

## **The Ultimate Mind Control Machine: Summary of a Decade of Empirical Research on Online Search Engines**

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### **Abstract**

In 2012, prompted by research that had been conducted in the marketing field, I conjectured that the opinions and votes of undecided voters could be shifted to one candidate by presenting them with search results biased to favor that candidate – that is, by placing search results at or near the top of the list which linked to web pages that made that candidate look better than the opposing candidate. In early 2013, I conducted a randomized, controlled experiment to test this idea, predicting that I could shift voting preferences by 2 or 3 percent in the direction of the bias. The actual shift turned out to be 43%, which I thought was an error. In a second experiment, the shift was 66%. In 2015, I published a series of five experiments on this effect – by then, the "Search Engine Manipulation Effect" (SEME) – which (a) confirmed the magnitude of the effect, (b) showed that the manipulation could be masked so that users were unaware that they were seeing biased search results, and (c) showed that the few people who could detect that bias shifted even farther in the direction of the bias. Subsequent SEME research has shown: (a) Strategically-structured search suggestions shown to users as they type a search term can also shift opinions and votes dramatically. (b) Answer boxes displayed above search results which share the bias of the search results increase the magnitude of SEME. (c) Biased search results can apparently impact the views of people who are undecided about anything at all. (d) Repeated exposures to similarly biased search results increase shifts in opinions and voting preferences predictably and additively. (e) SEME's large magnitude seems to be the result of a daily regimen of reinforcement for selecting high-ranking routine search results. (f) Personalizing biased search results increases the impact of the bias. These and other findings – all published or under revision in peer-reviewed journals – suggest an especially pernicious unintended consequence of the development of search engines: Even without human supervision or intent, search engines will continuously alter the thinking and behavior of billions of people every day without their knowledge. The merging of AI and search engines will rapidly put the future of humanity into the digital hands of machine intelligences. Will these entities have our best interests in mind?