Preface

Since the last decade, a spike in the level of technological development, especially linked with the rise of social media, *Big Data* and *artificial intelligence* (AI), is dramatically changing our societies and has already transformed the way in which politics takes place. At the beginning of 2022, around two thirds of the world population (more than 5 billion users) have access to the Web (this rate grew from 50% in 2016 to 65% nowadays)[1] and more than 1 human being out of 2 is now active on social media (53.6%; with a 20-points increase from 2016)[2]. The current penetration rates of Internet and social media have overstepped any prior expectation. Beside this, the latest years witnessed a striking diffusion of Big Data and digital data of any kind, which can be collected and analyzed through innovative tools made available to the scientific community and to the wider public. Lastly, recent developments in the field of AI open up new avenues and bring social scientists to both use, study and speculate on the relevance of *apps*, *algorithms* and *robots* in our societies and for the future of humanity.

New technologies and their usage are bringing with them lights and shades, promises and pitfalls, opportunities and fears. In our everyday life, when talking with friends or listening to the news, we are faced with topics such as *fake news*, *misinformation*, *cybersecurity*, *censorship*, *conspiracy theories*, *echo chambers*, *filter bubbles*, *trolls*, *Deep Web and Dark Web*, *surveillance*, *computational propaganda*, *Post Truth*. Often, we discuss about the potential of *E-democracy*, *data journalism*, *political influencers*, *whistleblowers*, *hashtag activism*, *Twiplomacy*, *meme* and *gamification*.

Technological innovation is not only changing our society, but also the way in which social and political scientists can (and should) study it. Indeed, social and political sciences are undergoing a complex process of revolution, which can be summarized under the label of 'Big Data revolution'. This revolution benefits from the existence of different data sources, which are more and more available to scholars, such as *open data*, *audio-as-data*, *image-as-data*, *text-as-data*, *mobile positioning data*, and other formats of digital data, generated by a growing *crowd* composed of Internet users and social media users that leave their *digital traces* online.

Such 'Big Data revolution' is not only related to data sources though. The methodological progresses of information technology allow us to gather (through application programming interfaces, *APIs*, or *scraping*) and store huge quantities of data, processing them at an incredibly fast rate. Furthermore, new developments in statistics and political methodology, particularly in the field of *machine learning* and *deep learning*, also contribute to such transformation.

After the 'Big Data revolution', social and political sciences are radically changing. They moved from using sparse datasets produced by isolated scholars that work alone, to building up collaborative, interdisciplinary, lab-style research teams that analyze increasing quantities of diverse, highly informative data. Such revolution entails a shift from studying problems to solving them. Consequently, the influence of quantitative social science (including the related technologies, methodologies, and data) on the real world is growing a lot.[3] This generates a strong and perhaps unique opportunity for political scientists and scholars in the field of computational social sciences. For the first time ever, our social and political 'soft sciences', in their digital and computational versions, can approach (at least, a little more) the level of accuracy of 'hard sciences', and can reach levels of credibility, reputation and respect that are traditionally assigned to the latter. It is not by chance that papers on social and political subjects are now welcome on journals such as *Nature* or *Science*, and some of these papers are repeatedly cited throughout this Encyclopedia.

Huge differences between 'soft sciences' and 'hard sciences' still remain in place, but the former seem now able to gain the attention of scientists from 'hard' disciplines as well as that of mass media, political actors and the wider public.

Consequently, in the current Big Data era, we, as social scientists, are given the chance to let our voices be heard by decision makers and policymakers, and our suggestions can resonate loud as never before. Indeed, some of the contributors of this book have been working or are currently active as consultants and data analysts for political institutions, think-tanks or private companies. Perhaps we can do our bit on the path toward a more responsive *sentiment democracy*.

Given all these technological changes, an Encyclopedia of Technology and Politics that aims to address such broad themes, shedding light on how technological development is reshaping politics, is well-needed. Seventy-eight entries contribute to this task. The present Encyclopedia is divided into five sections. The first one summarizes the main *Subjects & Subfields* within the discipline. The second introduces and describes cutting-edge research *Methods*. The third is devoted to study the most relevant *Actors* linked with technological innovation. The fourth explains and sheds light on *Core Keywords* and key concepts. The fifth addresses *Debated & Emerging Topics* that will be crucial in the politics of tomorrow.

The Encyclopedia achieved its goals gathering together established senior (54%) and promising junior scholars (46%), with an eye to the gender balance. Overall, there is a fair balance among female (47%) and male (53%) contributors, whereby 54% of the entries are authored or co-authored by a woman. Even within the methodological section of the Encyclopedia, gender equality has been granted, with 8 entries out of 14 (57%) written by women.

Scholars from all the five continents have been involved in the book (nobody was born in Antarctica though). Thirty-three different countries are represented. A plurality of authors comes from Western and Eastern Europe, and there are many contributors from North America (US and

Canada), but also several scholars from countries such as Australia, Brazil, China, India, Israel, Japan, New Zealand, Nigeria, Pakistan, Peru, Russia.

This exciting project has started right at the beginning of the Covid-19 pandemic, which has severely changed our lives and our lifestyle, reinforcing the importance of technology in every field, in our job (especially for *platform labor*), in the education, as well as in political and *public health* matters. The book certainly addresses some topics that are connected to this, but the aim of the project is to travel well-beyond the end of the pandemic, with an eye to the future and to emerging challenges and upcoming technological changes that will affect our lives for much more years.

During these years, many of us have faced health issues of various kind, family concerns, heightened commitments, drawbacks or troubles due to the restrictions enacted during the lockdowns. In such awful context, I want to really thank all the 94 contributors for their dedication and for having carried out their tasks so fast and with brilliant results.

The pandemic has taught us so much about ourselves, our world, about politics and society. I hope that this Encyclopedia will teach a little and will leave something to all its readers.

Andrea Ceron

Milan, 4 January 2022

Notes

[1] https://www.worldometers.info/

[2] https://www.statista.com/statistics/269615/social-network-penetration-by-region/

[3] See: King, G. (2014). Restructuring the social sciences: Reflections from Harvard's Institute for Quantitative Social Science. *PS: Political Science & Politics*, *47*(1), 165–172.