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Content

Europe

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The Digital Revolution and its Impact for Political Science

Marianne Kneuer and Helen V. Milner

1 Introduction

The digital transformation is an example of technological change that will have massive implications for politics and society. It involves a sweeping set of changes that many have likened to the Industrial Revolution. Many argue that it is bringing another enormous transformation of human life (Baldwin, 2019; Schwab 2017; Brynjolffson and McAfee 2014). These dramatic changes are among other things revolutionizing how we understand politics and how leaders govern. Social media, satellite and remote sensing imagery, and the digitization of administrative records have produced a massive amount of new data and social scientists are developing a set of novel methodological tools to deal with them. At the same time, digitalization has magnified old concerns over the future of privacy, surveillance and control, work, and the foundations of democratic governance.

While there is no universally agreed upon definition, most scholars agree that *digitalization* should be differentiated from a related but conceptually distinct term, *digitization* (e.g., Brennan and Kries, 2016: p. 556). Digitization refers to the process of converting "analog streams of information" and mechanical processes into "digital bits" and computations (Brennan and Kries, 2016: p. 556). From its earliest manifestations, digitization has been characterized by "extremely low costs, rapid ubiquity, and perfect fidelity" (Brynjolfsson and McAfee, 2014: 4). Economists characterize digitization as a "general purpose technology" — one that has transformative consequences across many industries and economic sectors (see Bresnahan, 2010; Cockburn et al 2018; Helpman and Trajtenberg, 1996). Exponential growth in computing performance and data storage has led to the broader use of digitized data (Pratt, 2013). For scholars adopting this view, digitization occupies a place alongside the steam engine, the electric generator, and the printing press in transforming all aspects of life (Schwab 2017).

Digitalization refers to the sweeping set of changes that restructure "social and political life … around digital communication and media" (Breenan and Kries, 2016: p. 556). The explosion of new data and technologies has facilitated the spread of information and action among individuals, consumers, firms, industries, movements, and governments. While some scholars view digitalization as a unique and irrepressible force that defines the contemporary world (e. g., Baldwin, 2019; Brynjolfsson and McAfee, 2012; Castells, 2010), others claim that digitization is not much different from earlier periods of technological advancement (e. g., Gordon 2015; Wolf 2015).

2 Technological benefits and challenges of digitalization

Regardless of whether digitalization is sui generis, the impacts of this change for political science are enormous. Digitalization has revolutionized data's volume, velocity, and variety (Brynjolfsson and MacAffee, 2012). As Brady (2019: 2) writes: "political scientists can observe and analyze (sometimes in real time) the information that people choose to consume, the information produced by political actors, the environment in which they live, and many other aspects of people's lives." Political scientists are able to leverage new types of data from the internet, administrative records, political texts, remote sensing technologies, and new media. Massive amounts of these new types of data make exact replication of information possible. Digitalization transforms data analysis from using small samples to ones with "near-universal population coverage" (Eivan and Levin, 2014: 715).

The digital revolution is at the forefront of many methodological advances. With increasing frequency, political scientists leverage automated text analysis (Grimmer and Stewart, 2013; Wilkerson and Casas 2017), probabilistic matching models (Enamorado et al 2018), penalized regression techniques and sparse estimation procedures (Varian 2014; Ratkovic and Tingley 2017), network analysis (Patty and Penn, 2017), clustering methods (Ahlquist and Breuning 2012), and crowd-sourcing (Benoit, et al 2016). Digitalization complements but does not substitute for solid research designs, carefully constructed theories, and appropriate analytical tools (Titiunik 2015).

With many commentators claiming "data as the new oil" (see Haupt, 2016), digitalization's impact on economic development is also substantial. As Cowhey and Aronson (2017: xi) point out: "[t]hese digital technologies are the 'digital DNA' that unleashes dazzling changes in the information, communication, and production capabilities that are transforming how the world works." Big data enables economic growth through network connections. Economists have found that U. S. firms adopting big data analytics have "output and productivity that is five to six percent higher" than would be absent these technologies (Hilbert 2016: 142). Digitization is massively disrupting almost every aspect of life, leading to revolutionary changes in banking, telecommunications, health care, and education for instance.

In politics, leaders have new channels to understand their constituents and mobilize voters. Governments have harnessed big data to prioritize services and rapidly respond to natural disasters and emergent threats (e. g., Mergel et al 2016). The McKinsey Global Institute (2018: vi) estimates that big data could help cities become "smart" and improve quality-of-life indicators by 10-30 percent over current levels. "Smart cities" can help reduce crime, improve traffic and public transport, help fight preventable disease, and cut greenhouse gas emissions.

The digital revolution has unquestionably generated extraordinary opportunities for political scientists, but it also raises serious questions about politics, issues like the future of work, privacy, regulatory oversight, international conflict, and democracy. Many of these problems are old, but digitalization has magnified their difficulties and importance.

A key issue these days is how the digital revolution is affecting the workplace and workforce. Automated systems, artificial intelligence, and big data are combining to change the way almost all features of work operate. Moreover, there is concern about to what extent and at what speed humans will be replaced in the labor force. Rising inequality and worries over wages and unemployment due to this technological change are critical issues. The political effects of this dramatic labor force change are much debated and worrisome (Frey and Osborne, 2017; Goos, Manning, and Salomons 2014). Some link the rise of populism with the workforce problems created by the digital revolution (Acemoglu and Restrepo 2017; Levy, 2018).

In the digital world, consumers (sometimes unknowingly) exchange their personal data for "free" or low-cost services (Ciuriak, 2018: 8). The same individuals are frequently linked across datasets, which exacerbates the risks of leaking potentially sensitive information. Heffetz and Ligett (2014) document numerous cases where researchers were able to easily identify individuals in datasets which were ostensibly already anonymized. In addition to inadvertent information disclosure, cybersecurity is a critical problem. Individual and state-sponsored hackers have routinely sought to break into confidential databases to obtain credit reports, email records, proprietary business data, and government secrets.

These problems are exacerbated by the overwhelming concentration of data among a small of number of firms. Steep economies of scale for digitization provide the largest corporations with distinct advantages in data collection where new data is given to the largest aggregators of data Add Ciriuak, 2018 to list of citiations. The five most valuable American companies — Apple, Amazon, Facebook, Google, and Microsoft — control most of the internet and online infrastructure, from app stores to operating systems to cloud storage to online ad business. Another group of broadband companies — AT&T, Charter, Comcast, Verizon — control all internet connections to homes and smartphones in the US. Much of the technology behind "Smart Cities" is controlled by private firms which are loath to make their underlying algorithms and source code public (Brauneis and Goodman 2018). The concentration of data among a small number of companies has led to an extensive debate over the extent these firms should have in providing access to consumers and how they should safeguard information.

In politics, we confront many of the same difficulties. Technological dominance by the United States and now China of patents and other intellectual property rights is a source of anxiety for many governments (Ciuriak, 2017). Some fear that database vulnerability and reliance on foreign technology may increase the risk of corporate and political espionage by adversaries. Political parties and election candidates have leveraged detailed voter data to affect electoral strategies and disseminate party election programs (Enos and Fowler, 2018; Hersh and Schaffner 2013), but big data may bypass political parties completely. Private firms and foreign governments can exploit big data and disseminate false information (Lazer, et al 2018). This problem is exacerbated by people seeking information that reconfirms their preexisting biases (Allcott and Gentzkow 2017) as well as the fact that fake news disseminates "faster" and "farther" on social media (Vosoughi et al, 2018).

Moreover, the access to information by authoritarian governments poses a unique set of challenges. Big data may help reinforce autocracy by limiting and shaping information flows (Roberts 2017; King, Pan, and Roberts 2013, 2017; Guriev and Treisman, 2018). Authoritarian governments are also harnessing big data to bolster their control and surveillance over dissent by integrating traditional credit scoring mechanisms with social media activity, online shopping data, and social networks to build an all-encompassing view of its citizens (Stockmann, 2018: 403). Many fear that these digital tools will help solidify rather than weaken autocrats' control of over society.

These challenges pose serious questions for political scientists to consider:

1. *How will digitalization affect the prospect of democracy?* The acceleration of information flows may empower citizens and bolster government accountability (Peixoto and Fox 2016). Some believe that greater information has the potential to create a more deliberative and egalitarian democracy (Singh 2013). However, the empirical evidence is mixed. Instead of fostering citizen oversight, does digitialization threaten democracy and make autocracy more stable and likely? Can social media, big data, phone apps for all sorts of services (like location), enable political leaders to take control and manipulate citizens? Does it enable them to monitor and control all aspects of citizens' lives?

2. *What types of governance structures and regimes do we need to deal with the negative effects of the digital transformation?* How do we craft rules and regulations that allow innovation and efficient use of the digital processes yet still mitigate or prevent its deleterious effects?
3. *How will the digital revolution affect world politics?* Will digitalization make competition and conflict more likely among countries and other actors? Or will it make the costs of conflict even higher and foster greater communication, cooperation, and peace? Is cyberwar likely? How damaging will cyberwarfare be and can it be controlled? Does more information and transparency mean more cooperation among nations? Will we need new international governance regimes to control and manage such technologies? What will these new rules and regulations look like? Can countries agree on them? What is national security in an open and highly connected digital world?

3 How digitalization affects political science as profession

Since the emergence of the internet and social media, social scientists have vigorously debated the promise and perils of ditigialization. Net-optimist voices are equally present as net-pessimist ones (see for the debate: Hindman 2009, Wilhelm 2009). The properties of digitalization generated different expectations in politics and social sciences. On one side, the technical capacities of the internet have nurtured hopes of constituting an antidote to democratic ills or seemed to provide new modes for mobilizing and organizing democratic protest like during the Arab Spring. The euphoria about the democratizing potential of the internet goes hand in hand, however, with more pessimistic views concerning the fragmentation of the public sphere, the radicalization of communication (hate speech), uncivil or illegal actions (intervention in political processes like elections via social bots, international cybercrime etc.). Eventually, it became evident that the internet can equally be used for mobilizing against liberal democracy.

The ambivalence of digitalization not only includes multiple aspects for political processes, for communication and for interaction in the political realm, but likewise for our discipline. Digitalization is both a transformative force for our discipline in terms of teaching and learning and research, as well as a research subject. Moreover, we are confronted with digitalized methods of data analysis that open new ways of data mining, data collection, and data analysis; but these new opportunities — again — go together with challenges such as research data management, especially ethical aspects of data management. Finally, the practical dimension is concerned as political consulting and policy recommendations may depend to a large extent on a different state of knowledge or different demands of consultancy, as well as on new methods of gaining knowledge. Thus, empirical social research is confronted with the fact that surveys must adapt to the different communication behavior of interviewees or other problems of reliability of data.

For the discipline of political science, digitalization implies various challenges:

- Digitalization has created massive amounts of new forms of data. How will this broaden the type of research and the tools available? How will it change teaching and learning? How will it change publishing and disseminating knowledge? Will it lead to greater progress in social science and improve our understanding of society and politics?
- How did our discipline react in the last years to the challenges of the digital era and how can it respond in the future? What new demands or tasks emerge for the discipline?

- Do we need new theories and concepts? How should studies be tailored to capture the empirical implications of digitalization in the various subdisciplines? Where is interdisciplinary cooperation required?
- What new opportunities does digitalization provide for teaching (see e. g. MOOCs)? Who can benefit from e-learning and how? How can citizenship education benefit from digital modes of knowledge and value building?
- What implications does digitalization have for authors and publishers?
- What new challenges come up for political consultancy? With which challenges are political foundations, think tanks etc. confronted through digitalization?

4 Structure of the volume

The volume goes back to the IPSA International Mid-Term Conference *Political Science in the Digital Age* held in December 2017 in Hannover, Germany. The aim of the conference was to examine the challenges of digitalization for the discipline of political science in three ways: 1) the reflection on the discipline and one of the most relevant challenges, namely digitalization; 2) connecting the National Associations of IPSA, the Research Committees, but also the IPSA 'leading personnel', encouraging networking and cooperation; 3) offering a platform for addressing problems as well as designing ideas for the future work within IPSA. Scholars from all over the world discussed theory, empirical aspects, methodology, teaching and learning, consulting, and publishing.

It was an upmost concern of this conference to encourage a regional stocktaking in order to get an idea of the challenges and opportunities of digitalization in most world regions. One important element therefore was the 'Roundtables on Regional Perspectives,' gathering scholars from all regions of the world, presenting balances and experiences from their countries, their teaching and their academic communities. These roundtables proved to be highly factful and valuable, contributing not only to the information about the state of all those national disciplines about digitalization, but also providing a platform for exchange.

In order to follow-up on this positive experience, we decided to provide this stocktaking — the first of its kind in our discipline, as far as we know — to a wider public, inviting the speakers of the round tables to collaborate on such a book project. At this point, we thank all authors for their contributions and their patience during the editing process. We did a blind peer review process, thanking also all the reviewers for their work. Edited volumes always experience some limitations: in our case, we strived to reflect an informative picture of all regions, also on the basis of IPSA's general mission to specifically include the Global South. While this intention could be well-accomplished in the case of Latin America, the regions of North and sub-Sahara Africa are underrepresented. This evidence, however, deserves some more detailed considerations. One aspect that was also revealed through debate at the conference, is that in many African countries, digitalization in the academic sphere still is at a starting point or developing, so that a stock taking proved to be difficult. This status correlates with an overall rather weak anchoring of political science as a discipline on the African continent, especially in Northern African countries.

Still, the volume presents the first attempt of stocktaking of a topic that will have a great relevance in the future for our discipline: How are research, teaching and learning, how are researchers, teachers, students and institutions of education in the different countries affected by digitalization? And how do the reactions and the options for shaping the digitalization of political science look like in the different countries? This stocktaking at the

same time informs us of open questions, problematic aspects, and future challenges which should be tackled either by governments or by the institutions of higher education and by any individual scholar. We are quite aware of the fact that as the dynamics of the development of digitalization take place, findings on this topic easily underlie the peril of being obsolete. At the same time, the well-known fact that changes in education systems are rather cumbersome may neutralize this possible effect. Moreover, as the articles show and as it could be expected, the different regions themselves and countries in these regions display a variation of policies, speed of action, intensity of action.

In order to get a systematic account of the state in the different countries, we asked the authors to follow a guideline including information about 1) teaching and learning, 2) research and 3) specific conditions or circumstances in the respective country. Regarding teaching, we were interested in the following questions: What role does the digital revolution play in the teaching and learning situation in your country? To what extent are digital tools or online-based communication/interaction integrated in the teaching methods? Could/should digital tools be more sophisticated? What are your experiences with these digital tools of teaching and learning? Would you say that there are big differences between the universities in your country in this regard? If yes, why is this so (federalism, financial resources, etc.)? Are there strategies – on a national level or at subnational level - for introducing, strengthening, or complementing these digital teaching and learning tools?

We also asked the authors to consider the following aspects:

- *Content aspects:* Is the digital revolution an issue covered in the political science curricula of universities? Is digitalization sufficiently covered? If not, are there specific reasons for that?
- *Institutional aspects*: Have professorships been created in this area (like Politics and Internet etc.)? Did universities develop their own e-learning programs or similar things?
- *Desiderata, positive perspectives, possible risks*: What are the desiderata in your country? What positive developments do you expect in terms of digitalization and political science in your country? What are evident problems or future risks to be expected?

Moreover, we asked authors to elaborate upon digitalization's impact on research: What role does the digital revolution play for the research situation in your country? How do digital communication/interaction or digital tools and procedures influence the research situation of political scientists in a general way and what are specific impacts of digitalization? Have digital communications and interactions (their implications, their effects for participation and political processes, their institutional context, usage, economic context) become an issue for political scientists in your country? To what extent? How would you assess the quantitative activity of political scientists referring to those issues (as indicators one could use publications, presence on conferences, research projects)?

Content aspects: Are there specific aspects of digital communication and interaction in politics (its implications, its effects for participation and political processes etc., its institutional context, usage, economic context) that the research in your country focuses on? Can you identify these aspects?

Institutional aspects of research: Have new 'sections' been created within National Associations of Political Science? Did publishing houses react to the new issue and offer new series? Have new journals for digital aspects in political science been founded? If not, where can or where do scholars of political science publish their articles on digital aspects? Is cooperation between political scientists with scholars of communication or media science more often than before? More intense? Or are there developments insulating them from each other? Have there been founded new research centres in or beyond universities dedicated to issues of political science and digital aspects?

Desiderata, positive perspectives, possible risks: What are the desiderata in your country? What positive developments do you except in terms of digitalization and political science in your country? What are evident problems or future risks to be expected?

5 Findings

5.1 Looking into the regions and the impact of digitalization

The *"Americas"* encompass variance in line with expectations; but this variance does not only refer to a North-South bias, but also to different levels of digitalization in Central (Mexico) as well as South America. The latter two regions reflect a quite heterogeneous picture when it comes to the institutionalization of the discipline of political science. For example, Freidenberg (2017: 26–35) differentiates between countries with higher levels of institutionalization (Argentina, Brazil, Uruguay, Chile, México, Costa Rica, Colombia, and Venezuela), countries with an inchoate level (Perú, Ecuador and El Salvador) and countries where political science programs are "almost inexistent" (Honduras, Guatemala, Panamá, Nicaragua, Paraguay, and Bolivia). Although this volume only covers a limited sample, all these levels are represented by at least one example. Despite this heterogeneity, it is a common trait of all South American cases that digitalization had a rather low impact on teaching, and here especially referring to the inclusion of digitalization-related topics into the curricula. More usual is the use of digital tools in the classroom, but this also seems to be selective and does not follow an overall strategy "to make the digital revolution a key component in their education programs" (Sandoval Almazán). The authors identify two reasons for digitalization's limited impact: In some countries such as Bolivia or Peru, there is no governmental strategy to equip universities with digital tools or to focus on digital teaching like. In other places such as Paraguay, the equipment is available, but professors do not use it. Still other locations find a lack of equipment availability and willingness among teachers to use digital tools between private and public universities underlined for most cases, but especially for Mexico, Brazil, and Peru. Additionally, Marenco points to a dysfunctional effect that the introduction of e-learning programs at private universities in Brazil had, due to fact that those programs displayed low quality and e-learning in general received a bad image.

In regard to digitalization as a research subject, the picture is even bleaker. There is only a small number of scholars investigating the causes and consequences of digitialization. At the same time, Duarte and Buquet find reason for optimism for digitalization's impact in Paraguay and Uruguay, respectively. In Uruguay, there is a push towards the internationalization of political science research in general through improved possibilities of networking. Duarte points to the opportunities to participate in international research projects, to adopt international standards in research techniques helping the scholars in Paraguay to "become part of an international academic community in a way that would not be possible otherwise."

Interestingly, the effect of internationalization in the sense of adopting international standards and thus approaching incrementally to an international scholarly community, does not seem to be not a consensual goal in all national political science communities. Tanaka describes that the traditional approach in Peruvian political science is to be involved in public and political affairs and that this is in tension with international standards, metric, rankings etc. Therefore, he argues for a balance between internationalization and domestic political and policy conditions. Similarly, Sandoval Almazán — highlights the

risks of digitalization in Mexico and the fear that the social sciences "will copy contents from other countries" wholesale and fail to adapt to Mexico's unique "reality". This goes together with the claim that Mexican political science has to develop its own research agenda, based on its history and cultural heritage. All authors agree that their countries still have a long way to go in terms of making intensive use of digital tools for teaching, but even more in terms of addressing digitalization as a research subject.

Very generally speaking, this distinguishes these cases from the United States. Notwithstanding there is one central and critical common feature that Owen also very much underlines: the gap between public and private higher education in general, but also in terms of the potential of digitalization for civic education. The author describes the immense discrepancy in the availability of ICT and instructional resources between elite universities and less selective public institutions in the USA. She exposes that the incorporation of digital skills into the middle and high school civics, social studies, and American government curriculum differs tremendously across schools, but the general finding is that political science education in the U. S. lags behind the shifts in the political environment. Thus, the teachers potentially could develop pedagogies that foster digital citizenship skills, but this is not widely done in the political science classroom. Moreover, Owen sets forth a highly relevant issue underscoring the importance of civic empowerment and the gap that also exists in this regard. The expectation that digital tools are prone for more social inclusion (especially of the poor and minorities) only can be put into practice if there is sufficient access to instruction for these groups.

In the case of *Europe*, we also find large variation in the impact of digitalization but not as much as in Latin America. On one extreme is Belgium where teaching and learning political science as well as research has been highly influenced by the. Belgian political scientists make broad use of digital tools in teaching political science, e. g. MOOCs or podcasts. It can be stated that a transformation of teaching political science is ongoing, initiated by digitalization. Digitalization has also affected the research system of the Belgian political science community. For example, Belgian political scientists have been among the most visible in promoting research on digitalization and the ABSP has even launched a blog on the topic. Digital tools are also used in order to disseminate the findings of Belgian political scientists to the wider society. On the other side of the scale stands Finland, which is somewhat surprising given that this country is among the better performers in digital technology and e-government. The results of an international study on digitalization of political science in Finland indicates that digital tools only play a minor role in teaching. It seems even to be a wide spread opinion among Finnish political scientists that digitalization rather makes teaching more complicated. Likewise, digital topics and digital instruments are of secondary importance for the Finnish researchers. Other disciplines are dominating the research on digital issues. Hope for the better especially derives from the advanced technological standard of Finland in general and from the priority that the new government poses on digital topics.

Other European countries studied in this volume are located between these two cases being moderately influenced by the digitalization. While the usage of digital teaching and learning tools entered practically all classrooms, there are differences in the inclusion of digitalization (as a teaching subject) as well as in the degree of focusing on it as research subject. Moreover, the potential of the internet for publishing is also exploited to a different degree. While Spain, for example, is a country that has undergone important changes due to the digitalization, the same does not apply to the discipline of political science. It has to be mentioned, however, that the first online university in the world was founded in Spain with the opportunity to graduate in political science. In terms of research, however, Spain has produced much less scholarship on digitalization. France is another European country showing mixed results. Despite government incentives, political science teaching

in France is a slower adopter of new digital technologies. That is not to say that there is no innovative usage of digital tools in teaching political science in France. Sciences Po launched its first mobile classes in October 2017 and offers a new master's course. Although political scientists in France have been slow to research digitalization's effects, there has been a sharp growth on the topic more recently.

