suggesting capitalistic ideology embedded in control and use of the algorithms that are the search engine product[14]. The sense is widespread, software is able to influence "the user's experience of and through the web", (Langlois, 2012). The algorithms, or the customized articulations, as Langlois notes, create different logics for different software spaces or platforms. Langlois (2012) similarly speaks of a measurement of knowledge, or a new knowledge logic, noting that to understand how they are inscribed with practice, it is effective to look at varieties of algorithmic protocols that in turn boost different cultural logics. Gillespie (2012) notes, Google has to some extent normalized its information logic as "right".

Publics

The different communities that form on media platforms and the technologies that facilitate in forming them have recently gone under the term "networked publics", (boyd, 2010; Ito, 2008; Varnelis, 2008). They are like other public spheres, but with stronger technological affordances. Moreover, algorithm providers create publics. These go by "calculated publics". They concern groups such as Facebook "friends of friends", or Amazon "buyers like you". Actors online are part of a vast amount of groups, overlapping, and continuously evolving in form as the algorithms change form. These generated groups rarely coincide with the public that the user sought out[15]. The intentions behind the publics represented by algorithms are not actuarial. Online constructed publics need to be understood through the underlying currents of algorithms. The "networked publics" produced by users and the "calculated publics" made by algorithms obfuscate the understanding of publics and the social online.

[14] In this theory capitalism is inscribed in the fabric of search engines through the negotiation between stakeholders that leads to the placement and ranking of advertisements related to queries. The user's *need for information* transforms into *customer desire* that the search engine is incentivized to satisfy.

[15] Like with the #amazonfail incident in 2009, where more than fiftyseven thousand gay-friendly books were removed instantly from Amazon's sales lists because they had been grouped as "adult".

With the algorithmic currents that shape participatory culture now outlined, it follows next to examine (the more explicit) media platforms and their agency on participatory culture.

Media Platforms: A Communication Technology

Algorithmic structure is thus found embedded in participatory culture. As too, is the way we interact on media platforms. Digital culture and the symmetrical communication that is possible creates a new relationship between sender and receiver. In attempting to understand the relationship journalist-audience, Anderson (2011) proposes that we see the image of the public as *algorithmic*. The previous simple dichotomy of an audience as either ignorant or respondent plainly obscures, and there exist a multitude of sometimes contradictory visions of what the news audience is, due to popular understandings of the relationship between journalism and the internet, (Anderson, 2011). A people who were previously known as the audience are to be understood differently. Not only are they explicitly contributing content themselves, but also implicitly by interacting with the medium, audience (read user) practice is as we have seen altered and embedded with the use of algorithms, software or platform, i.e. the digital medium.

There is a convergence of the two institutions; news organizations and online media platforms or social networks. News organizations are finding themselves hosting user communities who rarely value journalistic norm, and social networks are finding their users sharing and mixing content similar to news, which challenges their existing user guidelines, (Braun & Gillespie, 2011). The two industries are on each other's playing fields. News provision and community management are subsequently increasingly intertwined, in ways that result in implications for not only news organizations and social networks, but also their users and audiences, (ibid, 2011). Connected to this convergence, online engagement and participatory culture seem to be working simultaneously and in symbiosis with profit making actors, (Langlois, 2012). With an exception of perhaps Wikipedia, many user-generated content sites want to host as much content as possible in order to generate more activity, make user participation a part of mundane practice, and in turn generate profits.

With regards to online platforms and participation, an engaged user community, even one producing civil and valid comments or information, can be overwhelming. Processing the chaos and online noise, filtering out key components that could prove useful to the discourse is becoming an increasing part of the job that news organizations do online, (Braun & Gillespie,

2011). More than one source of major news organizations express a difficulty in finding the real valuable or upright activity from the constant flow of user content, (ibid, 2011). This is not mentioning the conditioning of the message through the platform itself. This coping and moderating of user contribution that news sites and social medias must work with, is referred to as gatekeeping, deciding what works and what doesn't, (ibid, 2011).

As well as managing information by the use of for example algorithms, online platforms are managing the users' perceptions. This by defining technical processes with existing cultural values, and assigning cultural ideals to information and knowledge by use of software procedure or algorithms, and at times by making equivalent online acts with cultural practices, (Langlois, 2012). To illustrate this later point, Langlois draws on studies of social networks adopting the terminology of "friending" [16].

What's News?

Media and newsrooms have always been interested in viewer metrics, and there is a whole body of research investigating the impact that metrics have on newsrooms. There has recently come into being an even more powerful way of quantifying media quality, that is solely interested on audience preferences, (Anderson, 2011). Companies, like DemandMedia, Seed, and Associated Content, make it their business to know audiences' online searches. They evaluate which of these will drive most revenue, and then choose topics explicitly on these metrics, i.e., based on the algorithmic intelligence, (ibid, 2011). The "algorithmic journalism" relying on such normative practices, defines a communication which according to Anderson (2011), articulates itself through the dimensions of algorithms discussed earlier. It is rooted in big data, collected from both human and non-human data which are treated evenly in the method. It mixes human and non-human judgement. Also, rooted in big data it contains "at least a seed" of internal bias of future orientation, the predictive at core, hinting that it does not exclusively report the now. Lastly, it lacks an emphasis on "improving" a level of knowledge, or an emphasis of excluding incorrect information. To understand the relationship between quantification and the public discourse, and to grasp how abstract notions as algorithms are bending the domain of media or journalism is of importance as "journalistic techniques and visions have politics", (Anderson, 2011).

[16] boyd (2006) adds to the popular debate on the entangled and at times opposing relationship between "friending" online and the social practice of creating a friendship. The platform enabling equivalency adds to dynamics of culturally meaningful practices for users.

This marks the end of the diagnosis on techno-cultural modernity composed by the influential essay of the mass society from Benjamin; the contemporary comparable or the like, Han, and his thoughts on the symmetry in communication; and a more detailed introspection of the algorithms that are the structure of the digital sphere. Having provided an outline of techno-cultural modernity, reflections can now be made concerning the political subject and the public sphere. Studying Arendt's selected theories on the political subject, as well as participatory culture as Deleuze/Guattarian assemblage, the following passage considers a novel view on participatory culture.

Reflections on Participatory Culture

The Political Subject and The Public Sphere

The Benjamin and Han depictions are reductionist, assuming technology as driving the development of socio-cultural structures and values. In the mass society, everybody is a critic or tester, and the literary license as common property of which Benjamin speaks is all the more relevant today, as depicted in symmetrical digital culture. The symmetry in communication suggests it a common good, which anybody is free to consume and produce. A first issue to point out is that, as being critics of all art, and following Han - all communication – the weight of being able to think and judge in Arendtian terms becomes all the more important. Inherent to being a critic is to have a dialogue with oneself, just as it is to Arendtian thinking. In regarding all subjects as critics, subjects thus similarly become Arendt's political. Everybody taking on the role of critic does not make politics banal, but rather, makes politics out of everything. Benjamin related to art. This now can be extended to digital culture of hyperlinks, hashtags, video, comments, likes, etc. - all that is digital culture in the medium of affect communication.

Arendt speaks of an imagination needed to create distance, with specific regard to judging events of the past. Judging is the by-product of thinking directed at the world, and so an imagination is crucial for gaining distance and perspective in order to do so. In Han's digital that is our participatory culture, it is plausible then that the lack of distance in both time/space dimensions weakens the political subject's capacity to judge its surroundings. The imagination needed to create novel standards of judging, novel frameworks of analysis or morals – at times needed, for example in crisis or stress – is therefore threatened in a public sphere of affect communication.

Techno-cultural modernity has more implications for the subject. As algorithmic logic is embedded with practice, in aspiring to be a part of the constructed logic that is participatory culture, the user goes into a tacit negotiation between themselves and an imagined auditor. This can mean tweaking online behavior to make it algorithmically recognizable, or making conscious or unconscious strategic reorientations in user practices. It implies a redesigning of expression from the individual subject. Redesign of expression can similarly be met on a larger scale. The industry centered on search engine optimization might be seen as gaming the system, but it can just as well be seen as content production reconditioning itself towards algorithms, somewhat comparable to newsmakers conditioning to the news industry schedule, by timing of press releases. This position of understanding and being able to operate in a field of algorithms is a position of power. Insight into the works of the circulation of information and knowledge can mean inclusion in the public conversation, it can mean visibility, and it can mean credibility, adding on the opportunities that follow. As too, is the understanding of the subject's perception of knowledge. In examining how individual practice is altered or individual knowledge logic is changed, it is therefore of importance to understand the underlying workings of the algorithmic logic. From the aspect of managing user perceptions and articulating online processes with cultural ideals, follows that both user and technical agency is shaped by the platform. Modes of expression are assigned. Drawing on distribution of the sensible, participatory culture channels and outlines the agency of users. As opposed to the old dualistic between those that could legitimately be heard and represented and those who could not, in the new distribution of the sensible, anybody can communicate – and the agencies are differential and have different modulations instead of having a binary yes/no of agency. And so, participatory culture is a politically valent structure of governance.

The crisis of which Han speaks parallels Arendt's rise of the social, the public dissolving with the private. Han depicts the private room disappearing. A reality where subjects are constantly found in the public sphere, being "always a picture". Therefore, subjects are constantly political subjects. Albeit in Arendt's ideal type, a subject cannot exist in the public sphere infinitely. It is a space to be in only when active (political action), and to exit for sake of returning to the distinctly private. Han's subject constantly finding itself in the public sphere then contradicts Arendt's ideal type, and thus results in the societal crisis of which Han speaks, and the rise of the social of which Arendt speaks. Modernity in participatory culture is then endlessly to be in the public and private at once. Han furthermore depicts the anonymity of digital modernity.

What does an anonymous mass of political subjects do our capacity to think representatively? In the Arendtian public sphere, plurality and freedom are key to being a reflexive and sensible actor. The freedom or liberation of being able to perform the novel – these are actions that reveal *who* you really are. This enables a plurality to show itself, one that is vital for the capacity to judge, in other words to think in terms of an enlarged mentality and to witness and self-enact a representative agenda. In the anonymity, it is plausible that these abilities intrinsic to politics are non-existent, noticeably weakening the political subject's ability to think politically, i.e. develop sound opinion based on representativity - if not deleting the ability completely. This anonymous public brings the discussion on to a similar point, of the way in which online publics are formed, by networked publics and calculated publics. Forming publics that act in the capacity of grouping like-minded subjects into filter bubbles or echo chambers[17], they undermine the plurality and political dialogue. There are two main implications of this. The constructed publics together with tailored results hint at results presented being so niched and personalized that a common discourse will be hard to sort. A mutual concern in the discourse would be hard to define, hurting the public debate. As mentioned, a filter bubble that suggests a users' online image to be norm as it is reinforced can result in a slanted reality view. The dissonance between the anticipated user (shadow body) and the real user, has political significance as this difference is what creates new publics whom in turn create the common discourse.

The democracy of the participation of online media often claimed is to a certain extent valid. All subjects are able to express themselves, encountering minimal censorship and moderation, and certainly net neutrality provides a symmetrical platform. But the underlying loci of power and emphasis of governance, is not on the actual information or content per se (though it also is), but on the conditions which allow communication or meaning to emerge. The often suggested symmetry of the digital culture, that is a symmetry in communication and information production, does not necessarily take into account the layer underneath the moderation, production and consumption; namely as mentioned previously, the selection of

[17] I would like to consider a link between echo chambers and Ernesto Laclau's notion of *chain of equivalences.* The chain of equivalence is noted as a *"political strategy that enables different groups to come together around a central thematic"* (Collins, 2010). Laclau defines populism as *"construction of a popular identity that challenge an existing hegemonic pattern of power and relations in society"*, (Collins, 2010). It is thus plausible that echo chambers, could in a manner of certain deployment be comparable to a chain of equivalences, in turn implicating populist trends, (should this be the aim of the deployment).

databases and algorithmic protocol. Similarly, concerning media platforms and social networks, the ownership, vested interests and subsequent agency of these is in a comparable manner not accounted for. It is important to consider how the information provider thinks, that is, understand their agency. Similarly, it is of importance to understand within which agency decisions are made. For example, in what agency did Google decide that Street View was a fair idea? This is key to tracing the loci of power and the political valence they are attributed. Returning to news institutions, media platforms and social networks, the news institutions are torn. They want to encourage a public discourse, but are at the same time responsible for all content on their site, leaving it in their interest for it to be respectful and appropriate. Social networks and online media platforms curate what they allow their users to make available. They too, are in-between acting as impartial platforms and moderators. What Wikipedia, Facebook, YouTube and Twitter allow and anticipate from their users differs between the channels, and they must all filter out and moderate to some extent. In this sense, private companies are here in charge of the informational flow in participatory culture.

In participatory culture both time/space dimensions lack the distance needed for sound portrayal and respect. This immediacy of communication, involving immediacy of actors, their agency, as well as immediacy of structures, results in an ever-changing communication structure. The duality of the structure implies a providing of users to algorithms as much as a conditioning of algorithms to users. In other words, participatory culture is an ephemeral structure composed of heterogeneous assemblies and relations which are immediate and hasty. In this sense, participatory culture may be regarded thought the concept of assemblage.

Assemblage and Public

Where is the public sphere in an always emergent condition of the present? Assemblage is a useful tool with which to analyze the public sphere of participatory culture. In Deleuze and Guattari's assemblage, the constant mutation restricts nothing of that of being public or private. It is a constant private/public in its essence. The private/public distinction might just be instantaneous, as instantaneous as the relations between entities themselves in the heterogeneous structure changes. In Arendtian terms, the participatory culture assemblage is that of the rise of the social, a blurring of the previously distinct lines. The matter not only being a blurring of the spheres per se, but also a weakening of the subjects' sensibility to separate between them as agency finds itself sprung from both spheres, as the assemblage/participatory

culture becomes more complex, more unpredictable and more submerged. An Arendtian critique of assemblage sees juxtaposed fragments and processes of private and public marking that of a mass society, connected to politics of privatization. In this scenario political subjects succumb themselves to the strenuous re-structuring mutation by self-management. Internalizing the process one could say, ephemeral systems placed within the self. Internalizing time/space relations overlapping and reprocessing amongst other entities, calls for another type of imaginative subject – that is the one belonging to a climate of innovation – wherein the process becomes not of political/public creativity but of personal novelty. The non-thinking, non-reflexive subject in this state misunderstands the idea of channeling deliberation onto public matters[18]. For Arendt, reality *is* appearance in the public sphere, so anything out of that is not part of the common, anything outside of public sphere is private. Participatory culture as assemblage here inhibits a true Arendtian (politic) public sphere. However, the ephemeral characteristic of assemblage allows for a certain type of power. For Arendt, power enacted *of* humans and not over would in this case rise and disperse with the tangents of participatory culture assemblage.

