# A Different Approach to Echo Chamber and Filter Bubble: What are Citizens Typing in a Google Search Bar?

## Abstract

## Introduction

Recently, there has been growing interest in how the Internet has amended political information seeking. In his seminal book, Schroeder (2018) has stated that this information structure encompasses almost all existing political information in one place. Scholars have concluded that online political information is easy to access, almost unlimited, and interactive. That is, citizens can “pull” political information instead of having it “pushed” to them (Hargittai et al., 2012; Neuman et al., 2012). This new paradigm seems to be a promise for a functioning democracy (Hindman, 2009).

However, scholars have also warned about the awakening of the selective exposure hypothesis. Indeed, they predicted that the features of the Internet would strengthen selectivity. Foremost, Sunstein (2001) has argued that citizens will construct echo chambers to only face consonant political information, i.e., self-selected personalization. Then, Pariser (2011) has stated that personal algorithm will filter out discrepant political information and keep citizens into like-minded bubbles, i.e., pre-selected personalization. Hence, the reinforcement of personalized communication is a potential threat for democracy, e.g., polarized citizenry, risk of self-reinforcement (Prior, 2007; Zuiderveen Borgesius et al., 2016).

In this new paradigm, a search engine is an information intermediary. It filters, prioritizes, and personalizes information sources to ease information seeking (Bozdag, 2013; Courtois et al., 2018). Though it does not generate content (Schroeder, 2018), most citizens use a search engine as a compass to seek political information online (Stephens et al., 2014). Citizens type in queries and obtain a personalized and abridged list of political information sources (Flaxman et al., 2016).

Despite the broad consensus that search engine is seminal for online political information seeking, surprisingly little is known about citizens’ search queries. Previous research concentrated on the selection of political information in the search engine result’s page (SERP), and disregarded search queries. That is, prior to self-selecting political information from the pre-selected list of information sources, citizens can inform the search engine’s algorithm about their search expectations by typing terms in a search bar. The aim of this study was then to determine what are citizens typing in the search bar when seeking political information online. Are they typing generic political terms because they trust the algorithm know which information source is the most relevant for them? Are they typing precise political terms because they know precisely which type of information source they want? Or are they already selective in their search instructions to obtain consonant and avoid dissonant political information?

From a democratic perspective, what citizens type in the search bar is not only crucial for the algorithmic personalization, but is also insightful about their selective exposure strategy. In other words, an analysis of political search queries provides a different approach to the study of the echo chamber (Sunstein, 2001) and the filter bubble hypotheses (Pariser, 2011). An encompassing analysis of online political information seeking strategy is pivotal to ensure an enlightened participation of citizens in a democracy (Dahl, 1989; Strömbäck, 2005; Vowles, 2013).

This study examines citizens’ search queries in a referendum context. Foremost, it operates Tate’s (2010) classification of information sources in a SERP to compare search query types. Then, it pinpoints individual-level drivers behind the search query types, and isolate their influence on information selection in a SERP. To do so, it exploits two mock Google webpage experiments during two real-world referendums in Switzerland in 2017 and 2019. A manual content analysis of respondents’ search queries (N=740 ; N=1022) evaluates what citizens type in a search bar when seeking political information. First, the results emphasize the prevalence of informational search queries. Second, a binary logistic regression isolates age, sex, and political knowledge as moderator variables of search query types. Third, a binary logistic regression indicates that what citizens type in the search bar has no influence on what they select in the SERP. At the end, this study contributes to the research agenda on political information selection in a search engine environment. Instead of focusing only on what citizens select in a SERP, it concentrates on what citizens type in the search bar to obtain an encompassing understanding of political information seeking online.

## Selective Exposure on the Internet

The Internet exacerbated research about selective exposure hypothesis. This hypothesis posits that citizen facing congruent and discrepant messages will either reduce dissonance (defensive avoidance) or add consonant information (confirmation bias) to reach a cognitive equilibrium (see for example Garrett, 2009; Knobloch-Westerwick & Kleinman, 2012; Stroud, 2011; see for a review Smith et al., 2008). It draws upon the cognitive dissonance theory (Festinger, 1957), and has been furthered by the motivated political reasoning perspective (Taber & Lodge, 2006).