The Portuguese case is interesting, as there the teaching system is hardly influenced by the digitalization, in favor of more established methods. In contrast, political scientists seem to be further ahead in respect to research, measured by the number of dissertations considering digitalization as well as researchers publishing digital related articles to an amount that is above the average worldwide. Likewise, there could be found increased international collaborations within the research system, which has been made possible through the usage of digital tools. *Poland* has to be regarded as a country with a political science community that is only moderately affected by the digitalization. Based on survey results, the authors point out that teaching political science in Poland has been influenced by digitalization. Besides Web 1.0-tools, there is a significant usage of Web 2.0-instruments, like YouTube and Facebook, through lecturers. The most important tools are, however, e-learning platforms, whereas there are no Massive Open Online Courses (MOOCs) or similar innovative alternatives. Furthermore, there are no institutionalized research units, dealing with the topic of digitalization. A remarkable characteristic in the Polish research system is the outstanding share of political science journals offering open access via; actually, the majority of journals follows such an approach.

The last two European countries under consideration — the United Kingdom and Germany – are not as digitalized as one might assume. Although it is a norm to use digital technologies when teaching political science at British universities, there are only few opportunities to learn advanced skills in the field of digitalization. The minor significance of digitalization is also reflected by the curriculum of most universities, where the term is seldom mentioned explicitly, and the absence of a professorship on politics and digitalization. The minor role of digitalization for British political scientists is also mirrored by the small number of articles in traditional political science journals in the UK dealing with digitalization. This seems to change due to the significant role of social media during the 2017 elections and Brexit. It is worth mentioning that there are social science research centres, such as the Oxford Internet Institute, dealing with digitalization. Roughly, the same can be said about *Germany*. It is difficult to find a digital infrastructure in the teaching system within the universities. There are, however, regular courses dealing with digitalization in some political science departments in Germany. In contrast to the rather minor role digitalization plays in teaching political science in Germany, the research on this topic is doing slightly better. Since the late 1990s, German political scientists publish regularly on this issue. Similar to the UK, Germany installed a research centre, the Waizenbaum Institute for the Networked Society, which is a government-launched and -financed institute and, among others, carried by political scientists.

The two Asian cases do not display a strong influence of digitalization. Japan seems to be a little less influenced by digitalization than India a nationwide report indicates, however, that the vast majority of universities in Japan have introduced digital learning management systems. Nonetheless, the actual usage is rather poor. Another restriction results from the desire of most Japanese students to learn in "some kind of traditional classroom structure" rather than exclusively online. Furthermore, digitalization is of minor importance for political science researchers in Japan. One explanation for this could be that in Japan it is the discipline of sociology traditionally dealing with media and information. Another reason for the absence of a lively political science dominated research field on digitalization might be that political science in Japan often belongs to law faculties.

One of the more remarkable findings comes from South Korea. Being one of the most digitalized countries in the world, its universities could also be expected to be at the forefront of the digital revolution. To be sure, there are cyber universities, devices that register the attendance in classes and course management systems, which are an integral part of each class. Surprisingly, however, the discipline of political science rather neglected digitalization as a as well as a research topic. For example, only a tiny share out of the huge amount of massive open online courses comes from political science. Furthermore, only two of 226 political science online courses deal with digitalization. In addition, there is very little research on digitalization conducted by political scientists, which could be attributed to, among other reasons, the low acceptance rates of papers dealing with digitalization in domestic political science journals. Thus, the high degree of digitalization of the Korean university system in general is economy- and government-induced; at the same time, the activities of the political science community are only relatively slightly influenced by digitalization.

The smallest impact of digitalization on political science can be found in sub-Saharan Africa and the MENA region. Two notable exceptions are South Africa – as regional hegemon in Africa and emerging soft power in the Global South – and Tunisia – as the only young democracy resulting from the Arab Spring. In South Africa, very similar to other countries, ICT are more easily integrated into teaching, but less into the curricula. And in terms of research, the country is also rather an incipient ground. An interesting aspect, however, is the political relevance of social media platforms on political participation and its relevance to higher education. For example, as Isike describes, following the Arab Spring in North Africa, political participation of young South Africans has increased, and the "Fees Must Fall"-movement (see #FeesMustFall) could be linked to the 'discovery' of social media as a tool of political change. Leaders of the movement used social media to mobilize support among young and old South Africans and they eventually succeeded in influencing the government's position, culminating in its announcement of free higher education and training for poor and working class South African undergraduate students in December 2017 effective 2018.

Finally, Tunisia is an example of a country with a very low impact of digitalization in every regard (teaching and research). Ben-Salem argues that the marginal status of political science as a discipline, the inadequate resources of higher education institutions and of the state itself, the economic conditions of students and a certain resistance to as reasons for digitalization's weak impact. Thus, the main challenge lies in establishing an independent discipline distinct from legal studies. In terms of research, Ben-Salem argues that it would be beneficial for the development of political science in the region on one side to achieve interdisciplinarity, but on the other side also "to outgrow the thesis of exceptionality that makes the MENA region an irreducible space to the conceptual tools elaborated by the West."

5.2 Which factors influence the digitalization of the political science?

A first and somewhat unexpected finding is that the degree of digitalization and adoption of ICT in a country does not seem to be a valid predictor for the influence on teaching (adoption of digital tools in teaching, including digital topics into to the curricula, installing new programs on digitalization in the political science departments) or for the influence on research (here: digitalization as an instrument for publishing etc. or as a research subject) in the discipline of political science. Thus, countries performing like frontrunners in ICT penetration (Finland, UK, South Korea or USA – see Internet Worldstats 2018, ITU 2018) are not necessarily avantgarde when the digitalization of our discipline is concerned.

Interestingly, other factors seem to be more relevant; one of them is the *institutionalization* of the discipline in the country. Thus, those countries where political science rather constitutes a younger discipline (because during a dictatorship it has not been present or suppressed like in several Latin American countries, Poland, and Tunisia) and where in consequence the discipline is rather weakly institutionalized, the access to digital tools and online learning provides welcomed opportunities for academic development. On the contrary, in countries which displays a longer period and therefore also a higher level of institutionalization teaching and research of political science can be influenced less, even if the society is highly permeated by digital tools (like the UK or France). Against the backdrop of the long history of political science in these countries, digital media are a very new phenomenon. There exist long standing teaching structures and political issues in which f. e. the British political science focuses traditionally. Apparently, a high level of institutionalization in combination with a long tradition of the discipline delays the adaptation of new phenomena. Another sub-factor of the disciplinary institutionalization is the degree of autonomy, and this feature seems to be very strongly shaped by the historical tradition and the genesis of the discipline. Two paths can be identified: firstly, the emergence out of law studies, *Staatswissenschaft* or public administration (like in several European countries, Latin America, Tunisia and Japan) which seems to make it more difficult for adapting new issues into the research agenda; and secondly, an early separation as an autonomous discipline (USA, UK and Belgium), which in contrast, increases the acceptance of new research topics.

Other institutional factors are – by nature – the *structure of the national university system* and here especially the existence of public and private universities. As already mentioned, in some regions like the Americas (and here North as well as Central and South), the gap between the digital teaching infrastructure, between the 'modernization' of curricula, and the inclusion of digital aspects into the didactical and pedagogical approaches can be immense between private universities with larger resources and public universities. There is only one country, namely, Mexico, where the author stated that digitalization of content may occur in public universities faster than in private universities.

Nearly all authors pointed to a critical factor for digitalization: the *central actors* – mainly the professors – and their attitude towards the usage digital tools in the classroom or their research interest in the topic of digitalization. Thus, this "human" factor plays an prominent role. Even if the universities provide the infrastructure (like e-learning management systems), digitalization's impact depends to a large extent on the professor if and how digital tools are integrated into the teaching. Furthermore, professors themselves need preparation for this new kind of teaching system. Here, a generational gap becomes evident. This refers possibly even more to digitalization as research topic constituting rather a "playing field for younger scholars" as several authors emphasize. Another central actor in this regard are, of course, the universities or the governments (always depending from the national system on higher education and who has the responsibility). Thus, the Belgium case (which results show to be the best performer in our sample) shows the existence of universities with high ambitions in promoting the digitalization of science and on regional political actors "that are pushing for more use of digital tools". Moreover, the national political science association, the Belgium Political Science Association (ABSP) is also a very ambitious actor. Thus, here seems to prevail a positive conjuncture of several actors pushing for the adoption of digitalization on different levels. Big research centres like the Oxford Internet Institute in UK or the German Waizenbaum Institute for the Networked Society might also function as an incentive for other initiatives in the field. For a lot of cases (see Latin America) however, a national strategy for digitalization would be needed (including national resources).

Park and Kang, as well as Jalali, raise two interesting points when it comes to a possible *correlation between teaching and research*. Thus, Park and Kang hold that "(P)art of the reason for the relatively little attention paid to digital revolution in teaching is related to the lack of research activity on the subject. That is, we cannot expect an opening of an independent course when there is not enough original research work or researcher who is interested in the subject." In their understanding, research interest in digitalization would constitute a factor for developing curricula and programs, installing professorships etc. Thus, the lesser the degree of research on digitalization, the less we could expect the influence of digitalization in the field of teaching. This would be worth testing in other countries beyond South Korea.

Jalali points to the fact that publications as outcome of scholarly work have a greater impact on academic career paths than innovations in teaching. Therefore, scholars interested in digitalization would rather dedicate to research – conducting projects or produce publications instead of investing time and resources into new didactic and pedagogic approaches. This is an explanation for the asymmetric relationship between a rather low digitalized teaching and a high interest in digitalization as research topic. The question thus becomes: How important is the argument of a higher benefit for the academic career? And how strongly do scholars separate their research subjects from the interest in teaching? This question, or course, is a more general one, but possibly is more acute in the field of digitalization.

As a last bundle of aspects, it is interesting to look at *structural factors like geography or demography*. Naturally, the level of economic development is expected to be tightly linked to the level and quality of ICT infrastructure. But even here, we can find contradictory results: Portugal and Spain – both countries heavily affected by the economic crises of 2008 and the following years – seemed to have dealt differently with the austerity measures. Jalali demonstrates that austerity impeded investment into the digitalization of Portugal's higher education system, while Luengo shows that f. e. the adoption of free open source software and the Moodle platform were induced by the economic crisis when universities across Spain had to cope with reducing budgets. But beyond economic factors, some authors point to others structural aspects. Remarkably, for South Korea, a forerunner in digitalization, the authors consider factors like the aging population, the decrease in the number of young students, and – in consequence – the increasing pressure of reducing the size of political science faculties or even abolishment of the department as a hindrance for taking policy initiatives for pushing forward political science in education and research. On the other hand, for a lot of societies – especially with a different demographic structure like in Latin America as well as for Africa – the digitalization of especially education could represent a huge potential. This is even more true if the geographical size of a country – like Brazil and India – comes in. For a dispersed society, virtual universities or virtual learning systems could have a substantial benefit.

All in all, the contributions clearly show that the potential of digitalization is not yet fully exploited – neither for education nor for research. The degree of influence of digitalization on the respective national cases depends on several factors that refer to historical paths and structural factors as well as the individual interests of relevant actors such as professors, scholars, and governments. As Tanaka writes, "Digitalization is a useful means, but it is no magic bullet that will by itself solve problems that should be addressed in other dimensions".

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We hope that this book constitutes a basis for further reflection on this important topic in our scientific community in general and within the International Political Science Association. It is a pleasant coincidence that this volume is launched in the year of IPSA's 70th anniversary. It emphasizes IPSA's ongoing efforts to contribute to the reflection on our discipline on a global scale and to contribute to the exchange across the regions.

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Digitalization and Political Science in Bolivia

Julio Ascarrunz

1 Introduction[1]

In the last decades, political science has turned from a discipline to a field of study, with scholars devoting time and thought to analyzing its history and development, both as case studies and in comparative perspective. The present work focuses on Bolivian political science and its relationship with ICTs (Information and Communication Technologies), in order to reach the main objective of identifying the role of the digital revolution in the country's discipline. In order to achieve this goal, the paper first summarizes the history of political science in Bolivia to better understand the current state of the discipline. This is followed by an analytical framework that contextualizes the digital revolution and its impact on political science. The main section describes that relationship in teaching, learning, and networks. The paper concludes with a balance of the status of political science in Bolivia and some recommendations for the future.

2 The history of Bolivian political science[2]

Bolivian political science was formally founded in 1983 at Universidad Mayor de San Andrés (UMSA) in the city of La Paz, following two previous attempts in 1969 and 1979 interrupted by military coups (Bueno & Torrico 2015). After the democratization process, which ended in 1982, the promoters take back their intention to make the program function, and though it was created in 1983, it is only in 1987 that the university receives its first political science professors formed abroad, mainly from Mexico. In 1992, political science starts to function at Universidad Autónoma Gabriel René Moreno (UAGRM) in the city of Santa Cruz de la Sierra with the first graduates in 1996. In 1997, in the city of Cochabamba, the political science program is created at Universidad Mayor de San Simón (UMSS); first depending from the Sociology, Law, and Economics programs, and since 2001 as independent program. These three processes described above, took place in the

[1] I would like to thank the comments and revisions from the editors, as well as Miguel Centellas and Xenia Ariñez.

[2] This section is based on previous research where the history of the discipline is described from its teaching programs, its research mainly in journals, and its networks (Ascarrunz 2017).

three main cities of Bolivia and in three public universities, constituting the first "stage" for Bolivian political science regarding programs creation.

At private universities, the first political science program was established at Universidad Nuestra Señora de La Paz (UNSLP) in 1999, followed by a Department of Political Science and Philosophy at Universidad de la Cordillera. Finally, in 2003 the Universidad Católica Bolivia (UCB) established a series of undergraduate social science programs, among which was Political Science. These three private universities held their programs only in La Paz[3], and they constitute as the second "stage" of political science programs.

The last stage of political science programs has started recently, in 2008 at Universidad Amazónica de Pando (UAP) and in 2011 at Universidad Pública de El Alto (UPEA). These have a special distinction, since it's the first time that the discipline leaves the main three cities and goes to other places, in this case to Cobija, in the department of Pando, and to El Alto, a neighbor city to La Paz. These universities stand out for being relatively new and have betted for political science programs at such a "young" face of their institutional lives.

When it comes to research, Bolivian political science is still weak. This weakness is not due to a lack of research or researchers, but more because of a failure in the diffusion processes or because lack of acceptance among international academia. From the eight universities with a political science program, four of them have a research institute and a journal and another one has only a journal[4]. Moreover, the five journals (*Revista Ciencia Política*, *Conocimiento i Política*, *Estudios Políticos*, *Ciencias Políticas,* and *Análisis Político)*[5] face problems of basic institutionalization processes, such as having a designated ISSN, compliance with strict periodicity, or counting with a correct editorial practice for academic journals (for example, call for paper or peer review). This past year, however, there has been an attempt from the Bolivian Political Science Association (ABCP) to promote a publication that can at least meet these basic requirements: the *Bolivian Journal of Political Science*[6]. Nevertheless, it is important to recognize that Bolivian political studies, among which political science is inserted with sociology or law, have had more impact when research comes in books, and these books have been mainly produced outside universities with the support of international or multilateral cooperation funds (García-Yapur 2017), but usually with limited or no peer review or other academic standars.

Finally, professional and academic networks of political science proliferate in Bolivia. There are four regional networks (from La Paz, Santa Cruz, Cochabamba, and Tarija) and one national network. However, none of these connect with each other nor do they gather many members to be viewed as legitimate. Outside of La Paz, the three networks were created to respond to regional interests of political science professionals that see research and academic promotion as centralized; while in La Paz, the regional and the national[7] networks were created seeking more spaces of representation and action. The Colegio de Politólogos de La Paz (CPLP) was founded first as a response to the closed informal structure of the University[8]. In the same way, a few years later, the Bolivian Political Science Association was founded, looking for a more open and academic space as a response to

[3] This is important since *Universidad de la Cordillera* and UCB have presence in other departments of Bolivia.

[4] In the case of Bolivian political science, this is important because most of the professors hired by universities do not have full time contracts, therefore academic activity is sometimes restricted to teaching and not researching as well.

[5] The information regarding the journal *Ciencias Políticas*, from UCB, is out of the analysis made by Ascarrunz (2017).

[6] This experience will be deepened in the section of the digital revolution.

[7] Even though it's national, it has its base in La Paz.

[8] Reported as closed, because of politics inside the University (Ascarrunz,2017)

the perceived closed structure of the CPLP. At the end of all the political games inside these associations, political science as one cohesive discipline has not been able to institutionalize.

3 Digital revolution, digital era and teaching/learning in political science

The digital era[9] can be observed by its relationship with the social sciences in two dimensions, more specifically with political science: as a tool and as a study object. Political science has the option, first, to relate to the discipline with technologies as tools, this is, to instrumentalize these contemporary benefits in order to improve the research of traditional subjects. On the other hand, the discipline has the chance to use this framework of technologies and the information society to study its effects over politics, whether produced directly or indirectly. It is important to identify the effects of either approach. By using or studying technology in politics, one realizes that constraints in obtaining and processing data, which were traditionally more common in the natural and physical sciences, no longer exist and thus the new challenge comes in knowing how to handle this reality (Alcántara 2017).

This section focuses on technology within the curriculum and used for pedagogic purposes. The paper analyzes two aspects: first, the presence/absence of subjects that relate politics and technology, and, second, the use of digital tools in classrooms in teaching applications. For the first part, the paper analyzes the curricula of five of the seven political science programs currently in Bolivia: UMSA, UMSS, UCB, UNSLP, and UAP (Ascarrunz 2017). For the teaching methods evaluation, information from only three universities will be used: UMSA, UCB and UNSLP.[10]

From the five curricula obtained, three of them (all public universities) are organized by years, while the other two (from private universities) use a semester system. Whether the curricula are by year or by semester, the first courses are mainly introductory ones, such as "Introduction to Political Science" or "Introduction to International Relations", or the basis of the study of politics, like constitutional law, economics, sociology, and history. All curricula differ from each other depending on the departmental approach, whether sociological, legalistic, or public administration oriented. From 195 courses reviewed in the five curricular designs stated, only one has direct relation with technology: "Informatics" in the seventh semester at UNSLP. Despite the fact that this course is part of the political science program, the approach is not exclusive to the discipline, since what is taught is the basics of computer management such as Microsoft Office and some SPSS, but for commercial purposes such as survey tabulations related to market studies.[11] Indirectly, there are similar courses at this and other universities that can be inferred to emphasize technologies used: for example, those related to communications and political marketing

[9] Despite the significant conceptual differences among digital era, digital revolution, and information society (see Rojas, 2010; CEPAL, 2016; Rendón-Rojas, 2001), this paper seizes their common denominator of use of technological developments (especially regarding information and communications).

[10] The first five universities considered are the ones that have their curricula posted on-line and available for public. The second three are the ones based in La Paz city, which made it easier to gather information, both by experience and shallow interviews. Interviews to other universities' staff were tried by e-mail or other digital communication, but no answer was received.

[11] This information was provided by a group of six students from the university.

and/or electoral behavior[12] due to recent phenomena that involve new ICTs in these processes; however, it is not possible to confirm this due lack of access to course syllabi.

On the other hand, the use of technology as a pedagogic tool, is analyzed from classes at UNSLP, UCB and UMSA. At all three universities, digital tools are limited to the use of computers, the internet, and multimedia projector. The use of these technologies depends on each subject and professor rather than on a university policy making it mandatory. In this sense, the youngest professors or the ones with studies abroad are more likely to use and exploit these tools beyond slides presentations, for example, with the connection with other professors in the world via Skype, or the use of platforms or online materials such as databases or information sites to improve and enhance interactions between professors and student. This kind of practice involves a minority of professors in most of the universities.

The problems get bigger when it comes to considering the differences between universities, which are related to both financial resources and centralization. Public universities tend to have more resources, but spending procedures are slower, while private universities do not have as many resources as public ones. Another problem is connected to the importance of political science programs for universities and students. Programs like law, social communication, or economics, among the social sciences, or architecture, business administration, or engineering are more popular among new students, both in public and private universities. This poses problems for public universities, while private universities directly decide to subsume political science under other disciplines.

Finally, the prospect does not look too different from into the near future. There are no explicit strategies by universities, university system, or governments to insert technologies into the teaching/learning processes for higher education or improving educational quality according to international standards. In this regard, if higher education in Bolivia does not embrace technologies both in its use and development, the chances of educational crisis and isolation from global scholarship increases. More specifically, political science programs, as a less popular option among students, might suffer from a higher impact on this kind of crises that could affect the whole system. Despite this negative scenario, Bolivian political science can improve its development (and its use of technologies) by modernizing, from curricula to professors, keeping closer relations with other associations, universities, and individuals.

4 Digital era and research

This section looks at research in its relationship with digitalization as an object of study, rather than as an instrument[13]. Two institutional data sources are used: final theses data from UMSA's political science program[14] and journals from UMSA, UCB, UNSLP and ABCP. This responds to the fact that other research conducted by the political science programs (theses, journals, or books) are not available online. By itself, this is revealing about the relation between digital tools and research. From data on 205 final theses, only three have an explicit object related to digital technology, all of them, as expected, during the XXI century: one about education (Plata 2006) and two about electoral processes or cam-

[12] Those subjects can be found at UMSA, UMSS, and UCB.

[13] Revisions of programs, theses, journals,and books was carried out until june 2018.

[14] This information is only available online for this university; the other seven political science programs don't make their final grade researches (for example, theses) available so easily.

paigns (López 2016, Torrez 2015). Two others do not explicitly have an ICT-related investigation object but indirectly study processes connected to digitalization: one related to globalization and the other to political marketing. This scenario may not be completely representative for all Bolivian political science as it is in the cases of curricula.[15]

When it comes to publications, this paper addresses five journals[16]: *Ensayo* and *Revista Ciencia Política* (from UMSA), *Ciencias Políticas* (from UCB), *Análisis Político* (from UNSLP), and *Revista Boliviana de Ciencia Política – RBCP* (from ABCP). It is important to state that none of the journals display their content online – except for *RBCP* – nor their indexes – except for the aforementioned and *Análisis Político*. The purpose here is to describe when and where digital-related topics were analyzed.

Ensayo was the first journal aimed at analyzing political phenomena. It started in the late 1980s and published three issues, with a total of 23 papers were published, among other documents and book reviews.[17] The other journal from UMSA, *Revista Ciencia Política*, started in the 1990s and went through two eras. In the first era, a total of sixty papers were published until 2003, while in the second era, from 2007, eighty-two articles were published[18]. Within this journal, in both eras, there is only one paper that can directly relate to digital topics, by studying cyber-democracy (Balderrama 2012). It is understandable that *Ensayo* and the first era of *Revista Ciencia Política* don't have any technology-related papers, since they were issued in a time where most of those technologies didn't yet exist or were unavailable in Bolivia.