Of assemblage, the political subject needs to be increasingly more in tune with the processual mutations that are conditioning the emergence of the present. A reflexive and sensible subject is all the more important in an ephemeral condition. The other side of the spectra - herein lies the tension - pushes to another argumentation. Namely, that of the transient, *ever-changing* structure solely, calling for, and inherently enabling a reflexive subject. This implies a participatory culture/politic that opens up for *continuous* deliberation. The unfinished characteristic is that which makes it inherently political, and thus in effect, the optimal public sphere. The discourse is the assemblage in this instance, relational and multidimensional, practicing at such speed that both thinking and judgement are tried, tested and trained (as Arendt recommends) in such broad spectra that opinion can be made and deliberated in a, sensible and sophisticated public sphere that relates and adjusts in real-time. This public sphere has the potential of hosting the agonistic politics Mouffe (1999) proposes[19], the key point being the political subject needs to evolve into an as sensible and sophisticated entity as the sphere it appears in. Subjects belong to overlapping schemas, if you will, and this will facilitate the

[18] Channeling deliberation instead to both private and public spheres.

[19] Agonistic opposition involves sound argumentation rather than antagonistic opposition that we see today (read Mouffe, 1999), ascribed with "enemy" jargon wherein politics loses its deliberative, compromisal nature.

thinking for the subject as it forces and makes it think in new relational settings. So for its continuous, ever-evolving characteristic, assemblage could very well hold the perfect politic. Arendtian thinking becoming ever the more vital. Though the non-distinguishable mix of content adds to the strenuous responsibility of the political subject. In a distributed field it takes a highly trained and skilled subject to categorize the landscape, assuming there still exits a distinction. However, the implications of assemblage, of the rise of the social and of a society in crisis all point to a blurring of the public and private spheres - diminishing in the political subjects reflexivity. In this light, participatory culture as assemblage and the non-thinking subject are incompatible. It does not hold for agonistic politics. The public sphere in an always emergent condition of the present pushing both the sphere and its subjects to the limits means that subjects need to become ever the more reflexive. If it is so as many suppose (Carr, 2008; Han, 2013), that the digital sphere is causing a demise in our thinking, then it will follow (for reasons gone through), that thinking must be performed and trained, or else politics will end up as antagonistic[20] or poalrized, inferring enemy terminology where lack of respect subsumes into Han's (2013) society in crisis.

Assemblage as participatory culture provides an ongoing dialogue. It resists fixity. This can be leveraged in a collaborative way in engaging in dialogue, but only if subjects "understand the discursive operations that must be carried out in order to retain its always processual and unfinished structure" (Collins, 2010). The discursive operations concern open systems of relations, are of public matter, one that relates to structured imagination, (both Arendtian and the systematic imagination of assemblage) reinventing and experimentation if you will, of the discourse. The strength of participatory culture is its never-ending process. The discursive operations that need to be carried out mean that the process *that is* heterogeneous must be retained. If the process is not sustained re-made and re-evolving, neither is the deliberation of opinion nor the differentiation of entities.

Agonistic pluralism must find itself therein. Articulated adversarial political identities must realize themselves in the tension that is between the stable and transient. The dialogue is then in danger of being replaced by (ephemeral) antagonistic politics, with loci such as nationalism or ethnicity. Which then arguably might not be politics at all. It is these scenarios of apathy

[20] As I read Mouffe, politics is what keeps antagonism at bay. It is what stands between agonism and antagonism.

towards politics that in turn, result in post-truth tendencies. Assemblage enables an ongoing deliberation yes, but it is withheld by the rise of the social and prevented from depth by its ephemeral range.

Hardt and Negri (2004) offer another view of the public valid to this discussion, one closely linked to the production of knowledge and sharing of information practices, coinciding with that which is participatory culture. They argue similarly to Benjamin's literary license as a common property, as well as Han's symmetrical communication discussed previously, that the public, or common[21] is found in *communication,* "the common does not refer to traditional notions of either the community or the public; it is based on the communication among singularities and emerges through collaborative social processes of production." The common emerges through process of immaterial production, as services and knowledge sharing. This is similar to the Arendtian public sphere which is found within subjects, within activities and within practices – and even in-between. The public will be that of interaction: codes, information, affects, and other shared forms of knowledge (Hardt & Negri, 2004). Participatory culture as interaction and a form of knowledge logic is here too, the public. This holds a peculiar stance in this thesis deliberation, as the public contains an explicit link to knowledge. The public is as the consideration continues, concurrently analogous to assemblage, to communication and to a form of knowledge; what Gillespie (2014) might call a knowledge logic[22]. Assemblage characterizing power, relates well then to a communication as a stance of power.

What is the medium with which to make communication, or power public? Returning to Benjamin, Han, and Gillespie, it seems like it already is embedded. The knowledge logic that is algorithms and the participatory nature of the digital medium are what incribes the public sphere into communication. Han (2012) proposes an existing symmetry in communication which could signify symmetrical participation in Hardt and Negri's public, seemingly valid but

[21] Michael Hardt and Antonio Negri use the terms *common*, *common wealth*, *singularity* and *multitude* to grasp ideas similar to known terminology of public/private etc. It should be said too, that they see both old terms of public and private as being pure instrumentalist means for capitalism. Their common also includes the natural resources the environment has and yields. Martin (2013) draws an etymology communication/common to guide their purpose. Their *multitude* can similarly be likened with assemblage as it embraces heterogeneity rather than what they would refer to as a "universal" public of the modern mass.

[22] Again a tension arises. How do participatory culture and communication exist at as public and as assemblage at once? The problematic is not real as the structure is always emergent conditions. It is not at *once*. Participatory culture is *becoming.* The public sphere is *deliberation*.

resulting in crisis according to Han's theory. However, the differentials of assemblage should not be underestimated, it is these that infer heterogeneity in space and timing in communication or other products of social interaction that is participatory culture. And so the process or mutation that is the public sphere is also communication, leans towards an asymmetric (in Han's terms) space, where relations between entities is key and therefore distance again brought to the forefront. Assemblage can thus be argued to unbalance the symmetry.

This diagnostic discussion has seen a multitude of dimensions to participatory culture. Implicitly, the duality and processual landscape of algorithms makes them inscribed with participatory culture. Explicitly, participatory culture is the communication or information production/consumption that is action (thinking) and expressions made by disparate actors in symmetrical digital media platforms, social networks and news institutions. Participatory culture should thus be focused on as a site of articulation between information processes, software or algorithmic dynamics, linguistic/re-expressionist processes, and cultural practices. This similar to communication, seen as the "codification of flows of meaning production and circulation" (Langlois, 2012). It should be highlighted that communication is about determining roles and agency of all the actors involved in this flow of participatory culture. In order to understand the political valence of participatory culture, not only should practices of communication and power relations be traced, there needs to be an understanding of participatory culture as assemblage inherently techno-cultural and political. Our discourse practices to be understood as embedded with practice on media platforms.

The architecture and procedures that constitute algorithmic and media participatory culture can have agency other than relevance; for commercial interest, for political gain. And so, they are a knowledge logic as vulnerable as the editorial. The editorial depends on authorized experts, and the algorithmic logic depends on the automated procedures of technology, decided on by humans who have made some kind of categorization and judgement calls. As subjects, it is seductive to turn on autopilot and not have to be skeptical about information, even that which we cannot guarantee for certain. Gillespie (2014) for instance, proposes that here there might just be something impenetrable about algorithms; working along without human intervention, being deliberately evolving and complicated, and relying on the masses from big data. However, it stands imperative to recognize that assumptions drawn from users and the mundane interaction that is norm imply a political significance of participatory culture duality.

Having regarded participatory culture through the lens of the Arendtian public and political subject, the thesis now moves along to a complementary analysis. It takes the form of a case study guided by structuration and schema theory. The following chapter focuses on the discourse involved in shaping a technology.

Chapter 4
Review, Post-truth Inoculation

This chapter further examines a new spirit of post-truth as inscribed in the fabric of participatory culture by way of social practices. This is now attempted to be brought out concretely in a study of recent academic work in order to show the dimension of which the tendencies are inscribed in the management of a technology. The hope is that such a self-reflection on our participatory culture and its political valence can open up to new practices of being a political subject.

As discussed in the beginning of this thesis, post-truth has a number of causes attributed to it. Causes retaining to this day and age in particular are pointed at through the digital medium, with problematics stated such as filter bubbles, echo chambers and symmetry in communication. Accordingly, one rooted understanding is of the online environment as leading up towards a situation where any spread of (mis)information becomes accelerated and widespread, and so accentuating existing beliefs. Misinformation as leading up to post-truth is an issue that is tackled in the following article (see Appendix), published in the Journal of Global Challenges in 2017. The article is considered in this thesis as a scene that deals with the ambivalence of participatory culture and the political subject. The article itself is a response to post-truth, one that deals with the current situation; it offers a technology to sort out the issue of the inattentive subject falling prey to misinformation. The article is brought up and reviewed as a study in supplement to the conceptual deliberation that has been going on so far, in order to provide a novel position from where to continue to discuss the problematic that lies between the political subject and our digital participatory culture.

Following structuration theory, a determination of major and minor schemas has been made so as to review the article. The quotes assigned to a particular schema are brought up for the ways in which they answer the primary question of how post-truth is inscribed in the shaping of the technology. The schemas involved are found/described and shown to be central in the dynamism of technological development as well as political conversation. In other words, these schemas are central in forming the technology that in turn shapes the participatory culture, or politic.

Psychological Vaccine

Inoculating the Public against Misinformation about Climate Change

Researchers from Cambridge, Yale, and George Mason have found that a similar logic to that of vaccinating subjects against virus - by exposing them to a small dose of that threat - can be applied to the public exposed to the threat of misinformation. The article suggesting "inoculation" of disinformation (van der Linden et al., 2017), proposes a solution to what they deem to be a damaging influence over falsities spread, in their study specifically, about climate change. With a vast amount of "disinformation" spreading, the researchers see a need to "counteract the politicization of science", and therefore to convey the high level of consensus there is on the issue, (ibid, 2017). This is of importance, the researchers remind us, as consensus is not only being undermined, but disinformation spreading has the effect of increasing existing political polarization, adding to limiting any deeper societal engagement, (ibid, 2017). Consensus, they continue, is important, as it is a driving factor in shaping public opinion, (ibid, 2017). The point being thus, that the 'correct' consensus would in their case, help fight climate change. "The idea is to provide a cognitive repertoire that helps build up resistance to misinformation, so the next time people come across it they are less susceptible" van der Linden (main author, also Director of the Cambridge Social Decision-Making Lab), cites in an interview for the university news, (University of Cambridge, 2017).

The article goes about exploring how what the categorized misinformation can be counteracted by being presented simultaneously with accurate information. To do this they conduct an experiment on psychological "inoculation". Groups in their study are given types of 'vaccines': one general inoculation; this signifying a message written as a warning to the patient, that there exists political agency and demagogue tactics trying to convince subjects that scientific disagreement concerning climate change is widespread. The second inoculation is more detailed; wherein the patient is given a concrete debunking of the misinformation. These messages are inoculated alongside consensus fact. For those patients receiving this extra data, it is found that the misinformation that followed did not cancel out the accurate message.

The results of the first more general type of vaccine, saw a 6.5 percentage point shift towards acceptance of the accurate consensus, despite being fed with misinformation. The results of additionally feeding the more detailed vaccine of an actual misinformation example, was almost 13 percentage points, two thirds of the effect seen as opposed to those whom were

only given the consensus accurate fact. The results are deemed as positive, and are presented in the article as a valuable technique to counteract misinformation, to promote scientific consensus, and to "protect the public from the spread of influential misinformation", (van der Linden et al., 2017).

Schemas of Misinformation Inoculation

The review of the article shows that two major schemas are involved in structuring the development of the psychological vaccine. This paper calls the first one the *science-technology* schema because of the use of discourse relating to efficiency and measurement, needless to say also for its belonging to an academic, statistically tested environment. The second major schema is found to be the *libertarian paternalism* schema; its discourse related to ideas of public service, duty and fairness. Another minor schema is also observed, a *war* schema; discourse suggesting enemies and defense. In the article the schemas are negotiated between and used for convenience, yet they are analytically distinct. At times used simultaneously, thus not found as mutually exclusive, but rather processual, relating, or leading up towards each other.

The Science and Technology Schema

In this schema, discourse is dominated by efficiency, feasibility, and experimentation. The scientific aspect of terms like proof, inoculation and measurement are alongside the more technological aspects like usefulness, progress and techniques. In this sense, the article relates decisions and motive to positivist, experimental science that has objectivity as key. The vaccine presented (along with the underlying problematic of misinformation) is both presented as an objective research object in itself (science), as well as a legitimate and possible solution to peoples 'needs' (technology).

The science-technology schema is first hand in use as the authors diagnose the problematic. This primary step looks at the otherwise universal knowledge that there indeed exist un-truths out there, to some sort of medical diagnosis seemingly new, that today there exists "real-world misinformation". Here are involved two aspects; misinformation as being objectively existing (as opposed to a subjective stance) and, that the diagnosis is positive, so to speak. The criteria for relevance to as to what real-world misinformation signifies is as unclear as algorithmic criteria for relevance. It is clear however, that what is objectively true in this article, is that of consensus. Wordings such as "undermining scientific consensus" further

signify a positivist outlook on both science and consensus. The underlying problematic the article intends to solve is in fact how to sustain/mold consensus.