Multiple scholars foresaw a reinforcement of selectivity on the Internet (Galston 2003; Prior 2007). Hence, the “pull” dimension of the Internet simplifies individual’s tailoring of information (Knobloch-Westerwick and Kleinman 2012). Thus, Bennett and Iyengar (2008) predicted that Internet will narrow political horizons of citizens. Similarly, Sunstein (2001) forecasted the construction of echo chambers in which individuals confront only like-minded political content.

However, literature fand mixed evidence. On one hand, empirical evidence indicated that individuals screen out dissonant information in an online information environment (Bennett and Iyengar 2008; Iyengar et al. 2008; Iyengar and Hahn 2009). Haidt (2012) specified that individuals use the Internet to avoid alternative opinions and to fill their “matrix” with only like-minded information. Knobloch-Westerwick, Johnson and Westerwick (2014) confirmed that individuals prefer consonant over discrepant messages. Additionally, Schulz and Roessler (2012) indicated that individuals are unable to exploit the diversity of viewpoints easily accessible online. On the other hand, some scholars considered that fears of an ever-increasing polarization and fragmentation of citizenry due to selective exposure are exaggerated (Garrett 2009; Valentino et al. 2009). Individuals do not conceal themselves from all discrepant information just because they can (Gentzkow and Shapiro 2010; Holbert, Garrett and Gleason 2010). Interestingly, Garrett and Stroud (2014) and Song et al. (2020) emphasized that the online media environment allows an easier access not only to consonant, but also to discrepant political information.

## Selective Exposure and Search Engines

Scholars suggested that search engines outpace all other applications to obtain political information online (Lee et al., 2016; Stroud and Muddiman, 2013). Literature proved that approximately 90% of users employ a search engine as a compass to navigate the Internet, including the political information it provides (Hindman, 2009; Lee et al., 2016; Scharkow & Vogelgesang, 2011; Stroud & Muddiman, 2013).

In a search engine result’s page (SERP) political information selection is driven by self-selection, i.e., choice personalization, and pre-selection, i.e., algorithmic personalization (Dubois & Blank, 2018; Zuiderveen Borgesius et al., 2016).

First, Internet users can exploit the “pull” dimension of a search engine by either typing asearch query in a bar to inform the search engine about their information expectations, or self-select information sources from the pre-selected list. On one hand, citizens type search queries to feed algorithmic personalization. Thus, they can tailor the pre-selection to avoid discrepant political information and obtain mostly consonant political information. That is, a search query informs about the selective exposure intentions of citizens. On the other hand, users self-select political information sources from the pre-selected SERP. There is considerable evidence to support that ranking, i.e., algorithmic personalization, strongly affects users’ self-selection of political information. Hence, Internet users trust search engine will supply their personal most relevant information source on top of the search engine result page (SERP) (Ghose et al., 2019; Kammerer & Gerjets, 2014; Lorigo et al., 2018; Pan et al., 2007; Trevisan et al., 2018; Unkel & Haas, 2017). This digital bandwagon effect fosters the selection of political information sources ranked on top of the SERP and trumps the selective exposure hypothesis.

Second, the filter bubble hypothesis extended research on selective exposure to algorithmic personalization. This hypothesis postulates that algorithmic personalization will filter out discrepant political information to keep citizens into like-minded bubbles (Pariser, 2011). On one hand, Muddiman (2013) and Hong and Kim (2018) have inferred that search engines display mainstream and political information sources read by others because the algorithmic personalization follow a market model. On the other hand, communication scholars have concluded that search engines provide diverse political information sources and that the filter bubble hypothesis is exaggerated (Fletcher & Nielsen, 2017; Haim et al., 2017; Haas & Unkel, 2017; Steiner et al., 2020).

Though its opaqueness (Courtois et al., 2018; Schroeder, 2018; Steiner et al., 2020), Cho et al. (2020) concluded that the algorithmic personalization is guided by the online behaviour of the user, i.e., content-based filtering, and the cross-section of other users’ online behavior, i.e., collaborative filtering. If a search engine follows a market model, its objective is then to provide users with their personal most relevant sources results to ensure its economic success.

Hence, this arrangement pinpoints the pivotal influence of the user’s search query to inform the algorithm about their interests and preferences. That is, a search query also guides the algorithmic personalization.

* Trouver de la littéraure sur search query (au moins un peu) (fouiller dans mes articles)
* Research question / Hypotheses: Qu’est-ce que je mesure exactement? Quel est mon intention ?
* Preéciser que l’on se concentre uniquement wur what they type, what they select. Not on the information processing (voir article MB-IST)

## Methods and Data