The first journal from a private university is *Análisis Político* from UNSLP which started in 1997. This publication issued 20 editions of the journal in which a total of 241 papers were published, and from those, nine related to digital topics and politics by analyzing the effects of globalization and technology through social and cultural effects over politics (Paz-Navajas 1998, León 1997, Riveros 2004, Fernández 2005), or by studying the relation between ICT and democracy (Fernández 2001, Dader 2002, Aliaga 2007) or elections and political communication (Gómez 2002, Badillo y Marenghi 2002). The second private university with its own journal is UCB which has issued two numbers of its recent journal, *Ciencias Políticas*. In these two editions, nine papers were published, and despite its recent creation, digital issues seem to be popular since already two of the papers address the topic: one about the use of Facebook in elections (Vélez 2017) and the other about digital diplomacy (Lazarte 2017).

Finally, a recent enterprise, *Revista Boliviana de Ciencia Política*, launched by the Bolivian Political Science Association, has published two issues in which there are 11 papers, in general, and two of them have a relationship with digital issues: a first one studies the situation of ICT, or its effects, in politics and political science (Alcántara 2017), and a second one studies the Twitter account of Evo Morales (Ojeda 2018). On the other hand, by the specific content of the article, there is one about "ethnic" voting and elector-

[15] In curricular content, UMSA has leaded the panorama in Bolivia regarding the direction of political science. For example, during the first stages with Marxism predominance (Bueno & Torrico 2015), this university was the first to try to balance with other theoretical approaches; the same happened regarding the dependence of the discipline especially from Law.

[16] Like the other publications, the other two journals, *Conocimiento i Política* (UAGRM) and *Estudios Políticos* (UMSS), don't have any information for digital consultation, and being in different cities made it harder to get the data from these. Although an e-mail or social network query was made, the information wasn't provided.

[17] The first two issues had State Theory as main topic, although, overall, the papers go from democracy, State, and nation to the role of political scientists in labor market.

[18] In this recount, two issues are missing, one from each era. This is due to lack of information at the library of the political science department.

al support for the MAS (Centellas 2017) that uses statistical models to assess its research question and processes the data in a computational software, such as Stata.

Nevertheless, the most important aspect of *RBCP* in relation to ICT appears when analyzing the structure of the journal. One can observe that the journal itself uses digital media like Facebook to enhance interaction with scholars all around the world, including inviting them to contribute.

In total, from 426 papers published by all institutional journals of political science programs and networks, 14 are related to digital issues, meaning that only a 3.3 % of all analyzed works study, directly or indirectly, the relationship of digital era/technology/information society and politics. Attempting to control for period of time, 283 papers were published during the twenty-first century, meaning that those 14 total technology-related papers constitute the 4.95 % of the total.

Beyond these academic-institutional experiences, there are a few other institutions, mainly NGOs that focus and/or use digital technology and its relation to politics. For example, *Ciudadanía*, based in the city of Cochabamba, applies its own data gathering and survey management system called ADGYS (Android Data Gathering System) a project developed in combination with LAPOP (Latin American Public Opinion Project). The products of this system are political culture studies based on individual-level data. Similarly, *Fundación Redes*, studies and attempts to intervene on information society and democracy within it, though following a more sociological approach.

These situations – digital study objects or tools in Bolivian political science – are not very common. One may think that only quantitative research is related to the use of technology or digital tools. Even if that is correct, Bolivian political science rarely makes quantitative research with the exceptions of *Ciudadania*'s studies. But recent methodological advances in social and political sciences have demonstrated that qualitative research can also take advantage of digital tools.

5 Political science networks in the digital age

Networking has become one of the easiest tasks with the developments of information and communication technologies. But even in this situation, Bolivian political science has not taken advantage from networking facilities. From the five professional and academic networks existing in the country (four regionals and one national), the professional associations of Cochabamba and of La Paz are the only ones that have more activity in social networks like Facebook, the latter has an online-based office and therefore most of its working process takes place online. The other two regional Associations, those of Santa Cruz and of Tarija, are not as active as the first ones. Most of these associations use digital tools for promoting activities.

In the case of the Bolivian Political Science Association (ABCP), the use of digital tools is concentrated on its journal. However, digital communication is important for this association for the contact with academics and associations around the world. In this sense, contact of ABCP with IPSA, AMECIP (from Mexico), ANAP (from Argentina), or ALACIP has been possible due to the use of digital technology. In the same line, these last few years there has been contact from de University of Sao Paulo (USP) to collaborate in a research project about Bolivia.

6 Conclusions

After this brief review of the situation of digitalization and the Bolivian political science some conclusions can be drawn. As seen in the first sections, political science in Bolivia is far from institutionalized and while other countries in Latin America are struggling to enhance their institutionalization processes, Bolivia is facing the uncertain beginning of that institutionalization process. This means that, so far, it is possible only to account for the stability of some political science programs, while research and networking have still a long road to go, as well as postgraduate courses.

This particular situation makes it harder to assess specific circumstances like digitalization. As Bolivian political science is having problems with researching, spreading that research, networking, and even with teaching and learning processes (specially outside undergraduate programs), it is even harder to think of including digital processes in teaching or in research.

Despite these difficulties, this paper has given a brief close up and some descriptive answers to these issues. Therefore, the most convincing conclusion this work can provide is that the discipline faces more difficulties in terms of adopting digital issues or digital processes if the institutionalization of the discipline has not arrived or started as in the Bolivian case. Regarding the prospects, it seems that after the discipline had reached a point of stabilization, the next step could be including digital issues in the research agenda allowing for in-depth-analysis in this field.

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Digitalization and Political Science in Brazil

André Marenco

1 Introduction

The organization and development of political science in Brazil has now lasted for just over fifty years. Its origins go back to the first academic and post-graduate programs set up in the 1960s, a little after the establishment of an authoritarian military government in the country. More recently its expansion was driven by the foundation of the Brazilian Political Science Association in 1996, which led to the nationalization and pluralism of the research agendas.

This paper seeks to review the conditions for the formation, development and challenges of political science in Brazil and involves mapping: (a) the disciplinary professionalization of post-graduate degree programs and departments with the aim of providing academic qualifications to new generations of PhD students and researchers; (b) in the second part, one can find a mapping of activities of teaching, research and scientific production related to digitalization by Brazilian political science. Running parallel with this, it seeks to incorporate a broader dimension in the analysis by comparing the development of political science in Brazil with its Latin American counterparts. In contrast with the period leading up to the mid-2000s, when the scientific output of political science in Brazil reached levels equivalent to those of Argentina and Chile – but below those of México – it has experienced a significant rise in the last ten years and according to the SJR (Scimago Journal & Country Rank) has now become the leading country in Latin America. The importance of post-graduate studies in scientific research and induction programs for publications at an international level, testify the significance of this phenomenon.

2 Origins of political science in Brazil

Viewed in retrospect, it is clear that the formation of political science in Brazil had three key features characterizing its early stages: (1) the discipline was a late arrival compared with the rest of Latin America; (2) it was only established on a professional basis after the inauguration of the authoritarian regime in 1964, and (3) its expansion accompanied the institutional development of post-graduate university centers.

A preliminary analysis of disciplinary institutionalization requires taking note of temporal variations in the creation of scientific associations. With regard to political science, the formation of scientific associations follows the trend towards greater specialization

and disciplinary autonomy, with a strict boundary line being drawn to distinguish it from other subject areas (Almond 1996; Goodin and Klingeman 1996; Dogan 1996; Goodin 2009). When this process is viewed from a comparative perspective, no temporal discrepancies are found when comparing political science associations with the traditional areas of the social sciences. In the United States, the foundation of the American Anthropological Association (1902), the American Political Science Association (1903) and the American Sociological Association (1905) occurred at almost the same time. In the case of France, although the country experienced a gradual decoupling of political science and sociology, (Favre and Legavre 1998; Grawitz and Leca 1985; Favre 1985), the Association Française de Science Politique [the French Association of Political science] was formed in 1949, before the foundation of the Societé Française de Sociologie [French Sociological Society] (1962) or its replacement the Association Française de Sociologie,[the French Sociological Association] which was only formed in 2002. Although this was late when compared with the Argentinian Anthropological Society (1936) and the Argentinian Society of Political Analysis 1982, it is a long time before the Argentinian Association of Sociology in 2009 [1]. In the case of Chile, the Chilean Political Science Association has its origins in 1966 (suspended during the period of the authoritarian military regime, only to be restored in 1983) while the 6th Chiliean Congress of Sociology was held in 2014. On the question of international associations, there were simultaneous occurrences: both the International Political Science Association (IPSA), and the International Sociological Association (ISA) were founded in the same year, 1949.

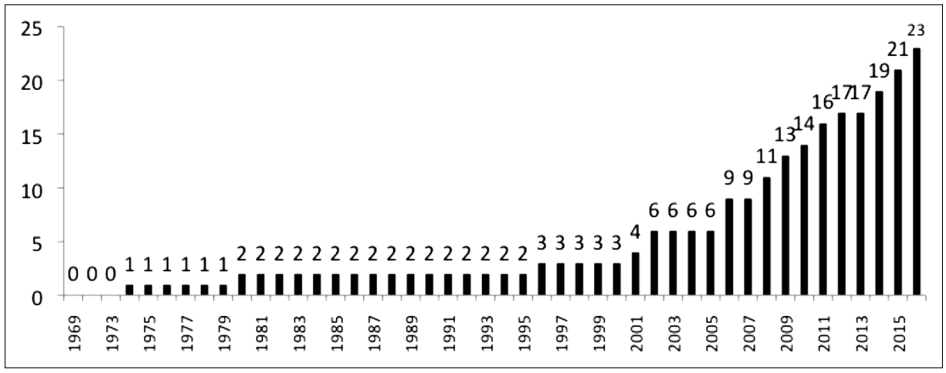
From an examination of the chronological formation of Brazilian associations in neighboring disciplines, it can be seen that there is a temporal gap that separates the foundation of the scientific associations of sociology and anthropology on the one hand and the political sciences on the other – which confirms once again that there was a delay in creating the Brazilian Political Science Association [ABCP]. Although the Brazilian Society of Sociology was established in 1948, its first congress was only held 6 years later in 1954, while the foundation of the Brazilian Association of Anthropology dates back to 1955, after its first congress had been held two years earlier in 1953. However, it was only three decades later that the Brazilian Political Science Association appeared in 1986, and a further ten years passed before its first congress was held on the premises of Cândido Mendes University in 1996.

The delay in the deployment of political science in Brazil is corroborated noting the temporal gap that is found in Latin America, when the information on the dates for the origins of the scientific associations in the region, is collated (Freidenberg 2015; Marenco 2014):

1915	1957	1966	1974	1983	1986	2006	2012
VEN ACPyS	**ARG** AACP	**CHI** ACCP	**MEX** College National	**ARG** SAAP **CHILE** ACCP	**BRA** ABCP	**URU** AUCiP	**MEX** AMECIP

Graphic 1: Year of creation of political science associations in Latin American countries
Source: Freidenberg 2015; Marenco 2014

[1] See: Statutes for the Argentinian Association of Sociology in http://aasociologia.globered.com/categoria.asp?idcat=47

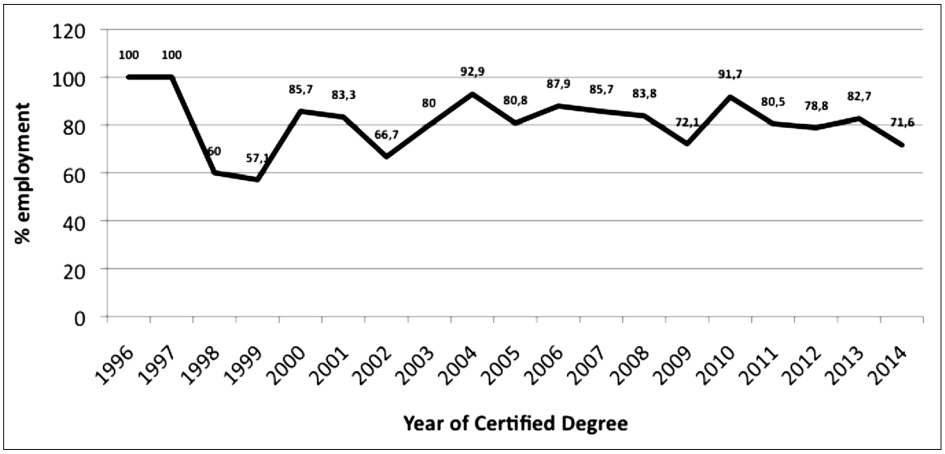


Graphic 2: Number of doctorates in Political Science and International Relations, Brazil
Source: CAPES

The setting up of the Department of Political Science at the Federal University of Minas Gerais, in 1966, and three years later, the first post-graduate studies programs at the Federal University of Minas Gerais (UFMG) and the University Research Institute of Rio de Janeiro (IUPERJ) ushered in a new era for treating this subject-area in a professional way in Brazil. Following this, a Master´s course was set up at Federal University of Rio Grande do Sul (UFRGS) (1973). A year after, this Master´s course was accompanied by the first PhD degree course in Political science in the country, at the University of São Paulo and there was a further Master´s course at Unicamp. However, the pattern of post-graduate courses grew very gradually and the second doctoral course at the University Research Institute of Rio de Janeiro (IUPERJ) was only introduced in 1980. It was another 16 years before a third PhD course was created at Federal University of Rio Grande do Sul UFRGS, in 1996. Thus thirty years after the "inauguration" of post-graduate studies in political science, there were only three programs with training at a degree level. In the Master´s courses, the pace was no different and the threshold of ten courses was only breached in 1994; in the whole of the decade that followed, only four new Master´s courses were added to those already running, while the number of PhD courses doubled from three to six.

The post-graduate system and the setting up of centers devoted to the preparation of Master´s and Doctorate courses in political science were essential for spreading this subject through the country at a professional level. The employability of the PhD students who were prepared in the main centers of post-graduate studies in Brazil, is evidence of the recognition of the high standard of these professional graduates in political science in Brazil. Data from the Center for Strategic Research and Management, based on a) the titration data of CAPES (Coordination for the Improvement of Higher Education Personnel) and b) data on employment and income supplied by the Minister of Labor, make it possible to estimate the proportion of doctoral students employed on 31st December, 2014, in the same year of their graduation.

In showing evidence that the employability of doctoral students was at a high rate, it is worth noting that 71 % of the doctoral students completing a degree course in 2014, were employed in the same year that they graduated. With regard to the National Classification of Economic Activities (CNAE) of employers´ organizations, 75.9 % of doctors in political science and international relations were employed in educational activities and 8.3 % in public administration. With regard to the Brazilian classification of occupations, an equivalent amount of 15.7 % of Master´s degree students and 12.9 % of Doctors in political science occupied positions as "senior members of public authorities, managers of public services and directors of business organizations".



Graphic 3: Official rate of employment of PHDs, Political Science and International Relations/ CAPES on 31st December, 2014, in accordance with the titration process – Year of Certified Degree
Source: Center for Strategic Studies and Management (CGEE), Brazil

How should the presence of qualified teachers abroad be explained? According to Altman (2012), the capacity to recruit teachers with PhDs obtained from institutions with an international reputation, particularly from North America, is a factor that must be taken into account when devising a scheme for ranking the political science departments in Latin America. In other words, the presence *per se* of graduates from abroad should represent an academic capital that makes it possible to distinguish one institution from another, both between, and within, different Latin American countries. Without ignoring the benefits that training in the principal centers of excellence can provide, they may show a tendency to bias, which is shown in the occurrence of a preliminary stage of institutional consolidation. A large number of academic degrees obtained abroad were evident in the political science programs found in Brazil before the 1990s and also, until more recently, in the case of Argentina, Chile and Uruguay which mainly shows the sharp reduction in the offer of doctoral programs in these countries. By contrast, it is expected that the extension of the programs – especially if they are linked to paramaters of rising standards – will after a few years be followed by a situation where it is more common for teachers and researchers to be recruited for either their own or other post-graduate programs in the same country.

The system of post-graduate studies in Brazil was formed through a combination of activities requiring certification, assessment and financial backing, which are carried out by a Federal Agency called CAPES (Coordination for the Improvement of Higher Education Personnel). CAPES was established in 1951, as a "National Campaign for the Improvement of Higher Education Personnel", and as a part of a ¨developmentalist¨ plan during the second government of Getúlio Vargas (1950–54). The rationalization and ´professionalization´ of the public administration and the need for specialist professional training to meet the requirements of the growing industrialization in the country, led to the setting up of a federal agency responsible for the improvement of personnel. Its first measures were to contract visiting foreign teachers, set up cultural exchange schemes and encourage cooperation between Brazilian and international universities, student grant schemes and the promotion of scientific events. Following the seizure of power by the military authorities in 1964, CAPES ceased to be attached to the Presidency of the Republic and became a part of the hierarchical structure of the Ministry of Education. Another peculiar feature of

the Brazilian situation is that the various procedures for monitoring and maintaining the sytem of post-graduate studies are combined within a single agency. CAPES is responsible for: (1) accrediting educational institutions with the legal powers to award Master´s and PhD degrees; (2) carrying out a periodic assessment of the students´ performance to ensure they comply with the minimum requirements of quality and achieve standards of excellence at an international level and, (3) financing a significant part of the system by providing scholarships and meeting the costs incurred by the accredited post-graduate programs. CAPES has undertaken the assessment of post-graduate studies in Brazil since 1976. The scores range from 1 to 7, 3 being the minimum score required for opening or maintaining a course or program, and 6 or 7 being used as a benchmark for institutions seeking to achieve a performance equivalent to that of renowned international centers.

The core of the assessment carried out within the system for post-graduate studies in Brazil can be separated into three key areas: (i) scientific output as a proxy for academic quality and the skills required for research (ii) the training of Master´s and in particular, PhD degree students and (iii) acquiring an international perspective in each program.

The influence of this institutional assessment (conducted by CAPES) of the development of political science in Brazil, has been witnessed in terms of i) a rise in scientific output, ii) the direction it has taken and iii) the concentration on publishing articles in prestigious periodicals and journals. These publications have been a key factor in the progressive improvement made by Brazil in the Combat Points (CP) and the Ranking Index (RI) in the international rankings for the subject. Running parallel with this, a comparison of the performance indicators of each institution that offers Master´s and PhD courses in political science in Brazil and the scores obtained in this academic assessment, reveal a close statistical correlation, which is evidence of the consistency obtained by this institutional adjudication.

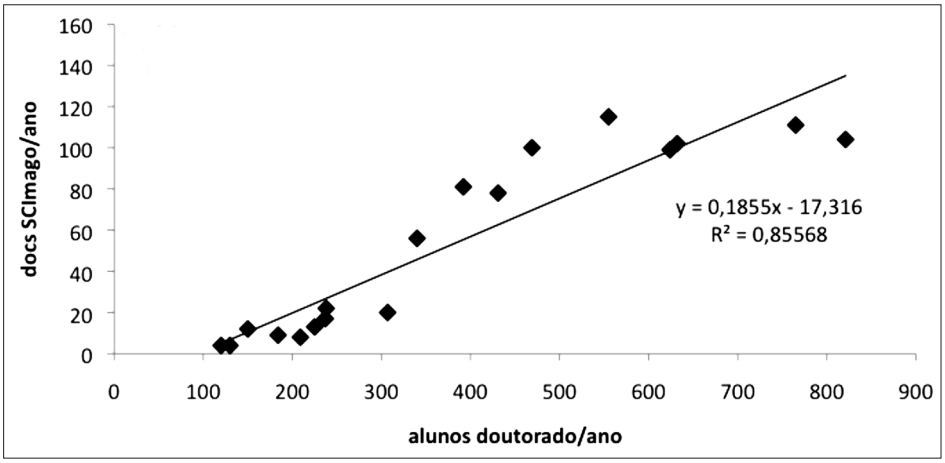
The information displayed by the SCImago Journal & Country Rank allows the evolutionary pattern of political science in Brazil to be viewed from another angle[2]. The data are obtained from the Scopus database which gathers information about publications in scientific periodicals in all areas of knowledge and ranks the periodicals in terms of the volume of output, the SJR impact factor, number of citations and H-index. The records of SCImago make it possible to compare journals, countries and areas of knowledge by measuring the intellectual output and its effects on the international scientific community.

Alongside the expansion of the area, recently there has been a significant consolidation in the indicators for measuring academic standards, which suggests that growth and quality are not mutually exclusive. Until 2004, political science in Brazil was behind Argentina, Chile and Mexico in the indexed publications of the AL. Since 2006, Brazil has strengthened its leadership position in political science in Latin America[3]. The sharp rise in the scientific output of political science and international in Brazil can be attrributed to a wide range of factors, such as i) the expansion of the post-graduate system, ii) the establishment of assessment procedures and the QUALIS system of CAPES and iii) the internationalizing of the main periodicals in the area.

At the same time, it can be argued that the expansion of highly qualified scientific output is closely correlated with the broadening of the number of PhD courses available, as well as the number of enrolments and academic degrees in the area. The graphic below shows the link between the number of PhD students per annum and the registration of scientific documents on the SCImago index for each year. On the basis of R^2, it can be estimated that in about 85 % of the cases of the growth of the number of enrolments in the CP & RI doctoral courses, there was an annual variation of scientific output in the area:

[2] http://www.scimagojr.com/index.php

[3] https://www.scimagojr.com/countryrank.php?category=3320&area=3300&region=Latin%20America



Graphic 4: The relation between the number of PhD students per annum and CP & IR scientific output in Brazil (1996–2016)
Source: SCImago and CAPES

3 Mapping studies on digitalization in Brazilian political science

Studies on Digitalization are still incipient in Brazilian political science. In this section, one can find a mapping of activities of teaching, research and scientific production related to this subject by Brazilian researchers. There will be considered disciplines offered by graduate programs, research projects, books and articles published in scientific journals, by Brazilian political scientists, as well as the use of e-learning resources in the teaching of political science in the country. The source for the data collection was the Sucupira Platform, an official and annual register of all activities carried out by graduate programs in Brazil, maintained by the Coordination for the Improvement of Higher Education Personnel (CAPES), the governmental agency responsible for accreditation, evaluation and funding of institutions that hold courses at this level.

Among the 43 graduate programs in political science and international relations in operation in Brazil in 2016, only three (03) offered classes related to studies on "digitization": The discipline "Digital Democracy", offered by the Institute of Politics of the University of Brasilia (UNB), has as its subject topics such as decentralization, citizen participation, transparency, accountability, grassroots social movements, alternative experiences, popular participation and social movements in the network. Among the topics covered are also the examination of factors of improvement citizen participation in various sites of legislative assemblies of municipalities in Brazil and Latin America and the use of information and communication technologies to increase participation and governance at the local level.

In the program on international strategic studies of the Federal University of Rio Grande do Sul, a course on "Digitalization and Local War" is offered, which is dedicated to studying the impact of digitalization on war especially in the sphere of doctrine, and the correlation of forces in the international system. Finally, the Center for Education and Training of the House of Representatives (CEFOR) through the Professional Masters in Legislative, installed the course "Digital Democracy and Legislative", aimed to examine cases of digital democracy applied to the legislature, digital culture, technology of information and communication and its diverse applications in democratic processes, social networks, collaborative transparency, digital participation and digital deliberation.