Phrases such as "effectively engage with public" and "reduce motivated reasoning" exemplify a quantification of the aspects of engagement, motivation and reasoning, suggesting metrics (which they certainly have) of how to 'talk' with the public. Note here the use of wording, it is engagement *with* and not *of* the public which is of interest, proposing not the engaged political subject in a plural setting, but a one-way dialogue between researcher and subject. Further quotes such as "research on public opinion dynamics" and "pairing of conflicting informational cues" are rooted in a mathematics or physics repertoire, allowing for interpreting, pairing, mapping and predicting the dynamics of thought processes, as well as an existence of clear cut opposing messaging in political context; quantifying discourse. The schema is strategically vouching for the research, namely the science of opinion formation.

The science-technology schema renders even politics, that which is (I assume unarguably) the most political out of all things politic, to the matter of ones and zeros. Citations in the article like "*neutralize* polarizing worldviews" and "misinformation as *neutralizing* effect of consensus treatment" (italics added) make a simple allegory out of complex ideological, socio-economical, cultural situations, i.e. politics[23]. To begin with, it suggests that there are such things as *exact* opposing worldviews; then, it suggests that neutralizing them is possible, meaning that there exists an *exact* middle ground and that there exists an acidic/base solution to perform the matter; and lastly and most importantly, it suggests that it is scientifically preferable to be in the neutral state.

By using wordings like "misinformation as contagion" and referring to memes as "thought contagions" the article once more allegorizes by placing factors of a cultural schema of thought, ideology and trend, into that of an objective diagnosis of virus. The article here chooses to speak from a scientific positivist discourse. The quote "debiasing people's perception of the norm often has a positive cascading effect on other personal beliefs and behaviors," similarly renders objective and positivist the shadings, variations, not to mention processes that incorporate the terms perception, belief, and behavior.

The article discusses its experiment and test efficiency on different political parties, Republicans, Independents and Democrats. These are presented as scientific distinctions; belonging to them not subjective. The article discusses the results as a technique proven to work

[23] In fact, Google *neutralize* and you will (depending on Google's point of You) get "neutralize acid" as first hit.

on all three categories, suggesting a scientific distinction between parties, hinting at a null-hypothesis of parties inherently behaving different to the treatment. "The rate of cultural transmission, or infection, may be slowed through a process known as attitudinal inoculation." This comment is in some sorts the grand finale of the science-technology schema, the one quantifying the subject matter of culture, which once more justifies the experiment the article takes on.

Finally, throughout the article, the issue of a "politicization of science" is brought up as a reminder to the reader of an underlying 'bigger' issue. This hints at a complete disregard for their body as researchers; a disregard for the issue that everything is political; and hints at proposal that this politicization is a novel phenomenon, or virus if you will. This quote belongs in the science-technology schema because it places the article in a science-technology underdog position, allowing the researchers to rid the question of politics. These are a selection of the scientific and technologic repertoire spoken from. Overall the schema embeds and allows for a context of efficiency, measurement, medication and opposing fields.

The Libertarian Paternalism Schema

Libertarian paternalism is the notion that it is legitimate for public and private actors, or institutions rather, to nudge and affect behavior all the while adhering to the principles of freedom of choice[24]. The idea is that subjects' preferences are often ill-informed and therefore a form of paternalism cannot be avoided, (Thaler & Sunstein, 2003). The aim, is to guide, condition and steer actor decision-making in "welfare-promoting directions without eliminating freedom of choice", (ibid, 2003).

The libertarian-paternalist schema is important because it frames a discussion on *why* the responsibility is legitimate. The researchers express a need to "protect the public from the spread of influential misinformation", later added with an emphasis of "pre-emptively protect(ing) public". Here, the schema allows for the choice of words with *protect* and *influential*, to emphasize the position of the public as tenuous, liable and un-reflexive. Not only

[24] The idea was coined by legal scholar Cass R. Sunstein and behavioral economist Richard H. Thaler from the University of Chicago. It exemplifies in choice architecture, nudging, reducing cognitive biases and policies such as opting-out, e.g: require companies to deduct money automatically from employees' paychecks and place it in the employees' savings account. Employees could opt out of the program. But if they did nothing, they would end up saving money.

to protect, but to do so *pre-emptively* accentuates the position of urgent interventionism. "Change requires significant changes in individual and collective human behavior and decision-making", this quote entails a warrant to intervene in individual agents as well as public agency, to provide a new and changed platform from which these agents can then engage in Arendtian thinking, judging and acting, or decision-making as the article writes. Use of wording such as "limited deeper societal engagement" and "absence of motivation" when referring to the problem is to be understood as participation being the preferred state of affairs, and that whatever participation is taking place at the moment it is not made in the correct manner nor is it encompassing enough. This is tied to an underlying tone of inducing behavioral change, as too the comment of "(getting to know) the way people process information". It permits firstly a review of agents' process, and later a processual tweak, i.e. paternalistic intervention.

The schema opens up for a discourse closely linked to politics. Yet it does not elaborate on the political as it cannot, in being part of libertarian paternalism schema. The treatment suggested is in itself a warning to people that there exist ideologies contrary to theirs trying to 'trick' them and spread lies, "some *politically* motivated groups use misleading tactics", italics added. This indicates the article as taking a position of providing the subjects with an architected platter of 'sound' information that the subject then has the freedom to choose from. The political repertoire seeps through also, by explaining the problematic with "selective exposure to partisan media", hinting at undertones of attitude towards both partisan media and subjects' media intake habits. In referring to the false media balance as a threat, though not presenting concrete intervention per se, the article sets a frame enabled by the libertarian-paternalist schema; that of a call to duty.

The public and similarly a collective thought processes are brought up through this schema. It allows for a presentation of norm and mutual understanding to be that of notions that need looking after and possible tweaking, rather than notions that exist simply by being, that are what they are, any intervention automatically changing the status of their being. By stating that "debiasing people's perception of the norm often has a positive cascading effect on other personal beliefs and behaviors" the article speaks from a repertoire of de-bunking, allowing the paternalistic vision of performing the favor of correcting false beliefs. One aim of the research is to "reduce motivated reasoning", or in other words to reduce confirmation bias, implying a responsibility once more, to teach subjects how to reason, to think.

By saying that "audiences should be provided with the cognitive repertoire" the authors progress the discourse into a position of proposing freedom of choice for the subjects. Finally, the underlying theme and problematic the researchers are addressing, titled "Inoculating the Public against Misinformation about Climate Change" regards the public as unknowing subjects and provides a stance from which the article can give 'sound' propositions on how institutions and technology can act on their behalf. The libertarian-paternalist schema enables a discourse oriented at responsibility, at ideas of a non-reflexive subject, and a notion of duty of intervention for the greater good.

The War Schema

The war schema refers to discourse characterized by antagonism, the opponent, strategic use of method or defense, and the like. The war schema allows for a motivation to produce the proposed technology. It is a minor schema and the comments and words that characterize it are more obviously related to the science-technology schema or the libertarian-paternalist schema. Nonetheless, there are a few comments that highlight the still important aspect of the minor schema.

The repertoire includes that of tactics. For example in saying that misinformation is "triggering a motivation" for subjects to dismiss norm, suggesting a nudge form the opposition to elicit certain behavior. The word *trigger* suggests the plan of a thought-out psychological method, rather than being an un-planned consequence of the misinformation. A discourse of weaponry, tactic and access arises similarly in denoting the perceived consensus as an "important 'gateway' cognition to other keys beliefs". Strategy and war scenarios are brought to mind when the article refers to its technology as risking to "backfire on 'free-market' endorsers", here additionally setting a scene with the latter as enemies.

This schema is important because it enables a discussion on *opposing* sides and defense against an incursion. "Ideologically motivated, vested-interest groups known as 'Merchants of Doubt' have orchestrated influential disinformation campaigns"; such a statement aims at setting a certain scene for the reader, while it actually portrays nothing other than a group with financial motivation and conflicting beliefs as driving information spreading, it simplifies and illustrates an enemy with orchestration as arsenal. Likewise, the schema frames talk of enemy lines "skeptical audiences" are presented as a conceivable addition to the opposing side. The multiple and separate usage of the term *undermine,* for instance in describing misinformation as

“undermining real-world attempts” of establishing mutual agreement, or in the effect of anecdotal evidence, hints at this being one of the major strategies, a weapon of choice.

The war schema enables the article to define the relationship between the technology and other actors (enemies). It also provides a contemplation on the identity and agency of the researchers themselves, in their taking on the role of guardians and soldiers of something important, in this case their scientific consensus.

In summary, the researchers use two primary and one minor technological schema to ascribe meaning to misinformation and the inoculation technology. The science-technology schema characterizes the inoculation, i.e. the technology, as medication; the libertarian-paternalist schema characterizes it as an honorable responsibility; the war schema characterizes the technology as a defense. These schemas are a method to help explain the technology, and also to explain the development as they are a way for actors within the schemas to mobilize resources. What schema to use for mobilizing what resource is the strategic factor that has implications for the development of the technology, as the schemas have different ways of articulating it. The implications of the different articulations are examined in the next section.

Inscription of Post-truth in Participatory Culture: Implications of Schemas

The article has shown that several schemas are at work simultaneously. The review of the article suggests that the researchers conceive of misinformation, thereby of information and knowledge, in different ways in each schema. As an objective right versus wrong in the science-technology schema, as a hierarchical dependency of scientific and institutional expertise in the libertarian-paternalistic schema, and as a question of majority and taking sides in the war schema. The strategic use of the disparate epistemological frames allows the researchers to ascribe a technology on how knowledge should be presented and how participatory culture should be. The implications are subsequently, that through ascribing discourse of right versus wrong (science), elitism (paternalism) and majority/populism (war), the article so features the main factors seen as leading up to post-truth.

Important to schemas is their generalizability, or ‘‘that they can be applied to a wide and not fully predictable range of cases outside the context”, (Sewell, 1992). Giddens (1984) adds that schemas hold a key agency in structure as they mobilize resources, i.e. begin processes on behalf of their actors. The schemas gone through here of science, paternalism and war, are generalizable, and they constrain other possible conceptions of (mis)information and then

further, how participatory culture should be, by mobilizing resources on behalf of their schema, in accordance to what both Giddens (1984) and Sewell (1992) note as a critical component of structure.

All three schemas indulge the repertoire regarding consensus, closely relating to Arendt's writings on majority. Arendt notes that when parties find themselves in doubt, majority is left to settle disagreements over *fact*, just as is done in cases of disagreeing *opinion*. This is a factor that must be taken into account, as even the majority can be misinformed, or "brainwashed" in Arendt's terms. It so happens, that the researchers are in accord with Arendt and see a risk of a misinformed majority, as it is the majority who has the power. This is in a sense, fundamental to their research.

The schemas similarly qualify the researchers to begin from a place Arendt speaks of, the nightmare, of the "value of fact being at stake". What Arendt refers to as a political problem of the first order, namely the disregard and disbelief of fact. For the researchers, climate change is a fact. This fact which to them is, of great global significance, is disregarded and being thrown at the public as if it were opinion. In this sense, the researchers take on the position of the truthteller in a community of lies. The truthteller thinks creatively, acts creatively. The one who according to Arendt has himself began to act, in a public where the rest of the matter is not truth, but opinion, lie, or deception. In this sense, both schemas allow for this Arendtian interpretation of sincerity and urgency, of natality of their action – however rational or absurd their technology may be; it is a new common sense to them as the old tradition has, for the researchers, been swept away. It is possible that the article follows what to Arendt is the struggle for politics and fact; to neither deny fact nor to give it law-abiding stature; this by "navigating" in-between as Arendt puts it. In other words, the inoculation can be considered *as* politics, by neither denying the message nor abiding it, but by cleverly navigating in persuasion. Herein lies once more the irony of the article's problematic of "politicization of science", as it does not account for its own position.

The method which the researchers and schemas suggest is a training of the political subject. Their wish is to create a more reflexive political subject. Although, in the article, an engaged participatory culture doesn't seem to be the issue so much as an informed one. As mentioned, the engagement hoped for in the subject is not a reflection of plurality, but rather a reading of the (one-way) inoculation message. Returning, the problem they seem to want to address is that

of Benjamin's universal equality of things, or Han's symmetry in communication. While everybody is a critic, they (political subjects) do not have the resources to be sound critics. It is implied that the symmetry of communication has resulted in the incapacity to separate the healthy from unsound. To judge agents on how to behave in the public sphere i.e., be a part of conditioning social practices, to judge motive of their actions. The researchers seek to expose the danger of the perceived universal equality of things, in some sorts by creating distance between the message and the subject, by inserting another opposing message on the other side of the spectra.

The article proposes a sort of framing of an enlarged mentality, by exposing the subject to alternate information and messages at once, to plurality. The researchers indeed want to mold an Arendtian thinking subject, and want to do this by inducing frequent disparate exposure, i.e., training the subject in the public sphere, albeit to a duality and not plurality. It is further questionable whether this 'training' and exposure can be paralleled to real experience. Even though it intends to be representative of the real public sphere, it is not the public sphere and does therefore not qualify as proper training in Arendtian terms. Moreover, it is not a stretch to imagine that such a management of information on accord to the political subject can induce a lazy habit, resulting in a political subject that is instead less engaged, less reflexive, less critical.

The article and its researchers have many schemas at their disposal, like for instance art, public service, human rights, digital democracy, to name a few. A schema is not only a matter of choice, it also has consequences for the users and thereby the social practices that form, in this case from an inoculation. The technology proposed in the article acts a conduit of governance. The inoculation (and the deciding resources underneath) is a locus of power, conditioning in what way the reader takes in a message, i.e., in which way meaning can emerge. It has this power by: managing the information, managing the subjects' perception by allocating the messages with certain political values, and by actually being part of shaping user agency, by becoming a new mode of how to process information, comparable to an editorial logic or information protocol; and so, it also displays a distribution of the sensible as processes are re-defined and assigned. In a similar manner to which Google indexing is for subjects considered 'right', a managerial logic like inoculation could theoretically also come to be considered relevant and a social practice; 'right'.

Structuration and SCOT theory signify that the schemas, along with their agency and conceptions, play a role in the distribution of rules and resources, as well as the negotiation and

compromise involved in a technology, maintaining and/or reshaping structures, such as participatory culture. Structuration theory further adds that pre-existing structures such as capitalism (Giddens, 1984), have an influence on what technological schemas become norm. The duality of the structure and agents' dynamic imply an embedment, or cycle. By embodying the factors that lead up to post-truth in each schema, the association is that the researchers and the article embody the bigger schema of post-truth. In the article, the non-articulated schemas suggested earlier (public service, human rights, …) would enable a different way of building up the structure and dynamics wherein participatory culture could operate. But these are proven hard to articulate.

Having formerly reviewed the diagnostic of a techno-cultural reality, and now finalized a supplemental, more practical schema analysis over a specific editorial technology, the two analyses benefit from additional dialogue. The conceptual diagnostic and schema agency allow a broader reflection on the implications of the modern informational flow and participatory culture.

Participatory Culture

Participatory culture has in-built the workings of both the implicit algorithmic logic, as well as the explicit, actual user/producer contribution and engagement. Therein lie the protocol and processes that define the disparate platforms, networks, human or machine editorial, and conditioning factors of the message or medium. The modern informational flow suggests that participatory culture is not one, but many. This point is key in developing an understanding of its political valence.

The diagnostic and the schema analysis both point to consumerist trend and capitalism, in that participatory culture is a structure wherein trade is controlled by private owners for profit. Overtly, capitalism is embedded in digital culture by ways of search engine and platform technology (Mager, 2012), and as drawn out, by public relevance algorithms selecting and providing database and criteria from both private and public spheres. Economic incentive in terms of advertising, clickbait, etc., finds itself intertwined with matter of both private and public concern. This is the convergence of news institutions, social platforms, media and other consumer products. Consumerism mixed with public deliberation, political engagement seems to be working simultaneously and in symbiosis with profit making actors. Tacitly, capitalism is inscribed as the rise of the social is seen in social capital as technology of the self. Consumerism and ideas of human capital are similarly transposing into qualities like digital capital. This goes by many names and shows itself in disparate ways, we might call this gamification of self, an internalization of the rise of the social, or an accordance with shadow bodies. The rise of the social so coincides with an instrumental view of politics, as the social leaks into the market place and focuses on the end and not the means. Capitalism is inscribed in participatory culture by way of acknowledging the subjects right to exercise agency; the right of production, buying and selling services.

The freedom of choice and agency of the individual subject is tightly knitted too with the values of universal suffrage and civil rights of liberal democracy. The condition of participatory culture can be understood as a dilemma of preserving both capitalism and democracy. Like broader dilemmas of globalization, economic integration navigates individual empowerment, democracy and national sovereignty. Such factors are noted unsuited to coexist, (Rodrik, 2007). To recap, Arendt (1958) notes, political equality is not due to natural (in the literal meaning) circumstance. Politics is constructed, democracy constructed. All that is

participatory culture is fully artificial and constructed. Any equality or symmetry therein is not due to natural circumstance. The right that is participatory culture must too be considered and nurtured. The partnership between capitalism and liberal democracy is, one could say, the factor which finds itself at risk with the rise of apathy.

The Political Subject

Applying structuration theory when perceiving participatory culture brings forward a duality of agent/structure influence, with a participatory culture conditioned as much by the subject as the reverse. This implies a potential cycle process of tendencies of the subject simmering into the structure and vice versa. As culture produces value to structures, technologies need cultural schemas to become empowered, the Internet and digital is inherently techno-cultural with dual dynamics. Already here, with this duality, it is of importance to grasp subjects as being conditioned by participatory culture just as much as controlling it. This implies that that in order to understand the full effects on the political subject, full understanding of participatory culture is needed. The duality as we have seen, results in a re-conditioning of our expression. Concretely, subjects are then 'tweaking' online behavior to fit the mold. Chasing shadow bodies. The implications are then not that the online world is a parallel one, but several shadow worlds. Subjects rearranging their behavior results thus in a sort of dual identity of the subject. It may even further denote that subjects chase multiple shadow bodies to suit the structure at a given time and place. This tweaking of online behavior is comparable to that of opinion formation and identification through other forces than the truth. In tweaking online behavior, the truths and facts regarding subject identity or expression slowly evolve to fit the current mold. As such, other forces than fact are what is driving the process of expression. Re-conditioning represents an instability contrary of that to truth, proposing post-truth as inscribed with practice.

The duality of participatory culture is only the beginning once proceeding to consider it as assemblage. For starters, the ephemeral aspect coincides with the thoughts on chasing shadow bodies, having multiple online identities. Identities in assemblage though are not per entity but defined by relation in the continuous assorted cnonsolidation. This implies a definition of the subject not on identity – but as said, within which network and relational status the agent acts (speaks, thinks, expresses) from. The process that allows the becoming of the entity so to speak.

The process could for one be seen as the medium, the condition in which the message is made. Further, multiple chases of shadow bodies and multiple identities that themselves are defined by ephemeral relations/tangents, imply as result the weakening of the subjects ability to sustain one thought process, one message, or a big picture if you will. Not only concerning the debate but also concerning the agency of the subject with every tangent. Subject agency here being sprung from process, relation and network rather than identity imply a post-truth manner in that forces other than the stable, objective are deciding agency. Forces dependent on the relation to another entity, public or private. This has consequences for the novel. The question arises, is it ever possible to do the novel, to allow for an action permitted by the freedom that is human, if all is relational? No matter how transient or abrupt, the participatory culture assemblage inhibits anything uniquely novel, uniquely unconnected. Or, could it be that participatory culture inherently makes every entity novel, in that no two can be equal in their differentiations. This latter implies a universal equality of the novel, leaving it to no good.

Allow for a contemplation on the time dimension of participatory culture as assemblage. It can be distinguished by the short versus long term political thinker. Participatory culture flirts with antagonistic politics. The environment calls for participation, granted – it says it in the name. Though the engagement is abrupt, heated, it does not follow anything but the momentary relation status of the node. Any next engagement need not belong to the same time/space as the previous, and so on. The political subject therefore need never deliberate deeper than the moment. This potentially misguides the non-thinker, in result damaging the integrity of politics. It implies a focus away from the long-term agonistic political conversation that could be made, and forces the subject to make rash judgment in whatever brief heterogeneity it is 'assigned' to. The implications for politics (and thereby its stature) here are both in time/space dimension: time, where the brief engagement is confused for long term commitment; space, where the random nodes assigned disperse of any line of ideology, or deeper discourse. And what is politics if not long-lived? Politics is inherently never-ending. And what is politics if not about revealing ideologies, persuasions? The participatory culture thus implies a leaning towards short-lived instances, additionally facilitated by a medium of affect communication and ease of expression. Instead of a pro-active politics is inferred a reactionary politics. This follows the same trajectory as agonistic versus antagonistic, or long term engagement versus activism. In concrete terms, activism has become easier than ever before in the modern digital political world. Media theorist Marshall McLuhan noted about TV in 1976, "there's no continuity,

there's no connection, there's no follow-through, it's all just now." (McLuhan, 2010). Surprisingly resembling to assemblage. Or Twitter on a Tuesday.

Articulation

The schemas reviewed only provide a selection of asymmetrical agencies involved in shaping participatory culture. These are not however, completely in the dark. In fact, the outline of algorithmic or editorial practice in this paper does not necessarily come to much surprise. This both refers to the algorithmic structures as well as the companies behind them, along with their socio-economic incentives. The science-technology and libertarian-paternalist schemas imply that they are agents in structuring practice. The articulation of a given schema may exclude vital elements of another. This has the implication of lack of seeing weaknesses or worse, a potential misuse of power. The discourse and schemas in use allow for a development of a technology that may be in best practice, though viewed from a separate schema intervenes with other rights, standards, or criteria.

As the producers of a technology act from disparate schemas, it is likely too that the consumers perform the same behavior. This implies that as users, or political subjects, see to technology from disparate schemas. In other words, political subjects resort to various schemas to justify/judge different settings in participatory culture and to mobilize certain rules and resources. This could have implications of judging private companies through a given schema, only to refrain from using another schema. In this manner, critical judging and thinking on public/private actors and their agency is never all encompassing. The assemblage participatory culture creates an environment where each new tangent may be judged and regarded through a new schema. And so, companies like Google or Facebook, though perhaps frequently judged through a libertarian-paternalist schema by their users, may never succumb to an all-encompassing judgment. Practical implications of such habits of judging could mean a negotiated articulation in order to sustain the image, the power or the technology. Post-truth is inscribed therein, in a resorting to a chosen (popular) schema from which to deliberate. The reflexive political subject is all the more important in such a milieu where it needs to actively seek out the not so apparent schema from where to judge other actors, rather than resorting to majority or heuristics. The opposing behavior leads to the self-deception of which Arendt speaks, wherein long-term image making of a libertarian-paternalist schema could drive

cynicism towards other articulations. The articulation in play here is similarly illustrated in the articulation of truth. As noted Arendt saw the value of fact being at stake should it be branded as opinion, or hidden in lies. The risk thus ends not with self-deception, but also with the possibility of apathy for the integrity of both truth and its agents, perhaps even an apathy for the articulation itself.

The success of companies such as the named Google or Facebook, and the thought processes that allow for suggestion such as the inoculation vaccine, imply that the articulation of the product coincide with the judging/thinking articulation of the majority subject. The frames of meaning articulated to the technology fit well with societal, economic and cultural currents of the given point of space and time. And so, it is safe to say that the tech-euphoric and tech underdog stature is the scientific-technology schema that has driven participatory culture in its development. Assigning the libertarian-paternalistic agenda to the techno-cultural reality furthermore explains much of the technological development of participatory culture. To recap, libertarian paternalism discourses "welfare-promoting directions without eliminating freedom of choice", (Thaler & Sunstein, 2003). This manner of depicting participatory culture answers the question of why much responsibility taken by tech giants has been supposed legitimate, in turn explaining that within tech-centricity falls a naiveté of political subjects allowing for pre-emptive decision making with regards to what it means to be part of participatory culture.

Technological paternalism could thus prove to be a viable concept wherein to ascribe participatory culture. The self-proclaimed tech-euphoric call to duty of information management, or enabling communication, implies a setting itself apart from the traditional public and private dichotomy. Through this lens then, participatory culture as a technological paternalist concept avoids self-deceit and admits an embedded rise of the social; in turn potentially hindering a rise in sense of apathy.

Communication

Communication is inscribed in participatory culture. What Benjamin sees as common literary license and what Hardt and Negri propose to be a common good portray different attitudes towards this. Arendt's public sphere nonetheless contains the artifacts that enable a political context; being inter-esse actors, it is the relations that are the common. The tech underdog

mentality thrives on this concept, namely of enabling and providing the common. The irony being nonetheless, that the public form of knowledge, i.e. communication, is inscribed in the public/private participatory culture that is arguably not common, but illustrates the rise of the social and is privately owned and managed. The symmetry of which Han speaks is a symmetry that does not consider of this layer underneath. The layer(s), or nodes/relations underneath are the ones pulling and breaking the strings of the assemblage. Even in his critique, Han falls prey to the false authenticity that is the symmetrical informational flow. In other words, the processual logics, media platforms, social networks, algorithms, driving participatory culture - are very much privatized and/or algorithmically processed and though delivering a symmetrical or universally unique product, do not mirror a symmetrical landscape. Hence, communication and information are incentivized in a landscape relying on other aspects than fact, explaining a macro level extent of post-truth. Though relating to Han's theory, the sovereign is the one with the power to silence the storm of the web. This reading suggests the sovereign in control of the communication that flows in participatory culture. In general, this sovereign is plenty. It is the structures and assemblage participatory culture. In a practical manner however, this sovereign can be drawn to private companies managing flows of information on the internet. Arendt comments, the first thing that happens as political subjects lose their citizenship is expropriation. Drawing on this, it is conceivable that subjects must be in ownership of the common, communication, public sphere in order to be political subjects, or citizens, of participatory culture.

If it is the common, then the first step must be to re-appropriate the space to the common. Because as it is now, it is a privatized common. Not only the knowledge logics are privatized, but the spaces themselves. Schemas structuring the development of not only the technology that is algorithms and media platforms, but also of the new knowledge logic itself as well as the common. The public as considered previously, is concurrently analogous to assemblage, to communication and to a form of knowledge. The public is at this point not empowered of its own common, moreover, it has not elected its sovereign, nor is it reflexive of its sovereign. For an agonistic agenda of participatory culture, implications are that of a re-appropriation needing to happen. The pluralized forms of the public need to be embedded in participatory culture, articulated into the technology and so as well into the new knowledge logic. An adversarial agonistic politics would find itself therein, by being a space/time process where morals, opinion, belief can be deliberated and disputed, *not* secluded and denied as part of enclosed private systems. The gist here being not that the issues/structures are private, but that articulated

as such, they are sealed off from the public and its criticism, the communication the forms of knowledge.