With regard to scientific research on "digitization studies", only three funded research projects were identified on the theme: researchers from the Federal University of Pará, located in the Amazon region, develop the project "Technological consumption behavior: digital inclusion and sustainability the contributions to social insert and local development", based on qualitative research developping a focus on ethnographic analysis; another subproject is performing a quantitative research including an analysis of responsible consumption (green technological products). At the Federal University of Rio Grande do Sul, researchers from the international strategic studies program investigate "Digitalization as factor of international Brazil inset: security, integration and development", which seeks to verify the impact of the digitization on Brazil's relations with the countries of the South axis, aiming to evaluate how such a process will benefit the Brazilian international insertion and will enable a leading role in the context of South-South axis relations. Finally, in CEFOR, researchers develop the project "Politics and the internet: strategies of political institutions in digital democracy", which aims to study the main digital mechanisms aimed at bringing political institutions closer to citizens and civil society, analyzing if contact and debate activities developed on the Internet are an effective instrument for the interaction, visibility and transparency of political institutions, parliamentarians, political elites and civil society organizations.

In the period corresponding to the quadrennial evaluation 2013–2016, researchers in political science published five books, two book chapters and five articles in scientific journals dedicated to analyzing "digitization" in politics:

Table 1: Scientific Production on digitalization in politics (2013–2016)

Production	Publication	Author	Institution
Brazilian parliament and digital engagement	Journal	Barros, A.T; Bernardes, C.; Rehbein, M.	CEFOR
Concepções, debates e desafios da democracia digital (Conceptions, discussions and challenges of digital democracy)	Book	Sampaio, R. C.; Bragatto, R; Silva, S.	UFPR
Deliberação online no brasil: entre iniciativas de democracia digital e redes sociais de conversação (Online deliberation in brazil: between initiatives of digital democracy and social conversation networks)	Book	Fabrino, R; Sampaio, R; Barros,S.	UFPR
Democracia digital: publicidade, instituições e confronto político (Digital democracy: advertising, institutions and political confrontation)	Book	Fabrino, R.; Pereira, M; Filgueiras, F.	UFMG
Democracia digital, comunicação política e redes: teoria e prática (Digital democracy, political communication and networks: theory and practice)	Book	Sampaio, R. C.; Bragatto, R; Silva, S.	UFPR
Democracy in brazil: is technology a game-changer?)	Book Chap.	Rosina, M.; Moncau, L. F.; Lazzari, E.	USP
Digital/commercial (in)visibility: the politics of daesh recruitment videos	Journal	Leander, A.	PUC-RIO
Disputas de poder: entre o totalitarismo e a democracia na era digital Diisputes of power: between totalitarianism and democracy in the digital age)	Journal	Wunsch, M.	UFRGS-EEI
Remarks on the relations between intellectual property and cultural diversity in brazil's digital environment: an analysis of the civil framework of the internet	Book Chap.	Kauark, G.; Cruz,P.	PUC-RIO
Os clientes diplomáticos e econômicos da espionagem digital estadunidense: análise das ações contra o conselho de segurança da onu e a petrobras (The diplomatic and economic clients of us digital spying: analysis of the actions against the un security council and petrobras)	Journal	Teixeira, C.; Datylgeld,.M.	UNESP
Rumo a um modelo mais participativo de comunicação partidária? um estudo comparado das estratégias de comunicação digital pelos partidos brasileiros e portugueses (Towards a more participatory communication model? a comparative study of digital communication strategies for the brazilian and portuguese parties)	Book	Braga,S.; Rocha, L.; Carlomagno, M.	UFPR
Setting the public agenda in the digital communication age	Journal	Lycarião, D.; Sampaio, R.	UFPR

Source: Sucupira Platform/CAPES

These papers address the problems and challenges associated with digitization, related to political aspects such as democracy, institutions, legislature, parties, agenda and political deliberation, social networks and participation, diplomacy and international relations.

In sequence will be considered digital tools available to researchers in Brazilian political science and distance learning initiatives developed by the postgraduate institutions in the área.

The main digital resource available is the Portal of Periodicals of CAPES[4], the federal agency for accreditation and evaluation of the Brazilian post-graduation. Funded by the federal government budget, the Portal promotes the signing of 37.8 thousands international journals, allowing its free access by scientific research institutions. In the area of Political Science, 190 international journals are available, corresponding to a total of 376.2 thousand documents, offering access to political scientists affiliated with university institutions, access free to the main journals of greatest international impact. Since 2002, CAPES has also made available the Thesis Catalog, with full access to all PhD Theses in the country[5]

It should be considered, furthermore, the Scientific Electronic Library Online (SciELO), an electronic library covering a selected collection of Brazilian and Latin American scientific journals[6]. The library is funded by Foundation for Research Support of the State of São Paulo (FAPESP), in partnership with the Latin American and Caribbean Center on Health Sciences Information (BIREME), and since 2002, SciELO is also supported by National Council for Scientific and Technological Development (CNPq). This digital portal currently has a total of 293 scientific periodical titles (88 of human sciences), with free access.

The National Council for Scientific and Technological Development (CNPq) maintains two digital databases, with information from all Brazilian researchers and research groups: Curriculo Lattes[7] and the Research Groups Directory[8].

Parallelly, all Brazilian post-graduate centers undergo an accreditation process, at the time of its creation, and through a periodic evaluation, every four years, carried out by CAPES. In these moments, one of the topics evaluated is the infrastructure available for teaching and research, especially considering the "availability and publicity of databases", "access to electronic databases of journals" and computational resources for interinstitutional interactions. The Ministry of Science and Technology maintains the National Education and Research Network (RNP), which constitutes Brazil's advanced network infrastructure for collaboration and communication in teaching and research. It connects more than 250 Brazilian institutions to each other and to the outside. Periodic reports in the Sucupira Platform[9] reveal a growth in the use of digital resources for access to databases, periodicals and the accomplishment of theses and dissertation examination with participation of members at a distance.

The Brazilian educational system has different incentive programs for distance education. The first, called the Open University of Brazil, was created in 2006, aiming to "expand and internalize the offer of courses and programs of higher education in the country." These courses are offered by public universities using distance education resources (EaD), as a priority for the training of teachers of basic education, as well as managers

4 http://www.periodicos.capes.gov.br/

5 http://sdi.capes.gov.br/catalogo-teses/ct_sobre.html

6 http://www.scielo.br/scielo.php?lng=en

7 http://buscatextual.cnpq.br/buscatextual/busca.do?metodo=apresentar

8 http://lattes.cnpq.br/web/dgp

9 Sucupira Platform is an electronic portal where all the information about Brazilian postgraduate centers (scientific production, classes, academic activities of professors and students) are registered and publicized. https://sucupira.capes.gov.br/sucupira/

and workers in education of the states, municipalities and the Federal District. In 2018, the UAB System had 109 Public Institutions of Higher Education (IPES), offering 800 courses; none of these in the area of political science.

The second modality, is the Master Professional Network, also aimed at the training of teachers of basic education, using semi-resourses and distance learning. In 2018, 12 Master's degrees were registered in areas such as mathematics, literature, arts, history, biology, chemistry, physics, philosophy, sociology, environmental sciences, hydrology, physical education. none of these, once again, in the area of political science.

It should also be noted that the Interinstitutional PhD and Master's degrees (DINTER, MINTER), in which a traditional and consolidated institution offers classes and is responsible for the training of doctors and Masters in more distant regions and without the presence of institutions of postgraduate studies in the respective area. There are initiatives in the area of political science, such as two DINTERs from UFRGS (extreme south of the country) in the states of Rondônia and Amapá (extreme north, Amazon region), or PUC-RJ (Rio de Janeiro) together with the University of Latin American Integration (southwest). But they are predominantly face-to-face experiences, organized from the physical displacement of teachers, with little use of distance learning resources.

The expansion of Brazilian political science in the last three decades has presented characteristics of regional concentration, with a high density of institutions and research centers in the Southeast and South states, a greater rarefaction in the Northeast and Center-West regions, and practically absence in the far northern Amazon region. Parallel, the rate of doctoral training has been lower, when compared to neighboring areas such as Sociology or Economics. These two facts should constitute a stimulus for the adoption of e-learning resources, as a way to reach more distant regions and to broaden the training of doctors and researchers. However, this is not what can be verified, according to information above.

What are the reasons for the absence of e-learning initiatives in the training of new generations of Brazilian political scientists? Three can be the elements to explain this picture: (1) characteristics of government policy, (2) association of e-learning to low quality courses, and (3) The post-graduate centers in the area of political science recruit students in geographically close regions, so there is a reduced territorial mobility in the training of doctors in the area, with less demand for the use of digital resources or distance education.

Government programs to encourage distance education (such as those mentioned above) are focused primarily on the training of primary school teachers. This is not the potential audience for Brazilian political science, since there are no "politics" disciplines at these levels. Studies and statistical surveys show that PhDs in political science are absorbed mainly in positions of planning and management in the public administration and in centers of research with higher education.

About 70 % of brazilian higher education is developed by private educational institutions. In recent years, e-learning has been strongly used by these institutions as an alternative to cost reduction, in the form of hiring of teachers, physical infrastructure, etc. Its consequence was the dissemination of low quality courses, in which the payment of fees practically ensures the obtaining of the respective diploma. This, in turn, ended up stigmatizing the use of distance education and its potential.

Finally, and perhaps more importantly, most doctors of political science and international relations (60.8 %) obtained employment in the same state where they graduated. By extending the territorial scale to the geographical region where the doctoral institution is located, this figure climbs to 73.8 %. Professional migration from the South/Southeast regions to the North, Northeast and Center-West (minus the Federal District) corresponded to a proportion of 14.2 % of new PhDs, whereas circulation between the South and Southeast was an option for only 5.9 % of graduates.

This behavior is also manifested when the information is broken down into graduate programs of the field: most of the graduates obtained jobs close to the place where they did their PhD. The exceptions were UERJ-CP and UNICAMP, where there was a predominance of doctors employed outside the state of the institution. Based on the number of states with PhD graduates engaged in professional activities, USP-CP (18), UFRGS-CP (14), UNICAMP (13) and UNB-RI (10) had the highest territorial dispersion, with graduates working professionally in all the geographical regions of the country. Finally, the ratio between the score obtained by each program, in reference to the period 2013–2016, and nationalization of the professional activity of graduates from each institution, produced residual indices ($R^2 = 0.0409$), indicating no association between academic hierarchy and higher odds of national placement of PhD graduates. Considering that 80.1 % of the PhD students in political science and international relations graduate programs in the period were doing their doctorates in the same state where they had obtained their Master's degree, would appear to indicate low national integration of the system, reflected in interstate and inter-institutional circulation among those seeking academic career opportunities.

4 Conclusion

As stated earlier, political science in Brazil has now completed fifty years of professional academic work in Brazil. There have been advances in post-graduate studies with regard to undergraduate programs and the formation of academic associations, as well as the institutional assessment that has been conducted by CAPES since 1976. This has been assisted by institutional incentives and has led to the formatting of a model for scientific output, that is set in parameters such as scientific research as a substitute for a dependence on essays and a dilettante´s approach, formal rigor and the peer review process. The results of this disciplinary institutionalization can be measured through an exponential growth of PhD students with a capacity for being employed as academic researchers or policy-makers in the national public adminsistration. It is also reflected in the índices for scientific output, which in recent years have surpassed the levels attained by the community of political scientists in the rest of Latin America.

The institutional and geographic expansion of Brazilian political science was characterized by strong regional asymmetry. Proportion close to half of the Center Programs is located in the Southeast region (46.5 %), with a significant proportion in the South region (20.9 %) and increasing in recent years in the Northeast. There is a more rarefied presence in the Midwest (particularly outside the Federal District), and especially in the North, where the Area has only one Center and no PhD.. Parallel, there is a limited national geographical circulation, evidenced by about 60 % of doctors reaching professional positions in the same state of doctoral degree. In the same direction, it should be pointed out, also, a reduced migration from the South / Southeast regions to the North, Northeast and Central West. Similarly, rates of doctoral training have been lower than in other areas.

In view of this situation, the use of e-learning resources should be an effective alternative for the territorial expansion and increase in the training of new generations of PhDs and researchers in political science. However, the experiences and initiatives have been residual. The emphasis of government programs on the use of digital resources for training basic education teachers, vocational market with regional recruitment, and the low quality of e-learning-based courses implemented by private institutions has inhibited more aggressive strategies of educational use distance learning by political scientists.

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Digitalization and Political Science in Mexico

Rodrigo Sandoval Almazán

1 Introduction

Digital revolution is changing all fields of human interaction. The educational field is not the exception, on the contrary, it is one of the most important and complex changes with a fast evolution and impact on students, academics and all of the society. Also, the political sciences field receives different impacts from the digital revolution, most of them unknown at this point. The purpose of this chapter is to unveil two of these impacts on the education of political sciences: teaching and research. The first part of this chapter focuses on understanding the impact of teaching political science in the Mexican context. The second part will discuss the impact of research on this field. These seminal ideas are the result of the discussion panel held during the IPSA conference in Hannover, Germany in December 2017. I hope this will help introduce the discussion of political science in Mexico and the rest of the world.

Digital revolution plays an outstanding role in nowadays teaching on political science. Teachers in many countries changed green boards with chalk for flat TV screens, DVD players, laptops and digital boards that send written information to a computer monitor instantly. However, this hardware evolution has not updated the content of lectures and presentation by professors. This change is just at a very early stage.

On the other hand, some students evolve quickly, they criticize contents, ideas, reformulate phrases and place questions beyond the readings, and other students are more passive and copy-paste notes, answer to minimal content and learn on the surface of knowledge. They only read headlines and subtitles of texts but do not understand the meaning of words or phrases. However, both types of students are aware that information is something easy to obtain, it is already on the Internet. Even worse, they do not understand the background concepts or the origins of ideas. It is just enough memorizing headlines to demonstrate some kind of wisdom. On the other hand, senior professors have difficulties adapting to this evolution. They prefer to go slowly, not using technology and avoiding easy knowledge. They would like to use the same old text books and printed papers, and it is difficult promoting a change in their habits and behavior for this new era.

According to the ANUIES' study "Current status of information technologies in higher education institutions in Mexico", the Mexican HEI's reported that 2 % of them allow access to 80,000 students to their learning platform, and 42 % answered that less than 1,000 students used the platform (Ponce Lopez 2016, 60). Those elements show the differences between universities and the challenges they face to promote digital education among their students.

An important disclaimer is the lack of data and studies focused on assessing political sciences' education in Mexico. Some scholars, Reveles (2016) and Loaeza (2005), did research on the discipline evolution and history over the past two decades. However, data about teaching strategies or the specific use of digital tools on the field are rare or scarce. This chapter intends to present as much information as possible from different official sources in order to build a consistent overview of the problem.

This chapter explores the impact of digitalization in education in political sciences considering the three main actors: teachers, students, and digital development. How does technology affect teaching in social sciences? How do students learn in this new environment? What are the roles professors have to change in order to adapt their lectures and management of subjects? This first section focuses on the Mexican context of teaching social sciences. It is divided into four sections: basic information about digital revolution; aspects of content; institutional aspects and a final section which presents some desiderata, positive perspectives and possible risks. The second section of the chapter will focus on research on political science and the impact of the digital revolution. It will be organized in the same way: general information; aspects of content, institutional aspects and the final section of desiderata.

2 Teaching political science in Mexico: digital tools and teaching methods

The new trend in digital education has three main digital tools: online courses, use of social media and digital contents and management. Last summer, in the Autonomous university of the State of Mexico, several courses for teachers were based on online teaching: online education; teaching tools for online environments; use of MSN tools for teaching, among others. Most social sciences professors learned several tools, basic or advanced skills for their teaching process. However, very few of them applied them immediately for their courses.

A second digital tool is the use of social media. Mexican students are immersed in social network sites (SNS). According to the Mexican Internet Association, young people spend eight hours on the SNS; the majority have an account on Facebook[1]. Therefore, it is important that teaching reaches students using these platforms. Another training course for teachers focused on the use of SNS for teaching, where many of them complement their offline class discussion with an online discussion.

There are different risks, privacy, personal data, and bullying, which have not been considered yet in these courses. This is important because online teaching is very different from offline teaching; rules apply differently to each context and teachers need to adapt to these rules. Several universities in Mexico are aware of this problem, and they have implemented their own SNS or closer environment for teaching. The Autonomous University of the State of Mexico developed an online platform called SEDUCA (Educational Digital Services for University[2]). However, very few university teachers use this tool, they prefer other tools such as Schoology or Facebook to manage their courses or promote online participation. Likewise, the Autonomous university of the State of Mexico, recently opened an online repository (see the link: http://ri.uaemex.mx/) for digital content, that includes papers, complete books, thesis, journal articles from the university professorship

[1] More than 79.1 million of Mexicans had Internet access in 2017; this means 61 % of the population has access to this new information platform (Alonso Rebolledo, 2017).

[2] See online http://www.seduca.uaemex.mx/continua/. [last access: May 11th, 2018].

to promote the open access policy for all the material that could be used for preparing lectures of different subjects[3].

The university of the State of Mexico opened three courses for Mexican teachers in summer of 2017, two of them related to teaching using ICT on different platforms such as Moddle and Schoology and one more for using Facebook for teaching. Unfortunately, at the time of writing these lines, there were no coordinated efforts, such as a plan or public policies to adapt teaching methods and strategies to communicate with students inside the university. Most teachers decided to adapt themselves using different tools and methods, and many others adapted their syllabus or classroom practices to some platform – Facebook – or technology like mobile phones. On the other hand, as mentioned earlier, there is a strong resistance from senior teachers to use this kind of technology in their courses, and they continue using their traditional offline teaching, using printed books or photocopies.

2.1 Experience on teaching political sciences in a digital revolution

The digital revolution is not covered in the political science curricula. Very few professorships have been created, but only for Master's programs and some optional courses for Ph. D. Programs, mostly related to e-governments.

The UAEMEX started content change and teaching experience by introducing a new undergraduate program called Information Management in Online Social media. The first generation began last August 2017, with 20 students in a mixed e-learning mode. Other universities, like UNAM and the private university ITESM, have developed extracurricular programs in Coursera, OpenEdX and other internal courses focused on open access.

Most students use their smartphones in the classroom every day. The teacher does not know if they are phubbing[4] or if students are looking for something related to the topic. Teaching in the 21 century is challenging for the many distractions we face through technology. Social sciences are not an exception. Teachers in Mexico are thinking about how to deal with this situation. There is not a right answer, but a combination of different teaching strategies – i. e., online vs. offline – could help.

At the university, we combine different solutions. The use of a website such as Schoology, is a landing zone for materials, discussions, news, comments and homework activities. The second part of combined digital tools is the use of Prezi. This innovator presentation software changes the perspective of students and creates a more relaxed exposition of contents, different from the common power point slides. Students become more engaged and make questions about the content. Even more, Prezi allows including video, audio, photos and has an extraordinary use of different templates with motion.

The third and last part of the combined digital tools is the use of social media platforms to increase discussions, share links and contents and create the sense of a virtual community. Of course, this should not be done in an invasive way, posting comments every day or at every hour, but in just a balance including news that creates curiosity or interaction about a complex task. The use of Instagram, Twitter or Facebook in class allows some freedom to participate beyond the classroom and enables the teacher to repeat content and to produce some discussions about certain social sciences topics.

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[3] Mexican Federal Government promotes Online repositories to foster Open access in 94 institutions (Universities and research centers) CONACYT (2017) page 3).

[4] Phubbing is a term coined as part of a campaign by *Macquarie Dictionary* to describe the habit of snubbing someone in favor of a mobile phone. On Wikipedia online: https://en.wikipedia.org/wiki/Phubbing [Last access; May 12, 2018].

These combined digital tools – Website-Prezi-Social media – have practical advantages. Students must develop intellectual skills if they develop their own content, involve a deep investigation about a certain topic and present it online, develop more challenging tasks that include the use of technology, like role-playing strategies for decision making or to understand certain situations of political communication. Complementary strategies such as providing content via Websites to be discussed in class could be enriched with some messages using SNS, specially Facebook – if the class share a web page – or maybe using presentations as Prezi to interact with the online content.

Also, a practical strategy with real problems or in-site discussions of several public policies or actual problems in the governments could help provide a practical perspective of the theories and ideas. Even though, there is no evidence so far to confirm these combined strategies in the case of Mexico's political science students.

Additional recommendations could help introduce more digital strategies into the classroom of political science students. For example, avoid boring and long readings for college students. Prefer short, concise, but with strong ideas that can remark some points of the lecture and improve the learning, use web sites or direct PDF files to share readings. Complement class sessions with short videos (1–5 min), appealing images and create a different learning environment related to the class topic which will help combine technology with offline discussions and interactions. Constant changes and dynamic lectures are the main issues to focus these distracted students' attention on the new digital era.

2.2 Mexican universities: a world of difference

Mexican universities are divided into two conditions: public and private and there is a huge gap among them. Most of the public universities have scarce resources, old facilities, and infrastructure and focus mostly on teaching, except the ones in the center region of Mexico. Private universities are concentrated in Mexico City and the states of Puebla and Nuevo León. Most of them also focus on teaching but compared to the public ones, count on modern facilities and infrastructure, their teachers are younger, and many of them have studied in foreign universities (Reveles 2016, Loaeza 2005). The public universities' gap also widens with the region of the country. Most universities closer to the capital, Mexico City, have more public funding, better facilities, and a large student population.

It is important to emphasize that college education in Mexico is almost free. Students only have to pay a symbolic fee to attend (around one thousand dollars per year). Federal and local governments subsidize most of the education costs. This reduces the expectancy to have good quality in teaching and foster innovations in education (Binelli & Rubio-Codina 2013). Reveles mentions that according to data from 2015, in Mexico there were 84 college degree programs focused on political sciences and only 14 programs for Master degrees and nine Ph. D. programs. (Reveles, 2016, 18).

The National Association of Universities and Institutions of Higher Education (ANUIES in Spanish) developed a report in 2016 for the use of technology in Mexican universities, titled: "Current status of information technologies in higher education institutions in Mexico" (Ponce Lopez 2016). In this report, the following data can be found: Concerning teaching strategies using digital platforms, Mexican universities follow four main strategies. The first one is to buy education platforms, 25 % of HEI's bought some platforms during 2016 (Ponce Lopez 2016, 59) such as Blackboard, Moddle or Schoology to teach some subjects. The second strategy is to develop their own platform, 16 % of the HEI's in Mexico have developed their own platform (Ponce Lopez 2016) as the UAEMEX developed

SEDUCA[5]. The impact of these two strategies has not been assessed yet, and there is only one test regarding which strategy could be the best for their students and teachers. Unfortunately, there is not a national strategy to support this kind of education.