Practical Associations

It can be concluded that it is not possible to understand nor to combat post-truth without a discussion on what participatory culture is. This including that a shift of view is necessary away from the effects that participatory culture has on society, towards the processes and negotiations involved in the forming of the technology, so as to understand its agency in the rise of the social and agency in shaping the political subject in the future. Participatory culture by inhibiting the reflexive political subject breads post-truth tendencies. A false authenticity of politics in combination with a false authenticity of participatory culture creates an environment where skepticism can grow. This thesis on participatory culture thereof suggests to first and foremost render apparent, consider and comprehend the false authenticity of techno-cultural political modernity. It is imperative to bring forward and discuss the technological paternalism as a main driver of modernity. What this thesis names technological paternalism might be likened to an ideology, a discourse, a schema; whatever the nomenclature, a sensibility to this driving force must be acknowledged and brought to light. Such an understanding can end secrecy and open up to debate on the development of participatory culture. For example, search engine criteria selection, or discussions on the Internet as a human right[25]. Such a discussion connects to a further suggestion, of providing concrete education on the discipline of algorithmic and internet editorial practice, an augmented media literacy if you will. This coincides with an aspiration of enabling reflexive, critical political subjects. This discipline could concretely be implemented in parallel with the judicial or social science disciplines taught at schools, to already there educate subjects. It is not impossible to think, as Mayer-Schönberger and Cukier imagine, a future where 'algorithmists' have a corresponding job to that of lawyers and accountants, managing internet law and data. As stated, building a future we want is building the web we want. "The medium is the message", (McLuhan, 1964) is an ever so appropriate depiction. And so, by understanding the informational flow we can also build the informational flow. The diagnostic of participatory culture leads to one final suggestion, that of a restructuring of the web. Net neutrality exists already, granted. But the loci of power on the web need to be

[25] Free Basics is a "a global partnership between technology leaders, nonprofits, local communities and experts who are working together to bring the Internet to the two-thirds of the world's population that doesn't have it," (Grossman 2014). It is a Facebook based mission to bring affordable access to selected internet services in developing countries.

scrutinized. The conception must be fully understood: the companies governing participatory culture primary objective is not to enlighten the political subject. The Facebook social platform concentrates the loci of power into one platform, one that Mark Zuckerberg calls "a global community", (Facebook.com, 2017). The issue is that the platform leans to promoting polarization, bubbles and tribalism. The issue at hand is not that participatory culture needs to be better, that Facebook needs to improve their product. The issue is that is that their agency is too big in the first place.

The situation at hand might deem comparable to the rise of public broadcasting and cable TV. TV today is arguably more culturally influential, more diverse and more sophisticated than at start. Political subjects might just need a nudge to become better versions of themselves. The suggestion follows that just as the platter of broadcasting choice flourished, so must the platter of social platforms. As such, small, perhaps niched versions of social platforms must be let into the market. The social network market is dominated by Facebook, which for example 68% of adult Americans use, comparable to 28% on Instagram (also owned by Facebook), 26% on Pinterest, 25% on LinkedIn and 21% on Twitter, (Pew Research Center: Internet, Science & Tech, 2017). These smaller platforms aspire in no way to be as all-encompassing (in terms of varietal use) and mundane to a global population as Facebook does. Perhaps it's time to support new varieties of social platforms. Government support would be needed for this to happen. And it is not certain nor the aim that any new platform should overtake Facebook, but simply that a plurality of niches exists in participatory culture that in turn would result in greater allowance for the reflexive political subject to develop. Of search engines the situation might consider a de-privatization. This would render criteria and advertisement modules (if funded by such) transparent, and the knowledge logic that encompasses algorithmic relevance or the sort would be debatable and brought out in public deliberation. This is important for social justice. Arendt recalls that, the genuine debate's main assumption is that factual truth and a convention of telling truth are in existence. This foundation is scarred should this assumption be non-existent. One could say the same for the transparency of our mediums.

Concluding Remarks

This paper has shown that it is not possible to discuss nor combat post-truth without a discussion on what participatory culture is, therein the political subject, politics and techno-cultural processes. It has attempted to portray in which way participatory culture controls informational flows, subjects and agency.

The analysis has outlined what is meant by being an Arendtian political subject and connected her line of thought to a digital modernity. Further it has used the concept of assemblage to create a depiction over the techno-cultural setting that is participatory culture. It has provided a complimentary depiction of participatory culture and a possible technology therein, through the use of schema theory. An awareness of post-truth has found itself throughout the analysis. The analysis has moreover provided novel stances by suggesting the concept of technological paternalism, and too, a re-thinking of platform and search engine management.

The tech industry has long enjoyed the image of the underdog to capitalism. Indeed, this reputation has been confirmed by symmetrical benefits, i.e. leveling the playing field. Communication, information production/consumption is everywhere. The subject's regard for the digital must leave its passive consent, and adhere to Arendtian thinking and active participation. The reflexive subject is hard to find in participatory culture. The online sphere is regarded for its inevitability and is a natural part of our social practices. Tech anti-elitism co-opts the left's agonism in its historical opposition to corporate dominance. This understanding must be the starting point for a structural change of participatory culture. Considering the old dichotomy of us and them is outdated and stranger to participatory culture. A distribution of the sensible means a consolidation and mutation of loci of power. Ephemeral and multidimensional in their relational assemblage, political subjects must learn to be sensible to this.

Believes about what politics is must change. Similarly, the set of believes surrounding participatory culture must adapt. The perception of what it means to be an engaged, participant subject must evolve to comprehend both implicit and explicit forms. We must call out the false authenticity of the digital, as we must always do in politics. Post-truth finds itself inscribed therein, in the falsely authentic.

Bibliography

References

Anderson, C.W. (2011). Deliberative, Agonistic, and Algorithmic Audiences: Journalism's Vision of its Public in an Age of Audience Transparency. *International Journal of Communication,* 5(0), pp.529-547.

Alterman, E. (2005). *When presidents lie*. 1st ed. New York: Penguin Books.

Arendt, H. (1968). *Between Past and Future*. 1st ed. New York: Viking Press.

Arendt, On Violence, 56; Owens, P. (2007) Between Wars and Politics – International Relations and the Thought of Hannah Arendt New York: Oxford University Press 16–19; Canovan, Hannah Arendt.

Arendt, H. (1977). Public Rights and Private Interests. In Mooney, M and Stuber, F. eds., *Small Comforts for Hard Time: Humanists on Public Policy.* New York: Columbia University Press.

Arendt, H. (1958). *The Human Condition*. 1st ed. Chicago: University of Chicago Press.

Arendt, H. (1978). *The Life of the Mind*. 1st ed. New York: Harcourt Brace Jovanovich.

Arendt, H. (1971). Thinking and Moral Considerations: A Lecture. *Social Research*, 38(3), pp.417-446.

Barthes, R. (1981). *Camera Lucida*. New York: Hill and Wang.

Beiner, R. "Hannah Arendt on Judging" in Lectures on Kant's Political Philosophy (Chicago: University of Chicago Press, 1982), 101

Benjamin, W., Arendt, H. and Zohn, H. (1968). *Illuminations.* 1st ed. New York: Harcourt, Brace & World.

Bijker, W., Hughes, T. & Pinch, T. (1987) *The Social Construction of Technological Systems. New Directions in the Sociology and History of Technology,* MIT Press, Cambridge/London.

Bijker, W. & Law, J. (1992) 'General introduction', in *Shaping Technology/Building Society: Studies in Sociotechnical Change,* eds W. Bijker & J. Law, MIT Press, Cambridge, MA, pp. 1–16.

boyd, danah. (2010). Social network sites as networked publics: Affordances, dynamics, and implications. *Networked Self: Identity, Community, and Culture on Social Network Sites,* ed.Zizi Papacharissi, 39-58. New York: Routledge.

Bucher, T. (2012). Want to be on the top? Algorithmic power and the threat of invisibility on Facebook. *New Media and Society*, April 8.

Braun, J. and Gillespie, T. (2011). Hosting the Public Discourse, Hosting the Public. *Journalism Practice*, 5(4), pp.383-398.

Canovan, M. (1989). *Populism.* New York: Harcourt, Brace, Jovanovich; Barr, R. (2009). Populists, Outsiders and Anti-Establishment Politics. *Party Politics*, 15(1), pp.29-48.

Carlson, B. (1992) 'Artifacts and frames of meaning: Thomas A. Edison, his managers, and the cultural construction of motion pictures', in *Shaping Technology/ Building Society: Studies in Sociotechnical Change*, eds W. Bijker & J. Law, MIT Press, Cambridge, pp. 175–198.

Cheney-Lippold, J. (2011). A new algorithmic identity: Soft biopolitics and the modulation of control. *Theory, Culture and Society,* 28(6), pp.164-181.

Collins, M. (2010). Conflict and Contact: The 'Humane' City, Agonistic Politics, and the Phenomenological Body. *Environment and Planning D: Society and Space*, 28(5), pp.913-930.

Echelon Insights, (2016). *How Social Sharing is Reshaping the 2016 Race: Key Takeaways from Our Research for BuzzFeed*.

Elster, J. (1981). States that are essentially by-products. *Social Science Information*, 20(3), pp.431-473.

Giddens, A. (1984). *The Constitution of Society: Outline of the Theory of Structuration.* Cambridge: Polity Press.

Gillespie, T. (2014). The Relevance of Algorithms. *In Media Technologies: Essays on Communication, Materiality and Society*, ed. Gillespie, T., Boczkowski, P. and Foot, K. Print Published to MIT Press Scholarship Online. Cambridge, MA: MIT Press.

Gitelman, L. (2008). *Always already new*. 1st ed. Cambridge, MA: MIT Press.

Gitelman, L. (2013). *"Raw data" is an oxymoron*. 1st ed. Cambridge (Mass.): MIT Press.

Hall, Stuart (1977). Culture, Media and the Ideological Effect. *Mass Communication and Society.* Ed. James Curran et al., 315-48; reprint, Beverly Hills, CA: SAGE Publications, 1952.

Hammer, T. (2007). The Role of Ontology in the Philosophy of Gilles Deleuze. *The Southern Journal of Philosophy*, 45(1), pp.57-77.

Harsin, J. (2015). Regimes of Posttruth, Postpolitics, and Attention Economies. *Communication, Culture & Critique*, 8(2), pp.327-333.

Inglehart, R. and Norris, P. (2016). Trump, Brexit, and the Rise of Populism: Economic Have-Nots and Cultural Backlash. *Faculty Research Working Paper Series*, Harvard Kennedy School John F Kennedy School of Government, p.7.

Ito, M. (2008). Introduction. In *Networked Publics*, ed. Kazys Varnelis, 1-14. Cambridge, MA: MIT Press.

Langlois, G. (2012). Participatory Culture and the New Governance of Communication. *Television & New Media*, 14(2), pp.91-105.

Levendusky, M. (2013). *How partisan media polarize America*. 1st ed. Chicago: The University of Chicago Press.

Mager, A. (2012). Algorithmic ideology: How capitalist society shapes search engines. *Information, Communication, and Society,* 15(5), pp. 769-787.

Marcus, G. Evans. & Saka, E. (2006). Assemblage. *Theory, Culture & Society*, 23(2-3), pp.101-106.

Martin, R. (2013). Public and Common(s). *Places*. [online] Available at: https://placesjournal.org/article/public-and-commons/ [Accessed 20 Apr. 2017].

Mayer-Schönberger, V. and Cukier, K. (2013). *Big data*. 1st ed. London: John Murray Publishers.

McLuhan, M. (1964). *Understanding media*. 1st ed. New York: McGraw-Hill.

McLuhan, M. (2010). *Understanding me*. 1st ed. New York: McClelland & Stewart.

Mouffe, C. (1999). Deliberative Democracy or Agonistic Pluralism? *Social Research. Prospects for Democracy.* 66(3), pp.745-758.

Mudde, C. (2007). *The populist radical right*. 1st ed. NY: Cambridge University Press.

Negri, A. (1995). On Gilles Deleuze & Félix Guattari, A Thousand Plateaus. *Graduate Faculty Philosophy Journal*, 18(1), pp.93-109.

Negri, A. and Hardt, M. (2004). *Multitude*. 1st ed. New York: The Penguin Press.

Phillips, J. (2006). Agencement/Assemblage. *Theory, Culture & Society*, 23(2-3), pp.108-109.

Pinch, T. and Bijker, W. (1984). The Social Construction of Facts and Artefacts: or How the Sociology of Science and the Sociology of Technology might Benefit Each Other. *Social Studies of Science*, 14(3), pp.399-441.

Poovey, M. (2010). *A History of the Modern Fact*. 1st ed. Chicago: The University of Chicago Press.

Potter, J., & Wetherell, M. (1987). *Discourse and Social Psychology: Beyond Attitudes and Behaviour*. London: Sage.

Rieder, B. (2012). *ORDER BY column_name: The relational database as pervasive cultural form.* Presented at The Lived Logics of Database Machinery conference, London.

Sambrook, R. (2012). Delivering Trust: Impartiality and Objectivity in the Digital Age. *Reuters Institute for the Study of Journalism.* University of Oxford.

Schwarz, E. (2014). @hannah_arendt: An Arendtian Critique of Online Social Networks. *Millennium*, 43(1), pp.165-186.

Sewell,, W. (1992). A Theory of Structure: Duality, Agency, and Transformation. *American Journal of Sociology*, 98(1), pp.1-29.

Smith, D. & Protevi, J. (2008). Gilles Deleuze. *The Stanford Encyclopedia of Philosophy*. https://plato.stanford.edu/archives/win2015/entries/deleuze/

Solove, D. (2004). *The Digital Person: Technology and Privacy in the Information Age.* New York: New York University Press.

Stalder, F., and Mayer, C. (2009). *The second index: Search engines, personalization and surveillance.* In Deep Search: The Politics of Search beyond Google, ed. Konrad Becker and Felix Stalder, pp.98-115. London: Transaction Publishers.

Thaler, Richard H. & Sunstein, Cass R. (2003). Libertarian Paternalism Is Not an Oxymoron. *University of Chicago Public Law & Legal Theory.* Working Paper, No. 43.

Van Couvering, E. (2007). Is Relevance Relevant? Market, Science, and War: Discourses of Search Engine Quality. *Journal of Computer-Mediated Communication*, 12(3), pp.866-887.

van der Linden, S., Leiserowitz, A., Rosenthal, S. and Maibach, E. (2017). Inoculating the Public against Misinformation about Climate Change. *Global Challenges*, 1(2), p.1600008.

Varnelis, K. ed. (2008). *Networked Publics.* Cambridge, MA: MIT Press.

Zourabichvili, F. (2004). *Deleuze. Une philosophie de l'événement*. Reprinted in La philosophie de Deleuze, ed. Franqois Zouribichvili, Anne Sauvagnargues, and Paola Marrati. Paris: Presses Universitaires de France.

Online

Barron, N. (2016). Stranger Danger. *Edelman*. [online] Available at: https://www.edelman.co.uk/magazine/posts/stranger-danger-trust-in-a-person-like-me-has-built-a-post-truth-world/ [Accessed 12 Mar. 2017].

Books.google.com. (2017). *Google Ngram Viewer*. [online] Available at: https://books.google.com/ngrams/graph?content=posttruth&year_start=1980&year_end=2000&corpus=15&smoothing=3&share=&direct_url=t1%3B%2Cpost%20-%20truth%3B%2Cc0 [Accessed 9 May 2017].

Carr, N. (2008). Is Google Making Us Stupid? *The Atlantic*. July/August Issue. [online] Available at: https://www.theatlantic.com/magazine/archive/2008/07/is-google-making-us-stupid/306868/ [Accessed 11 Apr. 2017].

Cisney, Vernon W. (2002). Differential Ontology. *University of Tennessee Internet Encyclopedia of Philosophy.* Online at: http://www.iep.utm.edu/diff-ont/#SH3b [Accessed 10 Feb. 2017].

Davies, W. (2016). The Age of Post-Truth Politics. *The New York Times*. [online] Available at: http://nyti.ms/2bz5Jr5 [Accessed 10 Mar. 2017].

d'Entreves, Maurizio Passerin, "Hannah Arendt", *The Stanford Encyclopedia of Philosophy* (Winter 2016 Edition), Edward N. Zalta (ed.), [online] Available at: https://plato.stanford.edu/archives/win2016/entries/arendt/

Edelman, (2017). *Edelman Trust Barometer Global Report*. [online] Available at: http://www.edelman.com/global-results/ [Accessed 12 Mar. 2017].

Facebook.com. (2017). *Building Global Community*. [online] Available at: https://www.facebook.com/notes/mark-zuckerberg/building-global-community/10154544292806634/ [Accessed 6 May 2017].

Giles, C. (2016). IFS brands Brexit camp's figures 'absurd'. *Financial Times.* [online] Available at: https://www.ft.com/content/b2858ec6-21aa-11e6-9d4d-c11776a5124d [Accessed 10 Jan. 2017].

Gottfried, J. and Shearer, E. (2016). *News Across Social Media Platforms 2016*. [online] Pew Research Center, p.2. Available at: http://www.journalism.org/2016/05/26/news-use-across-social-media-platforms-2016/ [Accessed 11 Mar. 2017].

Gottfried, J., Mitchell, A., and Kiley, J. (2014) *Political Polarization & Media Habits.* [online] Pew Research Center, p.3. Available at: http://www.journalism.org/2014/10/21/political-polarization-media-habits/10-20-2014-2-31-55-pm/ [Accessed 20 Jan. 2017].

Google, "Facts about Google and Competition," [online] Available at: http://www.google.com/competition/howgooglesearchworks.html [Accessed 2 Mar. 2017].

Grossman, L. (2014, December 15, Vol 184 No 23 US Edition). Inside Facebook's Plan to Wire the World, *Time Magazine.* Available at: http://time.com/facebook-world-plan/ [Accessed 10 Jan. 2017].

Higgins, K. (2013). Post-Truth Pluralism: The Unlikely Political Wisdom of Nietzsche. *The Breakthrough Institute*, [online] (3). Available at: https://thebreakthrough.org/index.php/journal/past-issues/issue-3/post-truth-pluralism [Accessed 10 Jan. 2017].

Krugman, P. (2011). The Post-Truth Campaign. *The New York Times*. [online] Available at: http://www.nytimes.com/2011/12/23/opinion/krugman-the-post-truth-campaign.html [Accessed 10 Jan. 2017].

Mance, H. (2016). Britain has had enough of experts, says Gove. *Financial Times*. [online] Available at: https://www.ft.com/content/3be49734-29cb-11e6-83e4-abc22d5d108c [Accessed 12 Mar. 2017].

Noonan, P. (2011). Show the Proof, Mr. President. *The Wall Street Journal*. [online] Available at: https://www.wsj.com/articles/SB10001424052748703992704576305392701601656 [Accessed 8 Mar. 2017].

Oxford Dictionaries. (2016). *Oxford Dictionaries Word of the Year 2016 is....*: [online] Available at: https://www.oxforddictionaries.com/press/news/2016/11/15/WOTY-16 [Accessed 22 Nov. 2016].

Pazzanese, C. (2016). Politics in a 'post-truth' age. *Harvard Gazette.* [online] Available at: http://news.harvard.edu/gazette/story/2016/07/politics-in-a-post-truth-age/ [Accessed 20 Jan. 2017].

Pew Research Center: Internet, Science & Tech. (2017). *79% of online adults (68% of all Americans) use Facebook*. [online] Available at: http://www.pewinternet.org/2016/11/11/social-media-update-2016/pi_2016-11-11_social-media-update_0-02/ [Accessed 6 May 2017].

Roberts, D. (2010). Post-truth politics. *Grist.* [online] Available at: http://grist.org/article/2010-03-30-post-truth-politics/ [Accessed 10 Jan. 2017].

Rodrik, D. (2007). *The inescapable trilemma of the world economy*. [online] Dani Rodrik's weblog. Available at: http://rodrik.typepad.com/dani_rodriks_weblog/2007/06/the-inescapable.html [Accessed 2 May 2017].

University of Cambridge. (2017). *'Psychological vaccine' could help immunise public against 'fake news' on climate change – study*. [online] Available at: http://www.cam.ac.uk/research/news/psychological-vaccine-could-help-immunise-public-against-fake-news-on-climate-change-study [Accessed 23 Apr. 2017].

@politifact. (2017). *Donald Trump's file*. [online] Available at: http://www.politifact.com/personalities/donald-trump/ [Accessed 30 Apr. 2017].

Video

Vita Activa - The Spirit of Hannah Arendt. (2015). [DVD] Israel/Canada: Ada Ushpiz.

Appendix

ADVANCED SCIENCE NEWS
www.advancedsciencenews.com

Global Challenges
www.global-challenges.com

FULL PAPER

Inoculating the Public against Misinformation about Climate Change

Sander van der Linden, Anthony Leiserowitz, Seth Rosenthal, and Edward Maibach*

Effectively addressing climate change requires significant changes in individual and collective human behavior and decision-making. Yet, in light of the increasing politicization of (climate) science, and the attempts of vested-interest groups to undermine the scientific consensus on climate change through organized "disinformation campaigns," identifying ways to effectively engage with the public about the issue across the political spectrum has proven difficult. A growing body of research suggests that one promising way to counteract the politicization of science is to convey the high level of normative agreement ("consensus") among experts about the reality of human-caused climate change. Yet, much prior research examining public opinion dynamics in the context of climate change has done so under conditions with limited external validity. Moreover, no research to date has examined how to protect the public from the spread of influential misinformation about climate change. The current research bridges this divide by exploring how people evaluate and process consensus cues in a polarized information environment. Furthermore, evidence is provided that it is possible to preemptively protect ("inoculate") public attitudes about climate change against real-world misinformation.

1. Introduction

Although numerous independent assessments have found that the scientific community has reached a near-unanimous consensus on the reality of human-caused climate change,[1–4] the general public has become increasingly polarized on the issue, particularly in the United States.[5,6] This is problematic because addressing global climate change will require large-scale changes in human behavior and decision-making.[7]

Dr. S. van der Linden
Department of Psychology
University of Cambridge
Cambridge, UK CB2 3EB, UK
E-mail: sander.vanderlinden@psychol.cam.ac.uk
Dr. A. Leiserowitz, Dr. S. Rosenthal
Yale Program on Climate Change Communication
Yale University
New Haven, CT 06511, USA
Prof. E. Maibach
Center for Climate Change Communication
George Mason University
Fairfax, VA 22030, USA

DOI: 10.1002/gch2.201600008

Polarization can be amplified when the inherent uncertainty of science itself is used to cast doubt on the existence of a scientific consensus.[8] For example, ideologically motivated, vested-interest groups known as "Merchants of Doubt" have orchestrated influential "disinformation campaigns" in which they publicly dispute the scientific consensus on various issues, including human-caused climate change.[9,10] These campaigns have not only successfully undermined public understanding of the degree of scientific agreement on climate change, they have also increased existing political polarization[11] and limited deeper societal engagement with the issue.[10,12,13]

1.1. Perceived Scientific Consensus as a Gateway Cognition

One promising way to counteract the politicization of science is to highlight the strong scientific consensus about an issue when a scientific consensus exists.[8,14,15] For example, a large body of research has found that "perceived scientific agreement" is a key determinant of the public's opinion on climate change.[16–23] In a complex and uncertain world, people often look to experts for guidance.[24] Accordingly, research has found that in the absence of motivation to cognitively elaborate on a message, people tend to heuristically rely on consensus cues to form judgments about sociopolitical issues,[25–27] particularly because doing so is often socially adaptive, as "consensus implies correctness."[28] In fact, people prefer to take cues from the combined judgment of multiple experts.[29] As such, adopting consensus beliefs can improve judgment-accuracy and reduce the cost of learning by condensing complex science into a simple fact (e.g., "97% of climate scientists have concluded that human-caused global warming is happening"). At the same time, the politicization of science can undermine the influence of consensus information by triggering a motivation for (some) citizens to dismiss otherwise credible scientific evidence.[16,30] Furthermore, research finds that people's perception of expert consensus (even when correct) is easily undermined by anecdotal evidence and "false media balance," both of which can distort the actual weight of evidence.[31] Thus, in the face of political polarization, effectively communicating with the public about the scientific consensus requires knowledge about; (a) the way in which people attend to, process, and organize new information

and (b) the structural nature of the information environment in which people form judgments and opinions about climate change.

On one hand, research has offered ample evidence for instances in which confirmation bias and motivated reasoning can lead (some) people to selectively process information and reject evidence that runs contrary to prior beliefs or deeply held ideological worldviews.[32–36] For example, the cultural cognition thesis predicts that conveying scientific agreement about contested societal issues will only increase attitude polarization.[37]

On the other hand, scholars have questioned the validity of the cultural cognition thesis,[38,39] especially because the biased assimilation of information is just one of many ways by which people can orient themselves toward science and the environment.[40] A substantial body of research has found that communicating the degree of scientific agreement on contested societal issues, such as vaccines and climate change, can shift public perception of the scientific consensus, which in turn influences other key beliefs, such as the belief that climate change is happening, human-caused, and a serious issue that requires public action.[7,41]

People's subjective perceptions about what other groups believe (i.e., "metacognitions") often serve as informational judgment cues. Accordingly, many studies find that conveying the fact that most scientists are convinced that human-caused climate change is happening can increase perceived consensus and acceptance of anthropogenic climate change across the ideological spectrum, either directly or indirectly.[19,42–44] In particular, the gateway belief model (GBM) developed by van der Linden et al.[7] suggests that reducing the "gap" between people's subjective perception and the actual of level of normative agreement among influential referents (e.g., experts) can lead to small yet important changes in other key personal beliefs. Indeed, much social–psychological research has shown that debiasing people's perception of the norm often has a positive cascading effect on other personal beliefs and behaviors.[45,46] Yet, although highlighting scientific consensus can neutralize polarizing worldviews[19,44] and reduce motivated reasoning,[8] more mixed evidence has also been noted.[47]

1.2. Countering the Spread and Influence of Misinformation: Inoculation Theory

More generally, people often process conflicting informational cues at the same time.[48] Thus, although highlighting scientific agreement has been found effective under stylized conditions, its efficacy in the presence of real-world misinformation remains unclear.[49,50] Yet, evaluating this is important because the pairing of conflicting informational cues is an explicit opportunity to examine motivated cognition. To our knowledge, no research to date has examined if and how public beliefs about the scientific consensus on climate change are affected by, or can be protected against, "sticky" misinformation. In fact, researchers have recently conceptualized the process by which misinformation spreads through a population as a metaphorical "contagion."[51] A closely related term is a "meme," which is often described as an idea, behavior, or style that spreads from person to person within a culture.[52,53] In the context of global warming, a false meme can be thought of as an inaccurate mental belief (e.g., there is no consensus among climate scientist) that is transmitted (replicated) from one mind to another.[54] Because of their socially infectious nature, (false) memes are sometimes referred to as "thought contagions."[55]

The rate of cultural transmission, or infection, may be slowed through a process known as attitudinal inoculation. In medicine, resistance to a virus can be conferred by exposing someone to a weakened version of the virus (a vaccine)—strong enough to trigger a response (i.e., the production of antibodies), but not so strong as to overwhelm the body's immune system. The social–psychological theory of attitudinal inoculation[56] follows a similar logic: A threat is introduced by forewarning people that they may be exposed to information that challenges their existing beliefs or behaviors. Then, one or more (weakened) examples of that information are presented and directly refuted in a process called "refutational pre-emption" or "prebunking."[14] In short, attitudinal resistance is conferred by pre-emptively highlighting false claims and refuting potential counterarguments.

Although a large body of research on inoculation theory has demonstrated its efficacy[57] in a variety of applied contexts, most notably in the areas of health[58] and political campaigning,[59] inoculation theory has not been tested in the context of climate change. Moreover, prior inoculation theory research has primarily examined how positive attitudes toward simple "cultural truisms" can be maintained.[60] Yet, there are many issues, including climate change, where people have strongly differing pre-existing (political) attitudes. Accordingly, this study addresses the following two key research questions: (1) does the presence of misinformation "negate" the positive effect of communicating the scientific consensus on climate change? And if so, (2) is it possible to "inoculate" public attitudes about the degree of scientific consensus against (influential) misinformation? Drawing on prior research, we hypothesize that the process of inoculation will indeed protect pre-existing (positive) attitudes as well as help counteract motivated reasoning.

2. Method

Two studies were conducted to answer these research questions. In the first study, we used a nationally representative probability sample of the US population ($N = 1000$) to test several misinformation statements about the scientific consensus on human-caused climate change. The purpose of Study 1 was to identify the most influential and representative "countermessages" used by climate change opponents. In Study 2, we conducted a randomized online survey experiment using a large and diverse sample ($N = 2167$) from Amazon Mechanical Turk (Mturk) to test whether it is possible to "inoculate" people against such misinformation (see Part B in the Supporting Information for more information about Mturk). We employed a mixed design that compared a participant's pre–post (within-subject) estimate of the scientific consensus across (between) six different experimental conditions. An overview of the different experimental conditions is provided in **Table 1**.