The third strategy is to rent an online platform, 19 % of Mexican HEI's rent a cloud platform or inside their facilities (Ponce Lopez 2016, 60). The last strategy is a combined solution, a partial section of the platform was developed inside the university, and the rest is either rented or acquired. It is important to mention that 10 % of the universities do not have this type of technology for teaching. Accordingly, 45 % HEI's mention the existence of an area for training teachers, only 29 % mentioned a combined area for training on IT teaching objects. (Ponce Lopez 2016, 61).

Most of the public universities across the country have no strategies to promote the use of technology in the political sciences programs, being this one of the main difference with private universities such as the Tecnológico de Monterrey (ITESM) or Instituto Tecnológico Autónomo de México (ITAM) that use several technologies. These universities use Blackboard, for example, to promote interaction with their students and foster the use of technologies in their programs. However, there is not a clear strategy or definition to make the digital revolution a key component in their education programs.

2.3 Content and institutional aspects

The digital revolution in the political science curricula is challenging for universities and professors because they face substantial changes in the contents they teach. For example: how to teach the topic of democracy and power in the Trump Era? How to deal with the lack of theoretical references to explain Brexit or the crises of the European Community? How to teach about sovereignty and democracy against the power of crowds at the Arab Spring? How to teach new public management in the context of big data? in other words, how to update political science curricula in a fast-changing world?

There is not a simple answer to these questions. At least there are three clues to help answer these questions and produce updated contents for political science (Mounk 2018, Mosco 2017):

- Markets forced digitalization;
- Digitalization forced to open education;
- Digitalization forced for interaction.

The digitalization of contents creates a fast, massive exchange of new knowledge impossible to capture in a single lecture. However, this digitalization needs a curator. This curator is becoming the teacher, the theoretical background and the students' criteria. All of these elements are pushing the markets to receive better education, high quality knowledge at low cost. The digitalization also forces to open education. New online repositories in every university, for every subject, by every teacher that uploads extra material at a DropBox account. This culture of sharing, collaboration and peer to peer tasks that were explained by Wikinomics (Tapscott & Williams 2008) is the force that changes the learning perspectives of teachers and students. We are witnessing a clash of civilizations among the X generation against the millennia one. Nowadays students' interaction with knowledge flows at a different speed and paths. It is easy to find information and data, but it proves to be much more difficult to transfer it into knowledge. Digitalization of contents

[5] Explained in the previous section.

has forced interaction between these two generational cultures, and this can result to be an advantage.

The digitalization of teaching in political science is an enormous task in Mexico. There is no promotion of such strategy, no financial resources allocated to provide support at any university or program related to it. Although it is an important matter to improve teaching strategies and modernize students, it is not a priority for any educational purposes so far. If we find the balance among collecting data, information from recent changes and systematizing such ideas inside an orderly plan of lectures, practices, and presentations, this could be the ideal way to engage students.

2.4 Desiderata, positive perspectives, possible risks

Mexico has enormous challenges in political science education and education in general. Besides the lack of digitalization of processes and Internet access, other problems such as the demographic bonus[6] need to be considered. Only 17 % of people aged 25 to 64 have completed higher education, the lowest proportion among the OECD countries, where the average is 37 %. Regarding postgraduate studies, only 1 % of Mexicans in that age range have a Master's degree or equivalent while less than 1 % has a Ph. D.

In political science education, Mexico faces three problems. 1. recognize the need to increase virtual education on the field; 2. promote a national strategy at all levels and universities to increase the use of technology in political science education and 3. embrace a digital transformation of contents and process across the disciplines of social sciences.

1. Recognize the need to increase virtual education in the field. Some small steps have been made in such direction with the National Association of political science in Mexico, that focuses its efforts to disseminate knowledge of the area using virtual technologies. Very few universities such as the UNAM and UAEM started with virtual courses on some political topics such as open government[7].

2. Promote a national strategy at all levels and universities to increase the use of digital technology in political science education. This is the most important task, but less attention has been provided during these years. Many political sciences schools and universities focus their attention on their programs, students' numbers but no attention to digitalizing their contents or increasing their quality focused on national problems.

3. Embrace a digital transformation of contents and process across the disciplines of social sciences. Only the Colegio de México[8], a prestigious public university for political science, history, and international relations has programs that share common ground on social sciences. However, this is elite education for a very few Mexicans; only 25 students are accepted every two years in the public administration programs. Other private universities, such as the Jesuit university, Universidad Iberoamericana and the Instituto Tecnológico de Estudios Superiores de Monterrey (ITESM) have programs that share some content with other disciplines such as communication and sociology subjects that enrich

[6] The United Nations Population Fund (UNFPA) has identified the demographic bonus as a growth potential that results from changes in the age structure of the population, especially when people of working age – between 15 and 64 – are more than dependents – under 15 and over 65. In Mexico, from the generation that is now around 15 years old, the base of the pyramid began to shrink, which means that the proportion of children has declined to make way for young people and adults. This is due to the increase in life expectancy and the decline in fertility that began in the late 1960s (Arreola-Rosales 2018).

[7] Take a look on the Transnational Open Government Virtual Education Project (TOGIVE) sponsored by ERASMUS, in which UAEMEX is a partner Online: https://togive.eu/ [Last access: May 12, 2018].

[8] See official website for college programs: https://www.colmex.mx/es/licenciaturas [Last Access: May 12, 2018].

their programs. But none of them have digital programs or virtual learning. The main challenge for Mexican political science teaching is to understand the importance of this task and their impact on future education. Without recognizing this problem, very few advances can be made in such a direction.

3 Research in political science in Mexico

The second section of this chapter focuses on research of social sciences on digital transformation. We also organized this section in four subsections: 1. General information; 2. Content aspects; 3. Institutional aspects of research; 4. Desiderata: risks and perspectives. Some other elements and information are discussed in each subsection's notes and conclusions. A key element to understand research in Mexico is that the fields of public administration and political science are combined in major studies in several universities. This lack of separation between two areas confuses the technology implementation in teaching and researching in each of them. Digital tools are used more often on political science subjects rather than in public administration because most teachers use materials from other countries to complement their teaching practices (such as material from the USA) and there is less digital material available on public administration.

On the other hand, research topics depend mostly on every university. For example, public universities receive federal funding to sponsor their research (CONACYT, 2017) but private universities, which have no access to public funding for research, need to have some alliances with public universities or private sponsors to participate in joint projects (Binelli & Rubio-Codina 2013). Likewise, most of the research funding for social sciences is centralized in Mexico City universities, such as UNAM, COLMEX, or in the metropolitan area of some states such as the State of Mexico, Puebla, and Querétaro. The National Council of Science and Technology (CONACYT) also promotes high quality researchers with the creation of the National Researcher System that assesses all researchers in the country that join this policy, providing a monthly scholarship to maintain those in public universities that are part of research centers or conducting some research projects.

The national research system from CONACYT is applicable for all disciplines, not only social sciences. Nowadays, it supports more than 27,186 researchers in the country, who are evaluated by publications for JCR and SCOPUS indexes (CONACYT 2017). political science researchers are evaluated through this system. The online platform, described previously, has tools to assess projects and researchers. However, it does not promote communication and interaction between researchers. The National Council of Research & Science (CONACYT) represents a relevant component that centralizes most of the social sciences research using an online platform. This national platform for research includes the following modules or sub platforms:

- Curriculum vitae platform for Mexican researchers;
- Research projects' platform;
- National repository access.

These platforms are combined with private organizations that sponsor mixed research and focus on national problems. They also assess the work from researchers and students nationwide. Most of the research budget focuses on Natural Sciences, Biology and Agriculture. The share of science in Mexico's budget is only 0.4 % from our GDP (in compari-

son: the total of all OCDE members' share is 2.4 % GDP). Moreover, the budget for science was reduced by 24 % in 2017[9] (Cassani 2018).

3.1 Digital content

Research topics on political science focus on three main areas: 1. Open government and accountability; 2. The political system of Mexico and elections; 3. The information and communication Technology (ICT) in politics to foster democracy. Topics such as public innovation, open government, and public policy recently have been developed in universities and research centers. A hot topic is corruption and accountability, directly linked with open government, which is one of the largest problems in Mexico.

The topic of open government and accountability is promoted because of the relationship with the open government partnership in recent years. This alliance fosters some improvements in law and implementation of open government practices (open data, transparency, collaboration, etc.) that are subject of study and will sometimes receive some funding[10]. The second research area refers to the Mexican political system and elections. The relative youth of the Mexican democracy requires to introduce new elements, laws, and practices to understand our electoral behavior and political parties' actions in recent years[11]. Another area of research on political science points to the impact of ICT in politics and its possible potential to enhance democracy[12]. There are different studies about the use of social media (Nabel 2015, Treré 2016) and marketing technologies (Villaruel & Mendoza 2016) or citizen participation (De la Garza & Ibañez). Much research has been done to understand the different impacts of technology in elections. However, all of these topics are dispersed among public and private universities in Mexico. There is not a national public policy to promote a single research topic or to develop contents focused on a specific area of the digital revolution. Research in these areas is scarce and rarely receives funding.

3.2 Institutional aspects of research

The purpose of this section is to report the main changes in institutions related to political science research in Mexico. Some important changes have occurred in recent years that impact the topics and funding for research in this area. The first change is that the National Association of political science is no longer active. This organization had gathered practitioners and scholars of this area nationwide. In the meanwhile, five years ago, another organization has emerged, namely, the Mexican Association for political science (AMECIP) which has been organizing five national conferences on the field, mostly ori-

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[9] Also data was collected and extracted from OECD Website with the main science and technology indicators. Online: http://www.oecd.org/sti/msti.htm [Last access: May 12, 2018].

[10] Like the study Metrics for Open government, originally developed by the public university Centro de Investigación y Docencia Económica. And sponsored by the National Institute for Transparency, Access to Information and Personal Data Protection (INAI). Online: http://tinyurl.com/yba8jcat [Last access: May 10th, 2018].

[11] See different research published by the National Institute of Elections in Mexico (In Spanish) http://tinyurl.com/y79au5cq. [Last Access: 07 January, 2019].

[12] A working paper about this topic was developed by the National Institute of Elections in Mexico, in 2014. The use of technology in the electoral process. Online: http://tinyurl.com/y9meqlqd [Last Access: 07 January, 2019].

ented to attract undergraduate students and practitioners rather than scholars and researchers. Up to now, it has become the best place to publish and report on a national level.

The second change is that Mexican journals dedicated to political science[13] have been modernized using Open Journal System (OJS) and implemented new policies to improve their quality and access from authors and indexes. Even though, very few new journals have emerged due to the lack of funding and a national public policy to promote them. Most new journals accept papers related to the digital revolution, social media, e-government, and open government. Unfortunately, very few of them have international recognition in the research rankings such as JCR. The third change is that political scientists are cooperating with scholars from public administration and communication, normally sharing facilities along universities. Besides, the National Council of Science and Research (CONACYT) has promoted a national policy to foster research groups that integrate different disciplines and provide funding for these kinds of relationships.

Finally, about research centers in political science, there is not good news. The most recent research center is the National Laboratory of Public Policy (http://lnpp.cide.edu/), more related to public administration rather than to political science. At this moment, there are no new research centers in this area, and some of them are disseminated in public universities across the country. There are important lacks in this matter which we discuss in the following section.

3.3 Desiderata: risks and perspectives

This desiderata section discusses risks and perspectives for political science research in Mexico. Some of the risks are: 1. digitalization of content may occur in public universities faster than in private universities. 2. content of social sciences subjects will copy contents from other countries and adapt them to the Mexican reality; 3. the lack of funding for research will create a large delay in understanding the present reality.

What can be observed so far is that the digitalization of content – books, white papers, thesis, research projects – is mostly limited to public universities. This bases on a national public policy to promote open access for research and knowledge sponsoring online repositories for universities. On the contrary, private universities have to apply for this funding or develop their own repository. During 2017, 96 institutions achieved this funding in order to create an online repository (CONACYT 2017). Digitalization of contents in open access mode constitutes an important step to promote more digital education and digital research. In the case of social sciences, having access to books, research projects and thesis allows students and scholars to collect information and efficiently share knowledge.

The second risk is related to content production and sharing. Political sciences research in Mexico has enormous gaps to develop its own knowledge. Several reasons explain this problem: 1. the lack of an open political system that fosters democratic practices; 2. the absences of schools and universities with long tradition of research on theory and practice of social sciences; 3. the lack of scholars focusing exclusively on political science and not being embedded also in public administration; and 4. the lack of public policies with dedicated funding to promote research on this field.

These reasons justify the need to import knowledge from other countries, using their frameworks and theories to understand the Mexican reality. These foreign ideas imply the risk that they are not necessarily applicable to the Mexican political reality. Mexican political science has to develop its own research agenda, based on our history, cultural heri-

[13] Journals like: Gestion y Política Pública (CIDE) or Revista Mexicana de Ciencias Políticas y Sociales on Q3 of SCIMAGO.

tage and supported by different worldwide theoretical perspectives. The third risk lies in the lack of funding. Without a proper public policy that promotes the understanding of Mexican problems – social and political – for long term research projects, there will be no important contributions to the national field of research.

What are the perspectives? The digital transformation can foster the creation of research communities using Web 2.0 sharing knowledge and producing more research in this field. Aspects to be taken into consideration are the following:

- In order to promote teaching and research of digital issues in political science, it must divorce from public administration and promote schools and universities focusing on this topic;
- Promote more research centers focused on national problems related to political science using technology;
- Impulse sponsorship for new journals and publications that promote social sciences in digital contexts;
- Expand more research topics, not only those for electoral processes, focusing on open government, e-government, and open data;
- Use the CONACYT platforms for managing research and scholars to promote digital communities using digital technologies;
- Distribute research funding and topics in the country according to their location. For example, money for border issues or migration on the border states; dedicated research for cities in the most populated areas.

The risks and perspectives of the digital revolution in the Mexican political science field are complex. Many Mexican scholars are working to make these changes possible and promote the discipline in the political parties, media, and government in the near future.

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Digitalization and Political Science in Paraguay

Liliana Rocío Duarte-Recalde[1]

1 Introduction

The increasing presence of digital tools as a disruptive force in global political dynamics compels academia to pay attention to both the phenomenon taking place and to the disciplinary developments that account for it. A regional focus of the analysis responds to the need to provide explanations of the phenomenon in its context, which is crucial to improve our understanding of the "diverse and peculiar" political processes (Murillo 2015: 576) that are taking place. While studies about political science in Latin America have shown "good progress on issues such as the extension of undergraduate and postgraduate programs, the quality of academic production and the social recognition of the profession" (Rocha-Carpiuc 2016: 458), other topics such as particular research agendas are scarcer.

Heterogeneity in the institutionalization of the discipline is also persistent throughout the region, as shown by the multiple accounts of asymmetries in the development of political science among Latin American countries (Altman 2005, Huneeus 2006, Barrientos del Monte 2013, Vidal de la Rosa 2013; Geary *et al*. 2015). In particular, the development of political science in Paraguay has faced multiple difficulties since the opening of the first program in this area in 1993 at the Catholic University "Nuestra Señora de la Asunción". Though currently the program is taught in this and the National University of Asunción – the most important and well-established universities of the country– their faculty remains made up mostly by professionals without specific training in the discipline, while the syllabi are outdated. This makes up for an institutional context that is not conducive to the development of Paraguayan political science, which has had limited progress so far.

Furthermore, Paraguayan universities do not promote research as a regular basis for the development of knowledge in the social sciences. This has created a situation where the teaching of the discipline involves memorized repetitions of pre-established material, generally lacking any critical thinking. Thus, the successive cohorts of political science students are educated without acquiring the theoretical or methodological tools necessary to do research in this area. In this context, student access to digital tools and online learning platforms provide a window of opportunity for academic development in the area, as these resources allow the continuous training of professionals beyond the institutional framework of the universities, as well as opportunities to participate in international research projects, which provide room for their specialization in practice in a way that was not pos-

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sible before. Information technology is thus essential for the development of political science in Paraguay.[2]

This paper is an exploratory work focused on the way in which the digital era poses opportunities and challenges for political science in Paraguay,[3] in the context of weak institutions of higher education. After performing a review of the state of the discipline in the country, we will identify the current use of digital tools both in the process of teaching and in research in the area, emphasizing the opportunities that they present while also highlighting the challenges that they imply. To do so, we review documentary and testimonial information related to both the Catholic University and the National University of Asuncion, the main institutions of higher learning that offer political science programs on a regular basis (Duarte Recalde 2015: 168).

2 Political science in Paraguay

As previously mentioned, political science in Paraguay still faces the challenge of its institutional development (Altman 2005, Rocha-Carpiuc 2013, Duarte-Recalde 2015). This situation coincides with the weak institutional development that affects all scientific activity in the country. According to the most recent report of the National Council of Science and Technology (CONACYT), the total investment in Science and Technology in relation to the Gross Domestic Product (GDP) in Paraguay in 2015 was 0.13 %, this being the highest percentage registered since this indicator began to be measured in 2001 (CONACYT 2016a). Political science in particular, as well as the social sciences, faces a state of backwardness in its scientific institutionalization due to: "(1) the low social recognition of its scientific status; (2) its low institutionalization in the university; (3) the weakness of mechanisms for disseminating research results; and (4) the lack of links between social research and public policies" (Ortiz and Galeano 2015: 7).

Similarly to other Latin American countries during the 20th century, the development of social sciences in Paraguay was negatively affected by the suppression of critical thought and freedom of speech that occurred under dictatorial rule, which had consequences that lasted well into the early years of democratic transition (Duarte-Recalde 2017). During the decades of the authoritarian regime under Alfredo Stroessner, which lasted from 1954 to 1989, any public expression that aimed to analyze the political context was persecuted and suppressed, while any criticism of the regime was framed as part of a communist political project. This resulted in many Paraguayan intellectuals being exiled and developing their academic careers away from the country, and the breakdown of the authoritarian regime did not imply their automatic return to the country or their rigorous analysis of Paraguayan politics from an academic perspective. Furthermore, once democratic institutions began to develop in the country, the traditional structures of domination continued to in-

[2] According to the Survey on Internet Access and Use in Paraguay carried out by the National Bureau of Information and Communication Technologies (SENATICs), 59.8 % of respondents regularly use desktops or notebooks, 70.5 % of which do it mostly at home, 26.7 % at work and only 15.0 % at the university. In turn, 58.8 % indicate using these tools to seek information and 43.4 % to work. On the other hand, 96.6 % of the respondents use mobile devices, this being the main tool to connect online for 98.5 % of the respondents. When comparing responses by age group, the use of these resources is higher among younger respondents, which reflects its growing potential as a vehicle for teaching and scientific research.

[3] While working on this essay the author faced many of the same challenges present in research in the country, such as lack of data or general acknowledgement of the research problem as such, in hand with lack of recognition of political science as an autonomous discipline.

Table 1: Curricula of political science programs in Paraguay

National University of Asunción	Catholic University "Nuestra Señora de la Asunción"
Semester 1	
Communication and Writing in the Spanish Language; History of Paraguay; Guaraní Language I; Introduction to the Legal Science; History of legal institutions; Latin American Social History; Introduction to Sociology; Seminar: Sociology of Work	Oral and written communication; History of Paraguay; Math; Symbolic Logic; Methodology; Introduction to Paraguayan Social Reality; Philosophical Anthropology; Faith and Science; Christian Mystery I
Semester 2	
Introduction to Political Science; Guaraní Language II; Political economy; Paraguayan Political History	Introduction to Political Science; Comparative Politics I; Introduction to National Reality; Introduction to Historical Science
Semester 3	
Economic and Political Analysis; Paraguayan Social History; Guaraní Language III; Elements of Statistics; Seminar: Interdisciplinary Approaches	Christian Anthropology; Political Science and its Evolution; Introduction to History I; Epistemology and Methodology of Research I; Statistics for the Social Sciences I; Philosophical Anthropology; Introduction to Social Theory I; Theory of Knowledge; Introduction to the Theory of Science I
Semester 4	
Methodology in Social Science; Statistics for the Social Sciences; Economic development; Guaraní Language IV; Seminar: Political Philosophy	Statistics for the Social Sciences II; Introduction to History II; Epistemology and Research Methodology II; Introduction to Social Theory II; Fundamental Ethics and Theology;
Semester 5	
History of Political Ideas I; Constitutional Law; History of International Relations; Foreign Language I; Seminar: Human Rights; Social Policy Research; Theory of the State	International Politics I; World History I; Epistemology and Methodology of Research III; English for Social Sciences I; Social Theory I; Comparative Politics II
Semester 6	
History of Political Ideas II; Political Process and Ideologies; Rights and International Relations; Foreign Language II; Seminar: Ethics and Politics; Social political theory; Rule of Law, Culture, Development and Business Policies in Paraguay	Social Thought of the Church I; World History I; International Politics II; Epistemology and Methodology of Research IV; Seminar; Economic Theory I; Social Theory II
Semester 7	
Computer Science and Political Science; Theories of Power; Political Law; Research Project Development; Foreign Language III; Interest Groups and Intermediate Societies	Social Thought of the Church II; Theory of the State; Economic Theory II; Contemporary Political Science; Cultural Systems; Social Theory III; Paraguayan Economic and Social History I
Semester 8	
National Politics; Geopolitics; Foreign Language IV; Participation and Electoral Systems; Public Administration and Finance; Seminar: Analysis of Political Regimes, Democracy and its Challenges; Seminar: Workshop for the Elaboration of Thesis; International organizations	Demography; Political parties; Latin Americana Political Theory
Semester 9	
	Design and Practice of Political Research I; Paraguayan Political System; Interest Groups; Optional Seminar
Semester 10	
	Paraguayan Foreign Policy; Design and Practice of Political Research II; Theory of Democracy; Public Opinion and Elections

Source: Prepared by the author

terfere with the workings of the educational system, which affected higher education in particular (Rivarola 2008).

Nowadays, Paraguay's two main universities –the Catholic University and the National University of Asuncion– regularly offer programs in political science at a graduate level.[4] However, neither program has a curriculum of its own: in the case of the National Uni-

[4] There are further institutions of higher learning in the country that at some point have offered political science either at undergraduate or postgraduate levels, but there are no records of their regular existence in time.

versity, all subjects up to the fourth semester are shared between political science and the social sciences program, while in the Catholic University subjects are shared with sociology and history throughout the full five years of the program.[5] At the same time, when comparing the curricula of both programs (Table 1) it is possible to observe the markedly legalistic bias of the National University, compared to the rather sociological bias of the Catholic University's program. Either way, in both cases the lack of independence of the discipline appears as a persistent feature.

The specificity of political science as a discipline different from law or sociology has not yet been recognized by a large part of the Paraguayan academic community, a perception that coincides with the limited social value given to the discipline outside academia. The teaching of political science is not structured according to specialized disciplinary criteria and, frequently, the theoretical and methodological debates present in the international academic circles are absent in the country. Teaching in the area is then led by legalistic or sociological biases that reflect the education of those who teach the different subjects in their curricula, posing continuous challenges to the existence of political science as an autonomous discipline. While the influence of classic legal-institutional approaches in teaching make it difficult to overcome normative stands in the study of politics, the preeminence of sociological analysis of political phenomena have influenced the trivialization of its object (Duarte Recalde 2015: 168).

Moreover, academic production in this discipline has limited institutional support from Paraguayan universities and teaching is not necessarily linked to research in the area. The Paraguayan academic production in social sciences in general occurs outside universities, either in think tanks backed by international organizations or as part of specific government projects that seek to address particular social issues. The universities that offer political science degrees do not have full-time teaching or researching posts, and students are not exclusively focused on their education (Ortíz and Galeano 2015: 8).

As a result, the lines of research present in the country tend to develop in a manner that is dependent on funding –generally made available through civil society organizations– which hinders the development of autonomous lines of research. Given the limited development of political science in Paraguay, epistemological debates about analytical, theoretical or methodological frameworks that have been developed in the Latin American academy (Rocha-Carpiuc 2013) remain absent in the Paraguayan case.

In this context, digital tools present important opportunities both for teaching and researching, which could help strengthen political science in this country. The increasingly widespread use of these tools by the incipient number of professionals in the area poses a favorable scenario for the institutional development of the discipline, parallel to an academic production that increases in number and quality among local political scientists. In turn, growth in academic production and its availability online have a positive impact on the learning opportunities of political science students, who are no longer constrained by the bibliographic materials they access through the university and can be aware of main theoretical and methodological debates taking place in the discipline beyond the national borders, and even getting to work with colleagues from other countries, advancing in their understanding of the field.

[5] While in the Catholic University there are specific subjects that make up the political science, sociology or history curricula, professors of those subjects do not necessarily have a specialized background in those areas. Also, in practice, students of either program choose to study them indistinctly as a means to complete the number of academic credits required by the university.

3 Teaching of political science

The digital revolution has yet to play a major role in Paraguay's higher education, as digital tools are still only marginally used. There is little integration of Information and Communication Technologies (ICT) in the classroom or as a didactic element outside of it, and they are often used only as an addition to the vertical transmission of information.

Although universities do have the technological resources to use virtual platforms to organize courses –such as the Massive Open Online Courses (MOOCs) used for distance education programs in other areas–, the effective use of this technology is not widespread and there are very few professors who use it for this purpose in the area. The use of the Internet in particular is directed more towards the search for bibliography as a complement to the basic materials of each class or material not available in printed form at the universities. At the same time, there is a tendency to increase formal online communication between professors and students, while also increasing the informal interaction between them. However, establishing digital means of communication depends on the will of each teacher and cannot be considered a regular practice. The incipient use of digital tools for teaching affects political science, though in a similar way to other areas of knowledge.

There are no major differences in terms of digital infrastructure between the mentioned universities. Internet access in these places, although free, it is not strong enough to be used as didactic element; Internet speed is not fast or stable enough for video-conferences, online access to audio-visual materials, or the search of bibliographical sources in real time. For these reasons, professors who want to take advantage of digital tools need to use their private resources to find and obtain all the material that they consider necessary for their classes beforehand. There are also no policies to introduce these tools to the higher learning process in a systematic manner.

The teaching of research methods does not make full use of digital resources for data analysis either. Although universities do have computer labs, they do not promote the use of digital instruments to analyze quantitative or qualitative data. The use of digital resources as methodological tools is limited to its introductory level, if used at all, as a reflection of the dated education practices of those responsible for teaching them. Thus, the use of information technology in political science research faces challenges on several levels: the programs are not research-oriented, professors that usually teach them have not been specifically educated in the area, while the few of those that have been educated in political science hardly ever do research in the areas they teach. Furthermore, there isn't any specialized library in political science in the country that could have a digital counterpart, and neither professors nor students have access to databases, online libraries or scientific journals, unless they are able to access them by their own means.

However, students in Paraguay do have access to digital teaching platforms developed by foreign institutions. Through the virtual availability of programs related to political science that are unavailable in the country, Paraguayan students who are unable to travel in order to further their education abroad take advantage of virtual platforms in order to improve their education, which enables them to become part of an international academic community in a way that would not be possible otherwise. Such platforms offer access to curricula and bibliography that are also used by other students and professionals when shared, thus generating positive externalities for the development of the discipline in the country.

Regarding aspects of curricular content, topics related to the digital revolution or the political importance of the digitalization of information have not yet been included as subjects in political science programs. This is mainly due to the fact that such programs have not been updated since the ICT gained importance as vehicles for political activism, or as

a tool used to strengthen the links of representation, which happened in recent years (Welp 2016: 220).

However, some references to this phenomenon have been observed in different subjects in both universities. Subjects related to interest groups, public opinion and elections in the Catholic University refer to the power of the media in agenda setting as well as the Internet as a basic component of the information society. In the case of the National University, the program includes the subject "Computer science and political science", though it's rather intended to train students in the use of digital tools as resources for work.

The reality described above presents a context of greater potential for the development of political science in Paraguay as a byproduct of growing access to academic resources via ICT. Such opportunities, however, will bear no effect as long as there is no optimal use of the resources at hand; further, backwardness is inevitable as a result of the current way the discipline is taught and the infrastructure made available by the universities.

There are possibilities for improvement in sight, due to the process of certification and accreditation of the programs that has been initiated at the national level. So far, no political science program in the country is certified by the National Agency for the Evaluation and Accreditation of Higher Education (ANEAES)[6], similarly to other programs of the social sciences and humanities. Thus, if a policy of certifying university programs becomes standard practice in time, the specialization of political science would occur as a result of such process.

4 Research in political science

The digital revolution plays a major role in the condition of political science research in Paraguay. Interaction between researchers through digital channels enhances collective initiatives and working on joint projects, even when members of the same project are outside the country. It also facilitates collaboration between Paraguayan researchers and their peers in other countries, allowing Paraguayan political scientists to be part of international research networks that positively influence their professional development. This is particularly important since Paraguay is among the least studied Latin American countries in this discipline, as shown by the percentage of articles published in journals in the JCR or Scimago indexes that choose Paraguay as a unit of analysis (Basabe-Serrano and Huertas-Hernández 2018: 162).

Like teaching, research is nourished by access to online data and bibliography, so the impetus that research in the area is gaining is largely due to access to these resources. Academic production, however, continues to be limited by the structural conditions in which university professors work. No full-time university professors have been found in either of the revised programs, and the work is limited to teaching a limited number of hours per week, for which they're hired per semester with contracts that are generally renewable but do not necessarily imply job stability.

On the other hand, up until recently, access to teaching posts didn't require any verifiable research background. This practice has improved since the National Program of Incentive to Researchers (PRONII) was established. This program takes into account the level of formal education reached by its members, their participation in academic events, and their number of published works in indexed journals and books as criteria for their inclu-

[6] Available at http://www.aneaes.gov.py/aneaes/index.php/ct-menu-item-12/carreras-acreditadas

sion in the official list of researchers recognized by CONACYT. Although it is not yet required for university professors to be included in PRONII, this is already valued as a requisite for researchers to work in various projects taking place in the country.

The limited number of published work by Paraguayan political scientists is also related to the absence of academic journals specialized in the area, as well as the scarce availability of journals in social sciences and humanities (Table 2). According to the scientific research journals information system LATINDEX, there are only seven journals in Paraguay that publish work in the social sciences, of which only two –ACADEMO "Journal of Research in Social Sciences and Humanities" and "Studies of Public Policies"– specifically mention political science as one of the areas covered in their published articles. In turn, only two of the seven journals are available online[7], so the impact of the works published in the other five is very limited.

Table 2: Scientific journals in Paraguay related to political science

Name	Editorial	Starting year	Subtopics	Online
ACADEMO Journal of Research in Social Sciences and Humanities	American University	2014	Political Science and Public Administration, Communication Sciences, Education, Psychology, Sociology, Philosophy, Multidisciplinary	Yes
Public Policy Studies	Public Policy Center, Catholic University "Nuestra Señora de la Asunción"	2012	Political Science and Public Administration	No
Paraguayan Studies	Center for Anthropological Studies, Catholic University "Nuestra Señora de la Asunción"	1973	Social Sciences and Humanities	No
Novapolis	Arandura	2007	Social Sciences and Humanities, Gender Studies, Local Studies, Sociology	No
REVICSO – Journal of Research in Social Sciences	Ediciones y Artes S.A.	2014	Anthropology, Education, Geography, Sociology	No
International Journal of Social Science Research	Autonomous University of Asunción	2011	Sociology, Education	Yes
Journal on Studies and Research of Academic Knowledge	National University of Itapúa	2006	Pedagogy, Medicine, Finance, Epidemiology, Higher Education, Education, Economics, Culture, Science and Technology, Social Sciences and Humanities	No

Source: Prepared by the author based on information made available by LATINDEX

For these reasons, research done by Paraguayan political scientists is generally published outside the country, either in academic journals or as book chapters. Because it isn't a common practice to have professional websites to showcase their work, the published works of Paraguayan political scientists are found mainly on online platforms created for that purpose, which are usually of free access.

On the other hand, the digitization of information allows for easier access, which in principle would facilitate the incipient research work done in the country. By way of example, the digitization of Paraguayan legislative documents allows for easier access to them through online platforms, so analysis of recent Paraguayan legislation has benefited from these resources. In contrast, information regarding the management of the Paraguayan bureaucracy is very difficult to access despite a law passed in 2014 that establishes the citizens' right to freely access public information and promotes government transparency. State agencies still do not have the capacity to provide a lot of the information required

[7] However, the website of the journal edited by the American University was not operational at the time of writing this essay.

for academic purposes, while the little information available so far tends to be incomplete and is insufficient to carry out longitudinal analyses.

Political research in Paraguay has not yet studied the effect of ICT on political practice, although this topic is already being addressed by recent interdisciplinary projects in other areas. In this regard, there is a small number of projects being carried out by the Faculty of Science and Technology of the Catholic University, along with civil society organizations and public agencies, that aim to identify behavioral parameters in citizen participation processes. Early initiatives that look into the role of ICT as channels to enhance citizens' participation are not followed by analysis in political science. Thus, the links between ICT and the world of politics remain unattended and unexplained from a political science perspective, which is also the case with many other topics relevant to the region's research agenda.

The main risk posed by ICT to research in Paraguay is related to the unethical use of these resources. On the one hand, there is still no student training for the critical selection of reliable sources; there have been some cases of students that engage in plagiarism by presenting complete sections of articles published online as their own work. The task of training researchers in the proper use of these sources is still pending, with much needed emphasis on the social and ethical value of the original research.

5 Final remarks

Despite the many challenges to teaching and research in political science in Paraguay, access to ICT has a predominantly positive effect in the incipient institutionalization of the discipline in the country. These resources have allowed Paraguayan political scientists to further their education and develop academic careers in this area, despite working in the context of institutional weakness of the Paraguayan academy in general, and of political science in particular. Digital resources offer professionals as well as students the opportunity to access the most recent academic production worldwide, allowing them to be aware of the main lines of research currently underway, theoretical developments and advances in current research techniques, and helping them become part of an international academic community in a way that would not be possible otherwise.

The scene is set so that the quality of specialized teaching in the discipline will occur along with the incorporation of digital tools to this process, coinciding with an increasing academic production in the area. However, this potential will only be realized to the extent that there is enough critical mass to use these tools in a way that positively impacts academic life. Thus, as long as teaching is not supported by a research background, the use of ICT will have a limited impact in the development of Paraguayan academia in the foreseeable future.

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Digitalization and Political Science in Peru[1]

Martín Tanaka

1 The Peruvian case: the periphery of the periphery

In this paper I present the situation of research and teaching in political science in the context of social sciences in Peru, in the digital age. In the Latin American social sciences context, Peru is an intermediate case regarding its institutional development and participation in the digital sphere; Peru is thus an interesting case to explore the possibilities of taking advantage of the potentialities that digitalization opens to social sciences in general, and political science in particular. I analyze the institutional development of political science in Peru, which is very recent and inchoate, and the impact of digitalization on teaching in social sciences through the experience of the project *Cholonautas*, that tried to provide digital access to relevant publications and study material to social sciences students in universities in provinces. The results of that experience are ambiguous: access to reading material is now relatively solved, but we still lack capabilities to do research and produce knowledge. Then I analyze the dynamic of research and publication focusing in one of the most important social research centers in Lima, the Department of Social Sciences of the Pontifical Catholic University of Peru. That Department is in the middle of a transition from a intellectual tradition where books and book chapters published by national editors are most valued, as well as the contribution to the debate of national problems; to a model where the publication in indexed international journals are most valued, and the contribution to academic discussions.

Latin America holds a peripherical situation in the global academic production in the social sciences (graph 1); and within Latin America, the Andean countries hold a peripherical intermediate situation: their participation is way below the one from Brazil, Mexico, and Southern Cone countries (Argentina, Chile), but look much better than Caribbean and Central American countries (graph 2). This according to the percentage of subregional participation in the number of social sciences articles in indexed journals published in the period 1996–2012. In the context of Andean countries, Peru appears behind Colombia, the leader of the sub region, although in recent years its production and participation in indexed journals has grown above the regional average rate. The same goes regarding political science, based on the number of political science articles in indexed journals in recent years (graph 3) (Hernández, 2014). Peru is thus an intermediate case regarding its participation in the digital sphere in the social sciences, a country in the periphery of the

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periphery of world production; regarding political science , Freidenberg (2017) considers Argentina, Brazil, Uruguay, Chile, México, and also Costa Rica, Colombia, and Venezuela as countries with higher levels of institutionalization of the discipline; Perú, Ecuador and El Salvador as countries with a inchoate level, with few undergraduate political science programs, characterized as "academic islands". Finally, in Honduras, Guatemala, Panamá, Nicaragua, Paraguay, and Bolivia, the discipline is "almost inexistent" (p. 26–35). Based on the indicators presented by Barrientos (2013), that consider the number of academic political science journals, the existance of undergradate, MA, and PhD political science programs, and the existance of a National Political Science Association, we could reach the same conclusion.

Social sciences in Peru have a relatively long tradition, and within them what we may call political studies. Historical, anthropological and sociological research, as we understand in contemporary terms, began in Peru around the 1960s. The political dimension was always very important, especially in a very politicized academic community, but it was viewed as a part of larger social schemes. Since its modern origins, the political sphere was considered an important but subordinated part within structural analytic schemes: first under the influence of functional structuralism, and later under the influence of structural marxism. The political sphere was important, and political concerns shaped in a relevant way the academic community committed with social change and leftists causes. But the keys to the understanding of politics were supposed to be found in the dynamics of social classes, class contradictions, social movements, or social protests. At the same time, it could be said that this perspective was akin to a situation where institutionalized democratic politics was extremely precarious. Peru did not have a stable democratic development during most of its history; and in the modern twentieth century, the APRA and the Communist parties were banned and excluded until the 1962 elections that were annulled by a military coup. In 1963, elections were held again, but a new military coup occurred in 1968, and this time the military government lasted until 1980. It is important to underline that during the awakening of modern social science, there did not exist an autonomous political and institutional sphere in Peru; and this allows us to understand why political science as a discipline did not exist in Peru, despite the widespread interest in political issues.

We can find a good illustration of this situation in the Social Sciences Department at the Pontifical Catholic University in Peru. This Department was founded in 1964; around the same years many other academic institutions in social sciences began to appear throughout the region (Tanaka 2016, 2014, 2014a). Consider for example the foundation the Latin American Faculty of Social Sciences (Facultad Latinoamericana de Ciencias Sociales – FLACSO) in 1957 and the Latin American and Caribbean Institute for Economic and Social Planning (Instituto Latinoamericano y del Caribe de Planificación Económica y Social – ILPES) in 1962, both in Santiago; the Institute of Economic and Social Development (Instituto de Desarrollo Económico y Social – IDES) and the Torcuato Di Tella Institute, both in 1958, and the Center for the Study of State and Society (Centro de Estudios de Estado y Sociedad – CEDES) in 1975, in Buenos Aires; the Center for Development Studies (Centro de Estudios del Desarrollo – CENDES) in Caracas in 1961; the Brazilian Center of Analysis and Planning (Centro Brasileño de Análisis y Planificación – CEBRAP) in San Pablo in 1969; and the foundation of the Institute of Peruvian Studies (Instituto de Estudios Peruanos – IEP) in 1964, among many others.

The Department of Social Sciences was born with four academic disciplines: anthropology, economics, sociology, and political science. However, in 1971 the political science program was cancelled, as a result of a demand presented by their own students; they preferred to be identified as sociologists, not political scientists, a discipline considered to lack a proper field of studies in the Peruvian context, under military rule. Sociology was considered a career with defined and attractive perspectives, and political studies were sup-

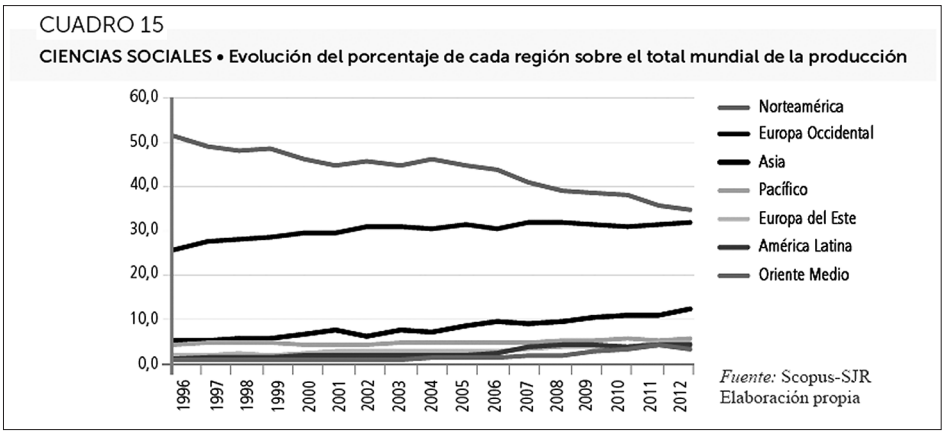
posed to fit within the area of political sociology. In 1988, the public university Federico Villarreal opened a political science program, but within the law department, with a formation lead by lawyers, in the context of a very politicized institution, linked with the APRA party, with no proper formation in political science.

Things began to change by the end of the 1990s, with an increasing interest in political science; Peru was living the end of the authoritarian Fujimori government, which led to intense discussions about the need of democratization and institutional reforms. At the same time, the economic recovery Peru had alongside the 1990s led to the growth of universities (Gómez, 2008). In this context, political science as an academic discipline and professional career experienced a modest development. In 1998, the private Catholic University opened a Master program in political science within the social sciences department, but under a political sociology orientation. In 2001 the public university of San Marcos opened a political science program, but within the law department, with a formation lead by lawyers and having constitutional law as the core of the formation. An important landmark was established in 2005 with the opening of the undergraduate program of political science at the Catholic University, within the social sciences department; it can be said that this was the first program to offer a proper political science formation following international standards of the discipline[2]. After that, other undergraduate political science programs appeared: in 2007 at the private university Antonio Ruiz de Montoya, in Lima; in 2011 at the national university Micaela Bastidas in Abancay; in 2012 at the national university of Trujillo; in 2013 at the national university Pedro Ruiz Gallo in Lambayeque; and in 2016 at the private Catholic university of Santa María in Arequipa. In recent years it could be said that there is a progressive convergence around the main orientations of the discipline in all universities, despite important differences among them. Some have modified its curriculum alongside the basic disciplinary orientations, other have a more "flexible" curriculum; some have mainly political scientists as professors, others still have mainly professors from other disciplines (law, sociology, history, among many others)[3].

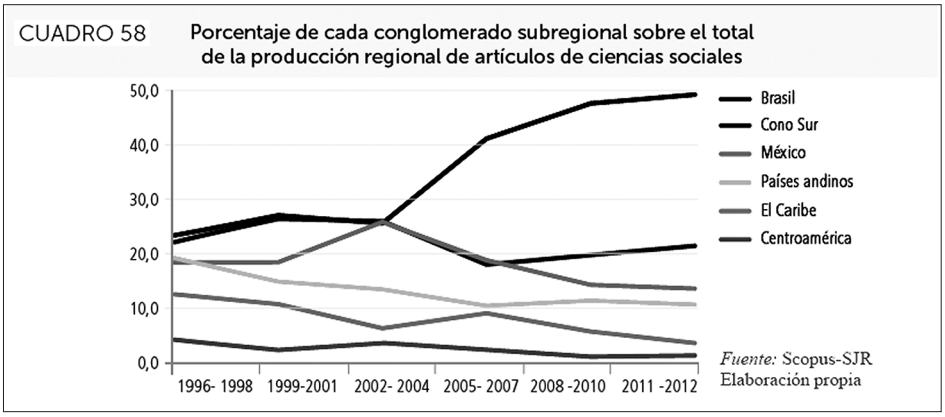
Peru is thus an intermediate case regarding its participation in the digital sphere in the social sciences, with a political science discipline that is recent and inchoate, a country in the periphery of the periphery of world production. This is what makes this case interesting, it is useful to explore the possibilities of taking advantage (or not) of the potentialities that digitalization opens to social sciences in general, and political science in particular. Is it a way to shorten the gap with the most productive countries? To develop the capabilities required to building a sound academic community?

[2] The commission that organized the undergraduate program was mainly integrated my sociologists, but had the advise of important political science national and international scholars such as Scott Mainwaring and Daniel Levine, among others. The history of the political science program at the PUCP can be read in Panfichi and Alvarado, 2009. A disclosure: I am Full Profesor at the PUCP political science program, was part of the commision that organized the undergraduate program, and its academic coordinator between 2010 and 2014. I am also senior researcher at the Institute of Peruvian Studies that hosted the project *Cholonautas* described later.

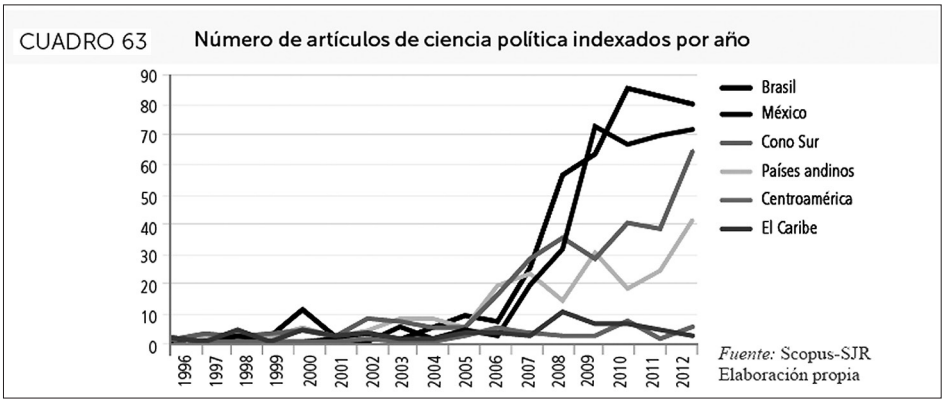
[3] Other assessments on the development of the discipline in Perú in Ramos, 2015; Tanaka, 2015 and 2005; Tuesta, 1999, among others.