Table 1. Overview of experimental conditions.

Experimental treatment conditions
1. Control group
2. Consensus ("pie chart") treatment (CT)
3. Countermessage (CM)
4. Consensus-treatment followed by countermessage (CT | CM)
5. Consensus-treatment + general inoculation followed by countermessage (In1 | CM)
6. Consensus-treatment + detailed inoculation followed by countermessage (In2 | CM)

Table 2. Sample characteristics.

Sample	(N = 2167)	Census
Demographic characteristics		
Gender (% female)	56	51
Age 18–65+ (modal bracket)	25–44	38
Education (% college degree or higher)	50	32
Region (% Northeast)	17.3	17.7
Party affiliation (% Democrat)	37	32

Note: US population 2013 census estimates. Age (median). Political party affiliation estimate by Pew (2013).

In short, we hypothesized that communicating the scientific consensus (by itself) would have a positive influence on perceived scientific agreement (condition 2), whereas the countermessage (by itself) would have a negative impact (condition 3). We also hypothesized that the presence of counterinformation would diminish the general efficacy of the consensus message (condition 4). Finally, as a direct test of inoculation, we hypothesized that both a general and more specific inoculation message would protect the consensus-treatment against the misinformation statement (conditions 5 and 6). Participants in the control group (condition 1) solved a neutral word puzzle.

Study 1 investigated which countermessage was most influential with the American public. Six common statements were tested (see Part A in the Supporting Information for a full description of the study). Respondents ranked each statement on two dimensions: familiarity and persuasiveness. Out of all statements, respondents were most familiar with and convinced by the argument that "there is no consensus on human-caused climate change." This argument was based on a real disinformation campaign ("The Oregon Global Warming Petition Project," 2007)[61] which hosts a website claiming that; "over 31 000 American scientists have signed a petition stating that there is no scientific evidence that the human release of carbon dioxide will, in the foreseeable future, cause catastrophic heating of the Earth's atmosphere." An exact copy of the petition was used as the main countermessage in Study 2, but all identifying source-information was redacted to prevent confounding effects between the source and the message.

Prior research has found that the scientific consensus is effectively communicated in the form of a pie chart stating: "97% of climate scientists have concluded that human-caused climate change is happening."[44] To ensure a representative study design in which the messages shown to participants reflect real-world content, we mimicked the design of the pie chart used by the "Consensus Project"[62]—because this graphic has frequently been featured in the media. The inoculation messages consisted of two components: (a) warning of an impending threat/attack on one's prior beliefs and attitudes (affective component) and (b) a pre-emptive refutation (cognitive component). In the shorter, general version, respondents were first warned: "some politically motivated groups use misleading tactics to try to convince the public that there is a lot of disagreement among scientists." This claim was then debunked by reiterating that scientific research has found that among climate scientists, there is virtually no disagreement that humans are causing climate change. In the longer, more specific inoculation condition, additional arguments were added to debunk the Oregon Petition specifically (e.g., by highlighting that some of the signatories are fraudulent, including Charles Darwin and members of the Spice Girls, that fewer than 1% of the signatories have a background in atmospheric/climate science, etc.).

The design of the experiment follows a linear-additive format (Table 1)—i.e., in both the consensus- and countermessage-only conditions, respondents only read the relevant message in isolation. In the general inoculation condition, respondents first read the consensus statement, followed by a general inoculation, before being exposed to the countermessage. In the detailed inoculation condition, respondents were first shown the consensus message, followed by the general inoculation and then the more detailed inoculation message, before being exposed to the countermessage. This design allowed us to assess the marginal benefit of the (two) inoculation strategies. A full description of all treatments used in Study 2 is provided in part B of the Supporting Information.

The main dependent variable is a respondent's (pre and post) estimate of the current level of scientific agreement on human-caused climate change (0%–100%). In addition, subjects were also asked how certain they are about their estimate, how likely they think it is that climate change is happening, whether they believe it is human-caused, how much they worry about the issue, and whether people should be doing more or less about climate change. To disguise the true purpose of the experiment, participants were told that they would randomly be asked about 1 out of 20 possible media topics (the topic was always the same). All subjects were presented with the same question set before (pre) and after (post) the treatments were administered. A manipulation check was also included to verify the efficacy of the treatment effects. An overview of the sample characteristics (and census data for comparison purposes) is provided in **Table 2**. A description of the MTurk procedure and platform is provided in Part B of the Supporting Information.

3. Results

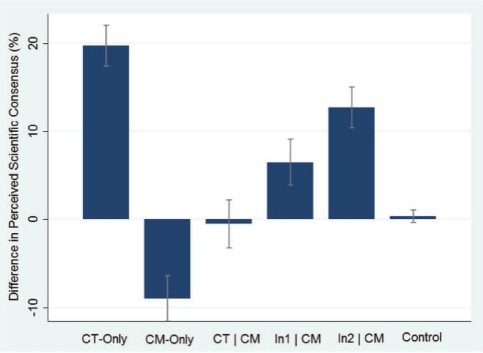
All of the hypotheses were fully supported by the data. Descriptive within-subject differences in perceived scientific agreement are reported in **Table 3** and **Figure 1**. As expected, no meaningful pre–post change in perceived consensus was observed in the control group (M_{diff} = 0.35). The consensus-treatment (CT)

Table 3. Descriptive overview of mean (pre–post) differences in perceived scientific consensus by treatment group.

Treatment conditions	Perceived scientific consensus [%] (pretest mean)	Perceived scientific consensus [%] (post-test mean)	Difference (post-pretest) (standard error)	Cohen's D (vs control)
Control group ($n = 360$)	72.18	72.53	0.35 (0.36)	–
Consensus-treatment (CT) ($n = 338$)	70.58	90.30	19.72 (1.17)	1.23
Countermessage (CM) ($n = 392$)	72.04	63.05	−8.99 (1.31)	0.48
Consensus-treatment (CT) | CM ($n = 352$)	73.48	72.99	−0.51 (1.39)	0.04
CT + general inoculation | CM ($n = 363$)	73.29	79.76	6.47 (1.32)	0.33
CT + detailed inoculation | CM ($n = 362$)	71.23	83.94	12.71 (1.17)	0.75

alone elicited a large increase in perceived scientific agreement ($M_{diff} = 19.72$). In contrast, the (misinformation) countermessage (CM) had a substantial negative influence ($M_{diff} = -8.99$) when presented on its own. When participants viewed the messages sequentially (CT | CM), the informational value of the consensus-treatment was negated completely ($M_{diff} = 0.51$). As hypothesized, the general (In1 | CM) and detailed (In2 | CM) inoculation interventions were each successful in preserving much of the positive effect of the consensus message in the presence of counterinformation ($M_{diff} = 6.47$ and 12.71—or one-third and two-thirds of the initial consensus-treatment effect, respectively).

To test whether these differences are statistically significant, an analysis of covariance (ANCOVA) was conducted with the post-test as the dependent variable and the pretest as the covariate. The ANCOVA revealed a significant main effect for the treatment groups, $F(5, 2160) = 82.10$, mean squared error (MSE) = 443.92, $p < 0.001$, $\eta_p^2 = 0.16$. Post hoc comparisons on the adjusted marginal means using the Tukey honest significant difference (HSD) test indicated significant between-group differences for all the previously stated comparisons ($p < 0.001$). There was one exception, as expected, the difference between the control group ($\bar{x} = 0.35$, standard error (SE) = 0.36) and the "neutralizing" (CT | CM) condition ($\bar{x} = 0.51$, SE = 1.39) was not significant.



Note: CT = Consensus Treatment, CM = Counter-Message, In1 = General Inoculation, In2 = Detailed Inoculation. Error bars represent 95% confidence intervals.

Figure 1. Overview of mean (pre–post) differences in perceived scientific consensus by treatment group. Note: CT = consensus treatment, CM = countermessage, In1 = general inoculation, In2 = detailed inoculation. Error bars represent 95% confidence intervals.

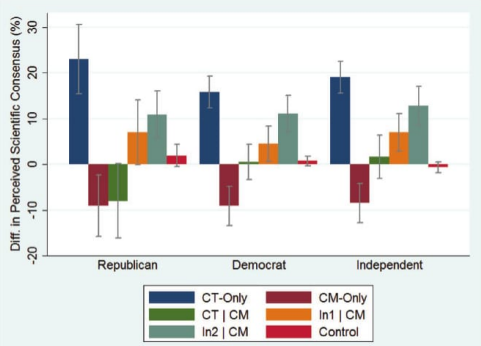
A number of manipulation checks were performed to assess the consistency of the results. At the end of the survey, participants were asked, using a seven-point scale, to indicate how convincing they found the experimental treatments. Respondents who only viewed the consensus-treatment thought the message was significantly more convincing than those who viewed the consensus message in the presence of counterinformation ($\bar{x} = 5.11$ vs $\bar{x} = 4.80$), $t(1237) = 2.42$, $p < 0.01$. Similarly, participants who viewed the counterinformation by itself thought it was significantly more convincing than when viewed in the presence of the consensus-treatment ($\bar{x} = 3.71$ vs $\bar{x} = 3.26$), $t(1037) = 3.13$, $p < 0.01$. In a similar vein, respondents who found the consensus-treatment more convincing (median split) adjusted their estimate of the scientific consensus at a higher rate than those who were less convinced ($\bar{x} = 8.18 > \bar{x} = 5.86$), $t(1526) = 1.72$, $p < 0.05$).

Next, within-subject differences in perceived consensus were examined for each treatment condition by political party identification (**Table 4**). On the whole, the pattern is strikingly similar across party lines, i.e., the consensus-treatment on its own elicits the greatest change, the countermessage by itself has a negative effect, sequential messaging neutralizes the positive effect of the consensus-treatment while the general and specific inoculation conditions both successfully preserve similar proportions of the treatment-effect across political party affiliation.

Yet, two observed differences are noteworthy. First, the effect of the consensus-only treatment is somewhat larger (descriptively) for Republicans ($M_{diff} = 23.00$) and Independents ($M_{diff} = 19.05$) compared to Democrats ($M_{diff} = 15.78$). Second,

Table 4. Descriptive overview of mean (pre–post) differences in perceived scientific consensus by political party affiliation.

Treatment conditions	Democrat ($n = 788$)	Independent ($n = 646$)	Republican ($n = 390$)
Control group	0.74	−0.67	1.90
Consensus-treatment (CT)	15.78	19.05	23.00
Countermessage (CM)	−9.11	−8.50	−9.03
Consensus-treatment (CT) | CM	0.57	1.61	−8.03
CT + general inoculation | CM	4.48	6.97	6.92
CT + detailed inoculation | CM	11.08	12.79	10.75



Note: CT = Consensus Treatment, CM = Counter-Message, In1 = General Inoculation, In2 = Detailed Inoculation. Error bars represent 95% confidence intervals.

Figure 2. Overview of mean (pre–post) differences in perceived scientific consensus by political party affiliation. Note: CT = consensus treatment, CM = countermessage, In1 = general inoculation, In2 = detailed inoculation. Error bars represent 95% confidence intervals.

while the presence of misinformation "neutralizes" the effect of the consensus-treatment for both Democrats ($M_{diff} = 0.57$) and Independents ($M_{diff} = 1.61$), it has a negative effect on Republican respondents ($M_{diff} = -8.03$). In other words, on average, only Republicans reduced their consensus estimates when they viewed the consensus message followed by the counterinformation. Accordingly, an ANCOVA revealed a small but significant interaction between the treatment conditions and political party, $F(11, 1805) = 2.12$, MSE = 415.77, $p = 0.02$, $\eta_p^2 = 0.01$). Main results are presented in Table 4 and **Figure 2**.

A main effect was also found for belief certainty, $F(5, 2160) = 52.94$, MSE = 2.09, $p < 0.01$, $\eta_p^2 = 0.11$. Post hoc comparisons using the Tukey Honest Significant Difference (HSD) test indicated that the consensus-treatment and inoculation conditions significantly increased belief certainty of consensus estimates compared to the counterinformation and control groups ($p < 0.01$). On average, the consensus-treatment (by itself) increased belief certainty (1–7 scale) by ($M_{diff} = 1.63$, SE = 0.11) versus ($M_{diff} = 0.62$, SE = 0.09) in the presence of counterinformation. As expected, much of the initial effect was preserved in both the general and more detailed inoculation conditions ($M_{diff} = 0.90$, SE = 0.09 and $M_{diff} = 1.21$, SE = 0.10). Finally, the treatments did not have notable main effects on other key beliefs about climate change—with the exception of normative support for public action, $F(5, 2160) = 13.54$, MSE = 0.41, $p < 0.01$, $\eta_p^2 = 0.03$. Compared to the control group ($p < 0.05$), the consensus-message (by itself) had a small positive main effect ($\bar{x} = 0.14$, SE = 0.05).[63]

4. Discussion

This study finds that public attitudes about climate change can be effectively "inoculated" against influential misinformation. In particular, our results point to three important conclusions. First, consistent with prior work, we find strong support for the efficacy of communicating the scientific consensus on human-caused climate change.[7,19,38,43,44,47] Second, this research further extends these findings by presenting information about the consensus in a politically "contested" information environment, that is, countered by a real petition claiming that there is no scientific consensus on human-caused climate change. As such, we help address the criticism that prior experiments "do not realistically model the real-world dynamics of opinion formation relevant to the climate change dispute" (ref. [49], p. 16).