Graph 1. Social Sciences. Regional percentage over world production, 1996–2012
(Hernández, 2014)



Graph 2. Percentage of subregional participation in Latin American social sciences production, indexed journals, 1996–2012
(Hernández, 2014)



Graph 3. Number of political science articles in indexed journals in Latin America by year, 1996–2012
(Hernández, 2014)

In this paper I will explore the impact of digitalization on Peruvian social sciences and on political science, regarding teaching and research, and our findings may prove useful to understand its impact on a medium-size, recent and inchoate academic community. Regarding teaching, we will explore its impact on the relationship between elite academic centers in Lima and academic centers in Peruvian provinces, and the problems involved in initiatives that tried to fill the gap between them. And regarding research, I will analyze the tensions involved in the current transition in habits of research and publication among elite academic centers, signed by the growing influence of digitalization and global standards that threaten prevailing intellectual traditions. I believe the findings regarding the Peruvian case could be useful to analyze the impacts of digitalization over other medium-size inchoate social sciences communities that face similar challenges.

2 Digitalization and "closing the gap" in Peruvian social sciences

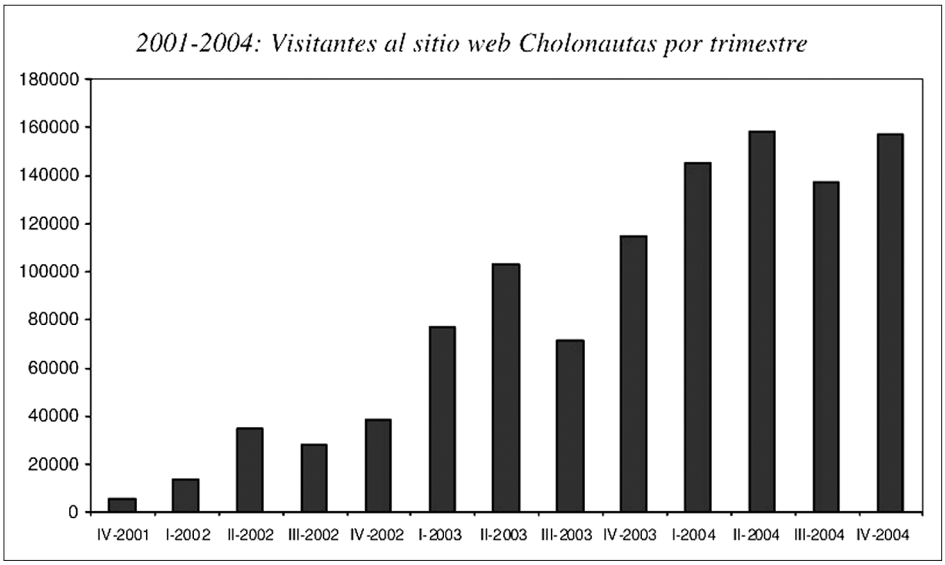
How to analyze the impact of digitalization over social sciences (and political science) in a country like Peru? To analyze the experience of the project *Cholonautas* is extremely useful for our purposes. This project was conceived to provide digital access to relevant publications and study materials to social sciences students in public universities, especially outside Lima, without access to good libraries and adequate sources of information. After some years we can evaluate the mixed results of that experience.

The *Cholonautas* project was born around 2000, after an evaluation of the situation of teaching of anthropology in four universities, one private, in Lima, of the academic elite, the Pontifical Catholic University of Peru, and three public universities: one in Lima, the University of San Marcos, and the other two the University of the Center (Universidad del Centro, Huancayo) and the University San Cristóbal de Huamanga (Huamanga) (Degregori, Avila and Sandoval, 2001). This research showed a big gap between the private Lima university and the national ones, especially between the ones in Lima and the others. This gap expressed itself in many aspects, a crucial one being the access to relevant and updated reading materials and information, more akin to what was being read and taught in the most prestigious universities in the world. Degregori found that his findings about teaching in anthropology could easily be generalized for other social sciences. In Peru, in many universities, anthropology usually is part of a department of social sciences, alongside with undergraduate programs of sociology or history. Social sciences formation was heavily influenced by the study of an outdated and simplistic version of marxism, taken from textbooks rather than from the direct study of marxist authors (Degregori, 1990).

Degregori, based in another prestigious Lima research center, the Institute of Peruvian Studies (Instituto de Estudios Peruanos, IEP), launched the project *Cholonautas*, based on the idea that digitalization and the diffusion of internet resources could constitute a big change in teaching and in formation for social sciences students. One of the main problems that Degregori et. al. (2001) detected was the access of professors and students to updated academic literature; this was expressed in outdated syllabi of the courses and the poor quality of university libraries. Access to internet resources through the digitalization of essential readings appeared to be an accessible, viable and revolutionary solution, a way to reach directly to motivated students and professors passing through institutional university system limitations.

Thus, the Cholonautas project opened a web page (https://www.cholonautas.edu.pe/) that consisted in an ordered repository of reading materials, organized by disciplines and

themes of interest in Peruvian social sciences. The first phase of Cholonautas ran from 2000 to 2004, approximately, and was relatively successful: the number of visits and the download of documents augmented, and in time (graph 4) these documents began to appear in the syllabi of different social science courses (Bustamante 2005). Access to good basic reading material for students was somehow solved, but this improvement reached an institutional limitation. The use of the documents that *Cholonautas* provided depended a lot on the good will of some professors who were still relatively exceptional in a conservative institutional environment in most universities. Others simply ignored the availability of the web page and its resources, and students did not have an institutional support or incentive to use them. To go further, institutional changes were also needed: the renovation of social sciences departments, the promotion of new professors that promote new readings, new theoretical perspectives that were resisted by conservative and outdated professors and authorities who, even more, felt threatened by the new and current trends of the discipline.



Graph 4. Number of visitors of the Cholonautas web page, 2001–2004
(Bustamante, 2005)

That is the reason why in a second stage *Cholonautas* tried to develop institutional relations and agreements between the Instituto de Estudios Peruanos and different social sciences departments in public universities, trying to promote the use of the *Cholonautas* resources. *Cholonautas* was seen with distrust from more conservative authorities and professors; as an intromission from privileged Lima scholars, symbolizing the promotion of ideas, theories and methodological approaches heavily inspired in the US academia, that were against our national intellectual traditions, that were against a leftist academic paradigm where social sciences had to be in service of political change. *Cholonautas* organizers tried to gain the confidence and collaboration of university authorities and professors, not only students[4].

[4] Interview with Rafael Nova, anthropologist, responsible of Cholonautas, November 2017.

Institutional and organizational change in universities appeared as a necessary step for *Cholonautas* objectives to be achieved, but it was of course out of reach for a modest project like *Cholonautas*. It hoped to unchain a process of change departing from an exogenous stimulus, but this alone proved relatively incapable to affect long-time structures and practices. The question arose what to do in reaction to this situation. If the professors at their courses wouldn't accept changing their syllabi and include new reading material, then an intermediate solution was to offer online-courses, in an attempt to reach directly to motivated students; *Cholonautas* thus promoted some courses, but the reality was that these efforts were not capable to change the situation of most social sciences students, beyond a small and exceptional group. At the same time, its promoters tried to improve the relationship between the project and university authorities, making an effort to widen its influence, to weaken barriers of distrust; they then visited university authorities trying to establish a direct relationship, and signed institutional agreements of collaboration between the Institute of Peruvian Studies and the different Social Sciences Departments, to promote the use of *Cholonautas* resources.

Around the years 2009/2010, another boost took place in digital technology. The use of internet expanded exponentially, and digitalized documents began to be more and more available in different sources and web pages, making the idea of building a web page based on the digitalization of reading materials for social sciences courses rather obsolete. Many universities and institutions began to develop on-line courses and on-line education schemes, offering Master degrees, for example. *Cholonautas* lost the purpose established at its origins as a result of a profound change in the context. Coincidentally, Carlos Iván Degregori, the main promoter of the project, died in 2011. Since then, *Cholonautas* suffered a period of reorganization and crisis. It remained as a repository of digital texts, but as years went by, it was only one among many others, and lost its original purpose.

At the same time, Peruvian economy began to grow since 2003, benefitting from the boom of the prices of commodities, and achieved impressive growth rates in the period between 2003 and2013, leading regional levels. This meant for some public universities a very important increase in its resources. By the canon law, since 2004, 50 % of the income tax that mining companies pay is destined to the canon; and public universities receive 5 % of the canon fund, that should be destined to finance research activities. Given the importance of the mining sector for Peruvian economy, and the relative deprivation of public universities, in some cases canon resources implied a very important amount of resources. In general terms, these resources translated into the improvement of libraries and access to journals and publications in general[5]. In the same period, institutional and organizational change began to occur in public universities, but as a consequence of the growth of enrollment in universities, the need to hire new professors and the retirement of many others. Many social sciences departments had been created in the 1970s, and a large group of the "historical" professors began to retire by the first decade of the new century.

As a consequence of all these factors, the objectives that *Cholonautas* sought through digitalization became obsolete, and access to updated reading resources was a goal accomplished, thanks to external circumstances. The syllabi of social sciences courses began to improve, moving to a position not so distant from international standards. In this period political science undergraduate programs began to appear and the existing ones modified its curricula. We could say that most students are now significantly better informed than at the beginning of the century, when *Cholonautas* started. However, what these profound and important changes have not achieved is to translate those improvements into more and better research and production of knowledge. The completion of BA and MA theses, based

[5] On the effects of the canon law on public universities see Garfias, 2009; and Congreso de la República. Comisión de Ciencia, Innovación y Tecnología, 2013.

on original research, the quantity and quality of publications by university presses remain very poor. Research is still concentrated in Lima in private universities, and there exists an important gap between private and public universities and between universities in Lima and outside Lima, one of the basic findings of Degregori et. al. in 2001. The improvement in courses and access to information, facilitated by the digital age, does not imply the generation of research capabilities. It seems that there are no shortcuts to develop these capabilities.

At this moment, in Peru we count only with three political science academic journals: *Politai*, the Andean Journal of Political Studies (*Revista Andina de Estudios Políticos*), and the Journal of Government and Political Science (*Revista de Ciencia Política y Gobierno*). *Politai* is edited by political science students of Catholic University in Lima; was founded in 2009, is a half-yearly journal with 16 numbers, and is indexed in Latindex. *Revista Andina de Estudios Políticos* is edited by an association, the Institute of Andean Political Studies (Instituto Andino de Estudios Políticos); it was created in 2011, is a half-yearly journal with 12 numbers, also indexed in Latindex. Finally, the *Revista de Ciencia Política y Gobierno* is edited by The School of Government and Public Policy of the Catholic University; it was founded in 2014, is a half-yearly journal with 8 numbers, equally indexed in Latindex (see Ramos, 2015). It is certainly an improvement, but it shows not only the great distance between Peru and others countries in the region; Barrientos (2013) registers in Peru two academic political science journals, while at the same time one can find 26 in Mexico, 20 in Brazil, 16 in Chile, 12 in Argentina, 10 in Venezuela and 9 in Colombia. And again it is necessary to emphasize the persistent the gap between private and public universities, and between the institutions in the capital Lima and the ones in the provinces.

3 Theory-oriented or problem-oriented research in social sciences?

But what about the centers of social sciences production, mostly located in Lima and in private institutions, that concentrate research? If we think about digitalization as a field of study, we would find a very scarce production. As a field of study, in Peru and other Latin American countries, digitalization is a subject of interest associated with the role of Facebook and social media in the organization of important social protests posing post-materialistic demands protagonized by middle-class urban sectors, without major links with political parties or the main civil society institutions: indignation against corruption scandals, the fight for the legalization of same-sex marriage, recognition of legal abortion under some circumstances, protests against the bad quality – not access, as in the past – of public services (education, transportation, health and retirement pension schemes), among others[6]. In the Peruvian case, Fernández-Maldonado (2015) and Lama (2014) analyze the organization of social protests relying in social media among urban sectors in Lima. See also Villanueva (2014), who analyses the political actors and social interests around the definition of author's rights in Peru, and the relationships between State, producers and consumers in the digital sphere.

In the Peruvian social sciences context, the most important issue to discuss regarding digitalization is its repercussions over a profound transformation that is currently taking place: the transition from a paradigm where political commitment and the involvement in

[6] In the Latin American context, see Sorj and Fausto, comps., 2016 and 2015.

national political issues was central, to another where academic concerns are priority, and the dialogue within a global academic community is privileged (Tanaka, 2015). Peru is part of that global trend, and illustrates many of the tensions involved in this transition. With globalization, an increasing number of Latin American new generation of scholars with PhDs in Anglo-Saxon countries, with the increasing importance of internet networks and access to digitalized information (access to international journals and publications in general), with the strengthening of academic global networks, we can register a qualitative change in the ways the academic community operates in countries in the periphery. Local production, paradoxically, becomes less visible than in the past, due to the comparatively minor development of electronic resources in local institutions; tends to occupy a subordinated place regarding the main global centers of academic production; and tends to be increasingly influenced by global standards, defined in north-western countries, that weakens local, national and regional academic contributions and intellectual traditions. This does not mean that regional and local academic communities should avoid a very nutritious interaction with the global academia, but poses the challenge of getting a more balanced relationship[7]. We analyze these complex issues based on information regarding the Department of Social Sciences of the Pontifical Catholic University of Peru, one of the main teaching and research centers in Peru.

What is the impact of digitalization on Peruvian social sciences, in the leading research institutions? A recent evaluation of the performance and trajectory of the Department of Social Sciences of the Pontifical Catholic University of Peru in the period 1970–2014 is a very useful source of information (Ramos and Diez, 2015). A good starting point for this analysis is the relevant finding by Buquet (2013) that the most valued type of publication within Latin American social scientists are articles published in indexed (ISI – SCOPUS) journals, and books edited by foreign publishers; and besides them, books published in their own countries, and articles published in indexed (Scielo – Latindex) Latin American journals. That means international recognition nowadays is the most important source of prestige. The problem is that Latin American scientific production becomes increasingly distanced from local and national debates. This is a big departure from our intellectual traditions, where academic knowledge was considered an important part of social transformation projects. Economists and political scientists seem to agree more with these recent preferences than sociologists, who tend to value a little more books published in their own countries and Latin American journals.

Another important finding provided by Buquet (2013) is that scholars with PhDs obtained in Anglo-Saxon countries preference of ISI-SCOPUS journals is much higher than scholars with PhDs obtained in Europe or Latin American countries. For the latter scholars publishing in Latin American journals and book publishers is also important, whereas for the former Anglo-Saxon PhDs the local or Latin American production seems to be irrelevant. This indicates that Anglo-Saxon influence tends to widen the gap between regional and local intellectual traditions. Buquet does not present the information, but we could safely assume that the number of scholars with PhDs in Anglo-Saxon countries are rising compared to others in recent years; in other words, their preferences mark a tendency that may prove majoritarian in the future.

[7] About this issues in Latin America see Beigel, 2016 and 2013, among others.

Chart 1. Hierarchy assigned to type of publication, along disciplines

Cuadro 24
Jerarquía que atribuye a tipos publicación según disciplina

	Ciencia Política	Economía	Sociología	CCSS interdis	Otra	Total
Artículos en revistas indexadas en ISI/SCOPUS	31.6%	49.7%	27.0%	33.9%	37.8%	36.1%
Libro editado en un país desarrollado	29.3%	17.6%	19.1%	17.4%	8.1%	20.0%
Libro editado en el país	18.8%	14.4%	22.7%	17.4%	18.9%	18.3%
Artículos en revistas indexadas en Scielo/Latindex	15.0%	8.5%	19.1%	13.9%	27.0%	14.9%
Libro editado en otro país iberoamericano	5.3%	6.5%	9.2%	13.9%	5.4%	8.3%
Otros (papers, documentos, informes)		2.0%		2.6%		1.0%
Capítulo de libro editado en un país desarrollado		.7%	1.4%		2.7%	.7%
Capítulo de libro editado en el país		.7%	.7%			.3%
Capítulo de libro editado en otro país iberoamericano			.7%	.9%		.3%

Pregunta: ¿Qué jerarquía le atribuye a los siguientes tipos de publicación?

(Buquet, 2013)

Chart 2. Hierarchy assigned to type of publication, along PhD area

Cuadro 25
Jerarquía que atribuye a tipos publicación según área de doctorado

	América Latina	Área anglosajona	Europa continental	Península ibérica	Otros	Total
Artículos en revistas indexadas en ISI/SCOPUS	29.7%	57.8%	34.0%	52.4%	50.0%	39.6%
Libro editado en un país desarrollado	17.2%	25.9%	16.0%	19.0%	50.0%	19.6%
Artículos en revistas indexadas en Scielo/Latindex	23.4%	6.0%	16.0%	11.9%		16.9%
Libro editado en el país	20.9%	7.8%	22.0%	11.9%		16.7%
Libro editado en otro país iberoamericano	7.5%		8.0%	2.4%		5.1%
Capítulo de libro editado en un país desarrollado	.4%	1.7%				.7%
Otros (papers, documentos, informes)	.4%	.9%	2.0%			.7%
Capítulo de libro editado en el país	.4%		2.0%			.4%
Capítulo de libro editado en otro país iberoamericano				2.4%		.2%

(Buquet, 2013)

In the Peruvian case, the PUCP Department of Social Sciences illustrates this dynamic of change. As seen in Tanaka (2016, 2014a), the intellectual tradition of this department was very much signed by its participation in academic debates, but had direct consequences over relevant national political controversies: for example, the characterization of the military government in the 1970s; the characterization of the potential and limits of social movements in the 1980s; the characterization of the Shining Path (*Sendero luminoso*), the terrorist organization that insurged against Peruvian democracy in the same decade; and finally, the characterization of the Fujimori government in the 1990s, and the challenges of democratization since the transition initiated in 2000. According to this trajectory, one can find, analyzing the academic production of the professors of the Department, a majoritarian number of books and book chapters in edited volumes, in relation with articles in academic journals. Historically, most books and book chapters were published in Spanish, and collective book projects generally expressed the construction of national (and international) networks around common interests, related to themes considered of public relevance; while publication in journals express a more individualistic enterprise. At the same time, it could be said that, on average, the editors of journals have more control over the quality of the contributions than edited volumes.

In recent years we find an increasing importance of articles: between 2001 and 2010, articles constituted 43.8 % of the book chapter's production, whereas they became 57.5 % between 2011 and 2015, only four years. The increasing importance of articles in indexed journals may have to do with the renovation of the department, the growing number of scholars hired in recent years, many of them with PhDs obtained in Anglo-Saxon countries, and the recognition of the current trends in social sciences. We do not have information about the language of publication of articles, but we could safely assume that the number of publications in English has also increased in recent years.

Chart 3. Average number of publications, along type, 1970–2015, Department of Social Sciences

Décadas	Promedio de publicaciones académicas por año del Departamento, en número de publicaciones		
	Libros	Artículo en libro	Artículo en revista académica
1971- 1980	1.3	0.8	1.7
1981- 1990	7.3	6.6	5.3
1991- 2000	12.9	19.2	12.1
2001- 2010	20	37.9	16.6
2011- 2015	25.4	49.4	28.4

(Ramos and Diez, 2015)

The problem or challenge is that this transition and these changes put a tension between what can be considered two different and distinct intellectual traditions. The historical prevailing tradition of the department of social sciences is to actively participate in political relevant debates referred to the most important political problems of the country (Tanaka, 2016 and 2014). Research and publishing were understood mainly by their social and political relevance; one consequence of this, for example, is the aim to publish in national books or journals available to national readers. In recent years, we are facing a different paradigm, where research and publishing is driven by academic concerns: research is driven primarily by theoretical questions, and the main objective is to publish in visible, well ranked international journals, mostly in English, disregarding the dialogue with national audiences beyond the world of social sciences. On the other hand, it is fair to say that the politicization or research based of political concerns tended also to go against methodological rigor; and that academic concerns tend to go together with more methodological sophistication and rigor, but certainly less political relevance. How to deal with these tradeoffs and the current transition, is the big question for Peruvian social sciences.

The transition is complicated, and the scholars in the PUCP Department of Social Sciences have mixed opinions regarding how convenient is to make a shift from one paradigm to other: most scholars value positively their intellectual tradition and do not want to completely loose it, but at the same time they understand that academic activity nowadays occur in a different context, where internationalization and international indicators of academic excellence are highly relevant. Scholars and university authorities face very concrete dilemmas: to promote publications in Spanish or in English; to promote publications in highly ranked journals only accessible through expensive databases, or in more accessible but not highly ranked open access journals; in international, more prestigious journals or in national and more accessible to local readers; to propose research questions

more theory-oriented, or more problem-solving oriented; to aspire to make contributions to theoretical debates, maximizing the possibility of being quoted by colleagues in different national contexts, or to maximize the influence over policy makers, state officials, or national public debate? Should the university aspire to cement its academic reputation in the international community alongside indicators and rankings, or to cement its reputation as a national center of generation of ideas, debates, policy recommendations, with strong ties with state officials, political actors, and the media? It would be easy to say that everything is important, but to attain all the goals simultaneously is almost impossible. Is it possible to build a "third way" that combines the best of academic excellence and international recognition with national political relevance and influence in the public sphere?

One example that illustrates how the PUCP Department of Social Sciences deals with theses contradictions is its policy of incentives for publication for its professors. The maximum points are obtained for a book by an international publisher, 4 points; a book edited by a local publisher obtains a little less, 3.75. An article in an international indexed journal gets 3.5, the same as a book chapter by an international publisher. An article in an indexed local journal obtains 3 points, the same as a book chapter by a national publisher (chart 4). As we can see, this table tries to reconcile the importance assigned to books and book chapters, while at the same time recognizing the increasing recognition that a publication in an indexed international journal gets; to increase international presence, but not to desincentivate national publications. There are also discussions regarding the need to register the importance and contribution of scholars not only in the fields of teaching and research, but also its contribution to national society and to public policies through other means, like consultancy.

Chart 4. Incentives to research along type of publication. PUCP 2016.