Results indicate that the positive influence of the "consensus message" is largely negated when presented alongside such misinformation. Thus, in evaluating the efficacy of consensus messaging, scholars should recognize the potent role of misinformation in undermining real-world attempts to convey the scientific consensus. Third, the current study also found that much of the initial consensus-effect was preserved (up to two-thirds) by the inoculation messages, which, importantly, proved equally effective across the political spectrum. Accordingly, "inoculation" is a promising approach to protect public understanding of the extant scientific consensus that human-caused climate change is happening, which, as prior research has shown, acts as an important "gateway" cognition to other keys beliefs about the issue.[7,17]

Some scholars have argued that because people sometimes engage in "identity-protective motivated reasoning," highlighting scientific consensus will only cause or exacerbate existing attitude polarization.[37] Yet, "true" attitude polarization in response to mixed evidence is relatively infrequent (ref. [64–66] and recent research suggests that political polarization on climate change is more likely the result of selective exposure to partisan media rather than motivated reasoning alone.[48,50,67,68] Moreover, this study finds no support for the hypothesis that inoculating people about the scientific consensus backfires among those who are ideologically predisposed to be skeptical about climate change (e.g., Republicans), which is both promising and consistent with other research on inoculation theory (e.g., see ref. [60]). In fact, we extend inoculation research in a novel direction by testing its efficacy in the context of a highly politicized issue.

This is not to say that the motivated processing of political information does not occur.[33] For example, simple corrections can backfire among the targeted ideological group.[69] Other recent research has suggested that communicating the scientific consensus on climate change may backfire among strong "free-market" endorsers.[47] Similarly, we find that when the consensus and countermessages were presented sequentially, Republican respondents were, on average, indeed more likely to weigh the "no consensus" treatment more heavily in their subsequent judgment of the scientific consensus. Yet, it is important to note that even in this case, highlighting scientific agreement is still beneficial, as the magnitude of the observed "negative effect" among Republicans is actually less (or at the very least, no different) from what it would have been if no consensus information had been presented at all. In other words, Republican respondents who only saw the countermessage decreased their estimate of the scientific consensus more than Republican respondents who saw both messages. Thus, we find no evidence that conveying strong normative agreement among experts "backfires" with potentially skeptical audiences.[70]

More importantly, both inoculation messages proved effective in protecting the positive effect of the consensus message

and shifted the opinions of Republicans, Independents, and Democrats alike in a direction consistent with the conclusions of climate science. Moreover, these results are consistent with other recent research, which has also found that warning people pre-emptively of counterattitudinal messages can help reduce directional motivated reasoning (e.g., see ref. [8]).

Practically, these findings suggest that, when possible, communicating the scientific consensus on human-caused climate change should be accompanied by information that forewarns the public that politically or economically motivated actors may seek to undermine the findings of climate science. In addition, audiences should be provided with the "cognitive repertoire"—a basic explanation about the nature of disinformation campaigns— to pre-emptively refute such attempts. In short, these findings add to a growing body of research reporting that communicating a social fact, such as the high level of agreement among experts about the reality of human-caused climate change, can be an effective and depolarizing public engagement strategy.[7,19,43,44,47]

Finally, this study is of course not without limitations. First, we were unable to assess the rate of decay (if any) of the effect of the inoculation messages. However, other recent research has indicated that the positive effects of attitudinal inoculation do persist over time (e.g., ref. [71]), although more longitudinal research is needed. Second, while great care was taken to ensure a representative design, laboratory research is limited in its ability to simulate the structure of an individual's information environment. Thus, we look forward to and encourage future research to test and extend these findings in real-world (field) settings.

5. Conclusion

In a large experiment ($N = 2167$), we show that communicating the scientific consensus on human-caused climate change significantly increases public perception of the expert consensus by about 20 percentage points (Bar I, CT-Only). Importantly, the introduction of (mis)information contesting the existence of a scientific consensus neutralizes the positive effect of highlighting normative expert agreement (Bar III, CT|CM). Further, in the absence of any cues about the actual level of consensus, the presentation of misinformation significantly undermines the public's perception of the level of scientific agreement (−9 points; Bar II, CM). Finally, pre-emptively warning people about politically motivated attempts to spread misinformation helps promote and protect ("inoculate") public attitudes about the scientific consensus (Bars IV and V, In1 | CM and In2 | CM).

Supporting Information

Supporting Information is available from the Wiley Online Library or from the author.

Acknowledgements

The authors acknowledge the Grantham Foundation for the Protection of the Environment, the 11th Hour Foundation, the Energy Foundation, and the Andlinger Center for Energy and the Environment for their generous support. All authors contributed to the conceptualization and design of the study and research questions. S. van der Linden performed the data analysis and wrote the first draft of the manuscript. A.L., S.R., and E.M. wrote and revised parts of the manuscript. The authors declared no competing financial interests.

Received: November 21, 2016
Published online: January 23, 2017

[1] W. R. Anderegg, J. W. Prall, J. Harold, S. H. Schneider, *Proc. Natl. Acad. Sci. USA* **2010**, *107*, 12107.
[2] J. Cook, N. Oreskes, P. T. Doran, W. R. Anderegg, B. Verheggen, E. W. Maibach, D. Nuccitelli, *Environ. Res. Lett.* **2016**, *11*, 048002.
[3] P. T. Doran, M. K. Zimmerman, *Eos, Trans. Am. Geophys. Union* **2009**, *90*, 22.
[4] J. L. Powell, *Bull. Sci., Technol. Soc.* **2016**, *35*, 121.
[5] A. M. McCright, R. E. Dunlap, *Sociol. Q.* **2011**, *52*, 155.
[6] A. M. McCright, R. E. Dunlap, S. T. Marquart-Pyatt, *Environ. Polit.* **2016**, *25*, 338.
[7] S. van der Linden, E. Maibach, A. Leiserowitz, *Perspect. Psychol. Sci.* **2015**, *10*, 758.
[8] T. Bolsen, J. Druckman, *J. Commun.* **2015**, *65*, 745.
[9] S. W. Elsasser, R. E. Dunlap, *Am. Behav. Sci.* **2012**, *57*, 754.
[10] N. Oreskes, E. M. Conway, *Merchants of Doubt*, Bloomsbury, USA **2011**.
[11] R. E. Dunlap, A. M. McCright, *Environ.: Sci. Policy Sustainable Dev.* **2008**, *50*, 26.
[12] R. E. Dunlap, A. M. McCright, in *The Oxford Handbook of Climate Change and Society* (Eds: J. S. Dryzek, R. B. Norgaard, D. Schlosberg), Oxford University Press, Oxford, UK **2011** pp. 144–160.
[13] H. Washington, J. Cook, *Climate Change Denial: Heads in the Sand*, Routledge: Earthscan, London, UK and New York, USA **2013**.
[14] J. Cook, in *Oxford Encyclopedia of Climate Change Communication* (Ed: M. Nisbet), Oxford University Press, Oxford, UK, **2016**, doi: 10.1093/acrefore/9780190228620.013.314.
[15] E. Maibach, S. van der Linden, *Environ. Res. Lett.* **2016**, *11*, 091003.
[16] M. Aklin, J. Urpelainen, *Environ. Sci. Policy* **2014**, *38*, 173.
[17] D. Ding, E. W. Maibach, X. Zhao, C. Roser-Renouf, A. Leiserowitz, *Nat. Clim. Change* **2011**, *1*, 462.
[18] M. J. Hornsey, E. A. Harris, P. G. Bain, K. S. Fielding, *Nat. Clim. Change* **2016**, *6*, 622.
[19] S. Lewandowsky, G. E. Gignac, S. Vaughan, *Nat. Clim. Change* **2013**, *3*, 399.
[20] A. Malka, J. A. Krosnick, G. Langer, *Risk Anal.* **2009**, *29*, 633.
[21] A. M. McCright, R. E. Dunlap, C. Xiao, *Clim. Change* **2013**, *119*, 511.
[22] J. P. Schuldt, A. R. Pearson, *Clim. Change* **2016**, *136*, 495.
[23] S. L. van der Linden, A. A. Leiserowitz, G. D. Feinberg, E. W. Maibach, *PloS One* **2015**, *10*, e0118489.
[24] R. Cialdini, S. Martin, N. Goldstein, *Behav. Sci. Policy* **2015**, *1*, 21.
[25] P. R. Darke, S. Chaiken, G. Bohner, S. Einwiller, H. P. Erb, J. D. Hazlewood, *Pers. Soc. Psychol. Bull.* **1998**, *24*, 1205.
[26] D. Mutz, *Impersonal Influence: How Perceptions of Mass Collectives Affect Political Attitudes*, Cambridge University Press, Cambridge, UK **1998**.
[27] C. Panagopoulos, B. Harrison, *North Am. J. Psychol.* **2016**, *18*, 405.
[28] A. W. Kruglanski, W. Stroebe, in *The Handbook of Attitudes* (Eds: D. Albarracin, B. T. Johnson, M. P. Zanna), Psychology Press, New York, USA and London, UK **2005** pp. 323–368.
[29] A. E. Mannes, J. B. Soll, R. P. Larrick, *J. Pers. Soc. Psychol.* **2014**, *107*, 276.
[30] S. van der Linden, *Pers. Individ. Differ.* **2015**, *87*, 171.
[31] D. Koehler, *J. Exp. Psychol.: Appl.* **2016**, *22*, 24.

[32] T. Bolsen, J. N. Druckman, F. L. Cook, *Polit. Behav.* **2014**, *36*, 235.
[33] P. S. Hart, E. C. Nisbet, *Commun. Res.* **2012**, *39*, 701.
[34] S. Lewandowsky, K. Oberauer, *Curr. Dir. Psychol. Sci.* **2016**, *25*, 217.
[35] Z. Kunda, *Psychol. Bull.* **1990**, *108*, 480.
[36] C. S. Taber, M. Lodge, *Am. J. Polit. Sci.* **2006**, *50*, 755.
[37] D. M. Kahan, H. Jenkins-Smith, D. Braman, *J. Risk Res.* **2011**, *14*, 147.
[38] M. A. Ranney, D. Clark, *Top. Cognit. Sci.* **2016**, *8*, 49.
[39] S. van der Linden, *Sci. Commun.* **2016**, *38*, 128.
[40] J. Cook, P. Jacobs, *Rep. Natl. Cent. Sci. Educ.* **2014**, *34*, 3.1.
[41] S. L. van der Linden, C. E. Clarke, E. W. Maibach, *BMC Public Health* **2015**, *15*, 1207.
[42] T. Deryugina, O. Shurchkov, *PloS One* **2016**, *11*, e0151469.
[43] T. A. Myers, E. Maibach, E. Peters, A. Leiserowitz, *PloS One* **2015**, *10*, e0120985.
[44] S. L. van der Linden, A. A. Leiserowitz, G. D. Feinberg, E. W. Maibach, *Clim. Change* **2014**, *126*, 255.
[45] M. Haines, S. Spear, *Am. J. Coll. Health* **1996**, *45*, 134.
[46] M. Tankard, B. Paluck, *Soc. Issues Policy Rev.* **2016**, *10*, 181.
[47] J. Cook, S. Lewandowsky, *Top. Cognit. Sci.* **2016**, *8*, 160.
[48] J. Krosnick, B. MacInnis, in *Social Psychology and Politics* (Eds: J. P. Forgas, K. Fiedler, W. D. Crano), Taylor and Francis: Psychology Press, New York, USA and London, UK **2015**, pp. 75–90.
[49] D. M. Kahan, *Polit. Psychol.* **2015**, *36*, 1.
[50] A. M. McCright, M. Charters, K. Dentzman, T. Dietz, *Top. Cognit. Sci.* **2016**, *8*, 76.
[51] C. Budak, D. Agrawal, A. El Abbadi, in *Proc. of the 20th Int. Conf. on World Wide Web*, ACM, Hyderabad, India **2011**, pp. 665–674.
[52] R. Brodie, *Virus of the Mind: The New Science of the Meme*, Integral Press, New York, NY, USA **1996**,
[53] R. Dawkins, *The Selfish Gene*, Oxford University Press, Oxford, UK **1976**.
[54] J. Harich, *The dueling loops of the political powerplace*, http://www.thwink.org/sustain/articles/005/DuelingLoops.pdf (accessed: November, 2016).
[55] A. Lynch, *Thought Contagion: How Belief Spreads through Society*, Basic Books, New York **1996**.
[56] D. Papageorgis, W. J. McGuire, *J. Abnorm. Soc. Psychol. 62*, 475. **1961**.
[57] J. A. Banas, S. A. Rains, *Commun. Monogr.* **2010**, *77*, 281.
[58] M. Pfau, in *Designing Health Messages: Approaches from Communication Theory and Public Health Practice* (Eds: E. Maibach, R. Parrott), SAGE Publishing, Thousand Oaks, CA, USA **1995**, pp. 99–113.
[59] M. Pfau, M. Burgoon, *Hum. Commun. Res.* **1988**, *15*, 91.
[60] M. L. Wood, *Hum. Commun. Res.* **2007**, *33*, 357.
[61] Oregon Global Warming Petition Project, http://www.petitionproject.org/ (accessed: August, 2016).
[62] Consensus Project (CP, 2013), http://theconsensusproject.com/ (accessed: August, 2016).
[63] The main effect of the consensus message on normative support for public action is, however, fully mediated when perceived scientific consensus is included as a covariate in the model.
[64] A. Guess, A. Coppock, *Back to Bayes: Confronting the Evidence on Attitude Polarization, Columbia University,* New York, http://polisci.columbia.edu/files/polisci/u227/GuessCoppock_Back2BayesV3.pdf (accessed: September, 2016).
[65] T. Wood, E. Porter, *The Elusive Backfire Effect: Mass Attitudes' Steadfast Factual Adherence*, https://ssrn.com/abstract=2819073 (accessed: November, 2016).
[66] D. Kuhn, J. Lao, *Effects of evidence on attitudes: Is polarization the norm? Psychol. Sci.* **1996**, *7*, 115.
[67] L. Feldman, E. W. Maibach, C. Roser-Renouf, A. Leiserowitz, *Int. J. Press/Polit.* **2011**, *17*, 3.
[68] A. A. Leiserowitz, E. W. Maibach, C. Roser-Renouf, N. Smith, E. Dawson, *Am. Behav. Sci.* **2013**, *57*, 818.
[69] B. Nyhan, J. Reifler, *Polit. Behav.* **2010**, *32*, 303.
[70] This finding is robust to differences in measurement, i.e., the observed empirical patterns replicate when political ideology or prior attitudes toward climate change are used instead of political party identification (please see Supporting Information D).
[71] J. Niederdeppe, K. Heley, C. L. Barry, *J. Commun.* **2015**, *65*, 838.