Reconocimiento a la Investigación PUCP 2016		
DEPARTAMENTO CIENCIAS SOCIALES		
Tipo de publicación	**Puntajes**	**Porcentaje del monto máximo**
Libro completo arbitrado en editorial internacional	4	100%
Libro completo arbitrado en editorial nacional	3,75	90%
Artículo en revista indizada internacional	3,5	80%
Parte o capítulo de libro arbitrado en editorial internacional	3,5	80%
Artículo en revista indizada nacional	3	70%
Parte o capítulo de libro arbitrado en editorial nacional	3	70%
Ponencia completa arbitrada en actas de congreso en editorial internacional	2	40%
Ponencia completa arbitrada en actas de congreso en editorial nacional	1	10%

4 Concluding remarks

Digitalization has contributed in many ways to social sciences and political science, facilitating access to publications and the construction of an international academic network, that were extremely difficult to obtain in peripheric countries. It has helped to shorten the gap between the centers of academic production and the periphery, and also from the centers and the peripheries in the national contexts. However, its advantages can not by themselves surpass the institutional weakness and the lack of domestic capabilities in social sciences and political science in academic communities in countries in the periphery like Peru. Teaching, and academic and professional formation is better than in the past, but there is a lot to do in order to translate these advances into quality and relevant research and publications. Digitalization is a useful means, but it is no magic bullet that will by itself solve problems that should be addressed in other dimensions.

On the other hand, digitalization has radically changed the conditions and nature of academic activity, teaching and research; international quality standards are increasingly important to legitimize academic communities. But, at the same time, threatens the prevailing intellectual national traditions, in the Peruvian case more prone to the involvement in public and political affairs in their own countries, a necessary feature of social sciences. Better quality to control the excesses of a politicized academic community is welcome, but not to at the expense of political isolation and social irrelevance.

What are the future prospects? Until now, most scholars and university authorities, from different generations, try to achieve a balance between the dedication to teaching, administrative chores, making research that reflect the expectations and criteria of international standards and metrics and rankings, but also referred to social and politically relevant issues, committed to community outreach, impact on public policies and state officials. Is it possible to achieve all these goals?

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Digitalization and Political Science in Uruguay

Daniel Buquet

1 Introduction

Uruguay developed an early welfare state during the first decades of the twentieth century. In the absence of strong competing actors, the state acquired a central role in the economy and in the provision of various public services. In the process, the country forged a wealthy, integrated, and modern society with outstanding educational and cultural achievements and a sophisticated university system by the middle of the twentieth century. The social sciences, however, developed relatively late in Uruguay as compared with other similarly advanced societies (De Sierra 2005).

Political science, for example, had to wait for the redemocratization that occurred in the late 1980s to acquire its own academic space. The discipline had first attained university status in 1957 when the subject of political science began to be taught at the Faculty of Law under the leadership of Alberto Ramón Real, who developed an approach very close to public law (Garcé 2005). Although the 1960s provided an important impetus for social sciences in Uruguay, political science could not gain momentum because of the predominance during those years of structuralist approaches. Subsequently, the dictatorship (1973–1985) largely impeded further development of the social sciences, in much the same way as in the other countries of the southern cone of America, such as Argentina and Chile (Altman 2005).

Immediately after redemocratization, however, the social sciences reemerged inside the Universidad de la República (University of the Republic, henceforth "UdelaR"), and political science began to develop within the Faculty of Law, which created an Institute of Political Science (ICP) in 1985. At the same time, the use of computers became increasingly common outside specialized academic circles. In a sense, political science and Digitalization were born together in Uruguay.

This chapter proceeds as follows: the next section presents the evolution of Digitalization in Uruguay and section three describes the development of political science in the country. Section four describes the connections between Digitalization and political science, in relation to learning and teaching, and section five discusses Digitalization with regards to academic political science research.

2 Digitalization in Uruguay

Uruguay has been, and still is, a regional leader in the use of new Information and Communication Technologies (ICT), and this leadership cannot be explained without noting the central role played by the UdelaR[1]. As early as 1963, the Central Directive Council (CDC) of the UdelaR created the Committee for Information Treatment (CTI), comprising people already working in the area, most of whom were mathematicians. Following a CTI proposal, the CDC created the Computer Center of the University in 1966, and in 1967 created a degree program in "University Computing," which trained individuals to work as informatics technicians (Cabezas et al 2012).

During the dictatorship (1973–1985), the UdelaR – which was controlled by the government – did little to advance the development of information technologies. However, the government created a state owned telephone company (ANTEL), which entailed separating management of the telephone utility from that of the national electricity company. The first innovation the new telephone company introduced was the Digitalization of the telex services, which permitted communication without human operators, and Uruguay "became in 1985 one of six countries in the world with the capacity to design and build a digital telex exchange."[2] The next phase of development, after the redemocratization, addressed the Digitalization of all telephone lines, and ended in 1997. Uruguay was the first country in the Americas (including United States and Canada) and the sixth country in the world to achieve a 100 % digitized telephone network.

On the other hand, after the redemocratization, the newly created Central Service of University Informatics (SeCIU), began to provide an electronic mail service for the University by means of a connection with Argentina. In 1990, the University made an important investment in equipment and created the Uruguayan Academic Network (RAU) to offer computer services and communication tools to academic institutions in Uruguay, through the SeCIU. At the same time, the University completed the formalities for obtaining the rights to administer the international domain "UY" for Uruguay. In 1994, the RAU joined the Internet network through a connection with the National Science Foundation[3].

Aside from these advances, Uruguay followed international trends in terms of ICT innovation, introducing cell phone communications and electronic data transmission during the 90s, before the Internet. Later, the cell phone companies[4] in Uruguay introduced mobile internet service with the advent of smartphones.

Despite the great performance of the ICT sector during the 1990s and during the beginning of the current century, there did not exist during that time a coherent and well-articulated state policy on the matter (Rivero 2005). The Uruguayan national government began in 2005 to carry out a comprehensive digital public policy with several components. The government established a presidential agency (AGESIC)[5] to articulate information technology policies and to lead e-government strategies, including information security, electronic certification, data protection and Internet governance (Clastornik et al. 2016). The government's digital policies are compiled in a series of documents, the first three en-

1 UdelaR was at that time the only university in the country, and still accounts for about 80 % of Uruguay's academic activity.

2 http://www.telecomunicaciones.org.uy/index.php/en-los-inicios-de-las-telecomunicaciones-uruguay-fue-lider/

3 http://www.rau.edu.uy/rau/historia.htm

4 Including the leading company which is also state owned.

5 The official name is Agency for the Development of the Management of Electronic Government and the Information Society.

titled "Digital Agenda for Uruguay" (2007–2008, 2008–2010, and 2011–2015), and the current one entitled "Agenda Uruguay digital: Transforming with equity 2020."[6]

The first, and probably most renowned government initiative launched in 2005, it was called the CEIBAL plan and it provided all students and teachers in the national education system[7] their own free personal computer along with free Internet access.[8] The plan was complemented by outreach to parents and teachers and the introduction of educational management systems and online and real-time student assessment systems (Clastornik et al. 2016). As a direct consequence of the CEIBAL plan, the gap in PC access and Internet access between upper- and lower-income households has been drastically reduced.

Nowadays, Uruguay is internationally recognized as one of the leading countries with regard to digitalization. The Development Bank of Latin America (CAF) has created an "Index of Development of the Digital Ecosystem" (IDED), based on eight dimensions, which measures the level of digitalization of production processes in the region. In the most recent edition (2015), Uruguay ranks third in Latin America, behind Colombia and Chile. But Uruguay leads all other countries in the region in "connectivity" and "household digitalization." The dimension on which Uruguay fares poorly and that accounts for Uruguay ranking only in third place overall is "level of competitiveness" in cellular communications, broadband, and paid cable TV; these markets in Uruguay are quite oligopolistic.[9] At the global level, Uruguay ranks 42, according to the last report of the International Telecommunication Union (ITU 2017), and is the top-ranked Latin American country, ten positions ahead of Argentina. The ITU determines rankings based on the "ICT Development Index."[10] Uruguay also leads the region in two of the three dimensions of the index: "access" (rank = 49) and "use" (rank = 34). However, it drops well behind Chile (rank = 19) and Argentina (rank = 27) on the third dimension, "skills" (rank = 61).

As a result of the development of ICT in Uruguay, the ICT sector has an unemployment rate of 0 %, which means that all people trained in that area found employment, and the country has become a regional leader in the software industry. Due to the dynamics and the promotion of the sector, Uruguay became "the leading per capita exporter of software in Latin America and the third in absolute values, with growth rates above those of traditional products."[11]

3 Political science in Uruguay

The Institute of Political Science (ICP), the first academic cluster of political scientists in Uruguay, formed gradually between 1985 and 1988, as a department of the Faculty of Law and Social Sciences of the UdelaR. During this period, the ICP founded the Uruguayan

6 https://uruguaydigital.gub.uy/wps/wcm/connect/urudigital/44f1500c-6415-4e21-aa33-1e5210527d94/Download+Digital+Agenda+%28English+Version%29.pdf?MOD=AJPERES&CONVERT_TO=url&-CACHEID=44f1500c-6415-4e21-aa33-1e5210527d94

7 Including elementary, middle and high school, and the system of teacher training for those educational levels, but excluding universities.

8 Including not only public institutions but also private educational institutions.

9 https://www.caf.com/app_tic/#es/ided.

10 "The IDI is a composite index that combines 11 indicators into one benchmark measure that can be used to monitor and compare developments in ICTs between countries and over time" http://www.itu.int/net4/ITU-D/idi/2017/

11 https://presidencia.gub.uy/comunicacion/comunicacionnoticias/exportacion-industria-+software+-alcanza+-cifra-+de-+trescintos-millones-dolares

Review of Political Science (RUCP) in 1987, created the political science Bachelor's degree program in 1988, and hired the first small group of researchers in the discipline (Buquet 2012). Later, in the 1990s, at the conclusion of the founding phase, the ICP was incorporated into the newly created Faculty of Social Sciences (FCS) as one of its five academic units and it remains the only research and teaching center in Uruguay exclusively devoted to political science.[12]

A second phase of Institute's development ended around 1997 with the creation of the political science Master's degree. During that period, the number of academic staff increased with the incorporation of new professors – some of them trained in the ICP's bachelor's degree program – and the creation of several areas and research programs. By the end of the last century, the ICP had a teaching staff and an academic structure very similar to the one that currently exists (Buquet 2012), that is, about 30 full-time researchers and a similar number of part time professors. The faculty is mainly organized around the areas of government and public policy, comparative politics, political theory and political history.

In the early years of the current century, important progress has been made in efforts to improve the quality of ICP's activities. The doctoral degree in political science was created in 2005, and several ICP researchers graduated from the program. Currently, the entire staff of ICP researchers hold doctoral degrees.[13] Immediately thereafter, a rigorous staff evaluation system was established that emphasizes the importance of peer reviewed publications. In addition, the RUCP set out to meet international scientific publication standards; in 2006, for example, it established a system of double-blind peer review and was increasingly included in several international indexes of journals (DOAJ, SCielo, EBSCO, Redalyc and Latindex). Recently, the journal decided to cease producing a print version and is migrating all its content to an online open access journal platform (http://rucp.cienciassociales.edu.uy/index.php/RUCP/index).

3.1 Political science and ICT

The foundational period of the ICP coincided with the popularization of personal computers; IBM launched its XT in 1983, and Apple its Macintosh in 1984. Consequently, one of the first investments made by the Faculty of Social Sciences was the acquisition of personal computers for their researchers. During the first half of the 1990s, however, personal computers were little more than sophisticated typewriters for Uruguayan political scientists. That was partly due to the low processing power of the first generation of personal computers, but the main reason was the narrative, qualitative, and mainly socio-historical approach prevalent among the ICP researchers. Nevertheless, the use of electronic spreadsheets along with the text processors[14] slowly spread among ICP researchers as a tool for gathering and analyzing data. Some researchers even began occasionally to use SPSS software for more complex statistical analyses.

The creation of the autonomous FCS introduced two innovations that took advantage of new technologies that were emerging at the time. First was the creation of a data bank unit, originally intended as a repository for databases (mostly surveys) provided by researchers in different formats, including digital form. Second, the collections of four dif-

[12] There exist other academic institutions that conduct research and teaching in political science, such as the Institute of Social and Political Sciences of the Catholic University or the Latin American Center of Human Economics (CLAEH), but they include other social sciences in their research and teaching programs.

[13] Four out of 24 senior full time researchers, all with doctoral degrees, obtained their doctorates at home.

[14] That was the glorious age of Word Perfect 5.1 and Lotus 123.

ferent libraries were consolidated and digitized in a single catalogue using the software ISIS, launched in 1985 by UNESCO.

Early in the 1990s the first email system was introduced. In 1993, the ICP created an email node called "cpolit" that enabled ICP to provide email addresses to the academic staff. The system operated on a single computer with the appropriate software that could connect to the SeCIU through a telephone line, sending and receiving electronic messages. This latter innovation completely changed the form of academic interaction, and made possible fast, inexpensive communication with colleagues abroad. This promoted the gradual internationalization of Uruguayan political science, a discipline that had previously been rather parochial. As it was verified later, digitalization favors collaboration and co-authorships in political science (Fisher et al. 1998), and, in turn, co-authorship favors impact (Pike, 2010).

Shortly after, during 1995, the ICP uploaded its first web page as part of the web site of the FCS, which resided on the server of the SeCIU. It was a static web page displaying the main information about the institute: its objectives, the academic staff and so on. Simultaneously, the university improved the infrastructure by installing physical lines, modem equipment, routers and computers with analog or digital connections that connected all the faculties in the University. As part of this infrastructure upgrade, the ICP, which was still housed alone in an isolated building, was connected by a dedicated line to the internet through a server in another building. This allowed every PC in the Institute to have its own connection. This opportunity greatly facilitated researchers' access to new data and literature using web browsers such as Netscape. Near the end of the century, the FCS installed its web site on its own server (originally fcs.edu.uy) and the ICP created a new web page as a part of it[15].

By this time, the data bank of the FCS was divided into three different subject areas and one was named "Politics and International Relations", aimed to provide information on Uruguayan politics (electoral results, composition of government and the legislature, etc.) through its own web page.[16] Simultaneously, the FCS library put its catalogue online. In 2010, the FCS library installed the software Aleph (Automated Library Expandable Program) and integrated its catalogue into a unified university catalogue.[17] Both initiatives greatly enhanced access to literature and data for students and researchers.

Finally, the ICP made its publications available online. The RUCP began online publication in 2006, and all prior issues were scanned and uploaded. In 2018, the ICP ceased print publication and now publishes only an online version. Additionally, in 2009, the ICP replaced print publication of working papers with online publication[18]. Finally, it is worth mentioning the creation of the Colibrí portal in 2015. This portal is an institutional repository intended to collect and organize the academic work produced at UdelaR, to encourage dissemination and access to UdelaR publications, and to increase the visibility and impact of the work produced by UdelaR scholars and scientists.[19]

[15] http://cienciassociales.edu.uy/institutodecienciapolitica/
[16] http://cienciassociales.edu.uy/bancosdedatos/secciones/area-de-politica-y-relaciones-internacionales/
[17] http://www.biur.edu.uy/F
[18] http://cienciassociales.edu.uy/institutodecienciapolitica/dols_icp/
[19] https://www.colibri.udelar.edu.uy/jspui/

4 Teaching and learning political science in Uruguay

As mentioned in the previous section, the teaching of political science at UdelaR began in 1989 within the Faculty of Law. In the years since, the UdelaR political science bachelor's degree program, through its graduates, has been Uruguay's main source of political science researchers and professionals. It is also the only program in the country that provides comprehensive training in the discipline at the bachelor's level, although the Catholic University of Uruguay (UCU) also grants the bachelor's degree in political science through its Bachelor's Degree in Applied Social Sciences[20] program, which allows one to specialize in political science by taking specific courses in the discipline during one's last two years of study. Compared to UdelaR students, UCU students receive more extensive methodological training. These are the only cases of bachelor's level political science training programs in Uruguay. The curricula for both degrees have been modified in similar ways over the years, such as by increasing coursework in methodology and in public policy subjects.[21]

Although in other countries it is normal to have a considerable number of political science degree programs, in Uruguay this limited offering seems to be more than enough. A way to verify this assertion is to look at the number of students entering the political science bachelor's degree program at the Faculty of Social Sciences.[22] Demand appears to be fully satisfied because the enrolment figures are stable from 2005 on, and admission to

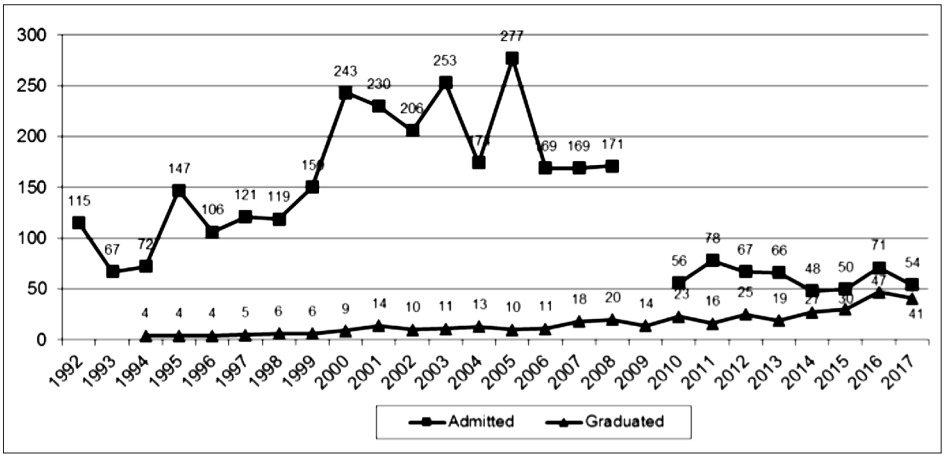

Figure 1. Number of students admitted to and graduated from the FCS political science bachelor's degree program, by year.
Source: FCS student information system.

[20] That was the name of the degree from its beginning in 1991 to 2005. Then it was simply called Bachelor of Social Sciences.

[21] The curriculum of the UdelaR was modified in 1992 and in 2009. The curriculum of the UCU was modified in 1997, in 2005, and again in 2015.

[22] There is no specific enrolment information for political science at UCU until 2015 because all students were subsumed under the social sciences bachelor's degree. The average entry per year in that period is about 17 people and with a slightly decreasing trend. The enrolment average in political science between 2015 and 2017 is five per year. The average number of graduates in political science at the UCU is less than three per year. In short, figures from the FCS represents almost all the training process in political science in Uruguay, and the UCU represents a marginal complement.

the FCS is completely free for anyone who has completed high school studies.[23] Figure 1 shows a trend of increasing enrolment in the FCS political science degree program until 2005, and then stabilization of enrolment numbers at around 170 per year. The enrolment numbers dropped after 2009 because, as a consequence of a curriculum reform implemented that year[24], students began declaring their major in the second year of study and not when entering the faculty.

The challenge for academic political science training in Uruguay lies not in recruiting students to enroll in the program but, rather, in graduating them. Because admission is free, most people who enter the program are interested in political science, but may not be ready to make the effort needed to fulfill all the requirements for the degree. One general problem with the Uruguayan public higher education system is its low student retention. In the FCS, the highest attrition occurs during the first year of study, so figures from 2010 on can be interpreted as the effective demand for training in political science, representing not only the desire to pursue this course of study, but also a real dedication to achieving that goal.

Another serious obstacle to completing university studies in Uruguay is the lack of an adequate system of financial aid. For that reason, many students begin to work during their training and most of these eventually drop out of the university. This is the main explanation for the low rate of degree completion. Even if we consider only the enrollment and graduation data since 2010, during which time there has been an increase in the graduation rate, still only around 50 % of those admitted to the political science bachelor's degree program in their second year of study go on to complete the degree program. The increased graduation rate since 2010 can be explained by the 2009 curriculum reform which allowed student to fulfill the requirements for the major by completing an internship instead of having to write a thesis.

Graduate training in political science began in 1997 with the creation of a Master's degree program at the FCS. Admission to the master's program is limited to a maximum of 35 persons every two year, a number that does not satisfy the gross demand because the number of applicants exceeds the number of places. The faculty are therefore able to exercise selection and offer admission to those whom they consider the most promising applicants. Despite the selectivity, the number of graduations is particularly low given that, as of December 2017, the FCS had awarded only 59 Master's degrees in political science. On average, only 20 % of those admitted to the program obtain the degree. Although the restrictions on enrolment and the higher academic level of the degree program should attract more qualified students, the graduation rate for the Master's program is lower than the rate for the bachelor's degree program. In this sense, free tuition, combined with more rigorous demands on students who usually work and study at the same time, seems to act as a disincentive to complete the course of studies. Currently, the FCS is offering two new master's degrees, one in government and public policy and other in political history. applications to both new programs far exceed the number of places available.[25]

Finally, the doctoral degree program, initiated in 2005, is a program essentially focused on research for the doctoral thesis, based on the curricular training offered by the master's degree program. It offers a limited number of courses taught by visiting professors. The program admitted 38 students between 2005 and 2017 and ten of them obtained the de-

[23] There are no fees and no selection process for admission in a bachelor's degrees at the UdelaR; however, the place of residence can be considered an important restriction, since the political science degree is only taught in Montevideo.

[24] In 2009 there were no entry to the political science bachelor's degree because that year all new students entered to the common first year and began to choose the major in the following year.

[25] The UCU offers masters' degrees in Public Administration and in Public Policy

gree, most of whom (eight) were professors of the ICP. The doctoral degree is oriented to those wishing to pursue academic careers and became an option for people who already were part of the faculty and had impediments – mainly family constraints– that prevented them from being able to study abroad. In Uruguay, students desiring to pursue an academic career normally try to obtain an advanced degree abroad, either in the US, Europe or in another Latin American country, where there exist higher quality institutions and scholarships that are scarce in Uruguay (Malamud y Freidenberg 2013).

4.1 Teaching and digitalization at the FCS

During the 1990s, the FCS installed a computer classroom in order to teach methodology courses using the appropriate software. Specifically, the bachelor's degree program in political science included – as an elective – a course on data analyses using SPSS. Around the turn of the century, teachers increasingly were incorporating the use of PowerPoint slides in their classroom presentations. During the first years of the present century, all the classrooms of the FCS were equipped with computers and projectors, including Internet connections. The FCS provides free Wi-Fi access throughout the building, so students are able to use it. Thanks to the CEIBAL plan, which greatly reduced the country's "digital gap," all university students are familiar with the use of personal computers and most of them have their own laptops. Already in this century, the UdelaR introduced a centralized system for tracking students' performance, which records all students' activities and grades. The system also allows students to sign up for courses and exams. The administration of the bachelor's degree is currently totally digitalized.

The most important advance in the use of computer technology for teaching and learning, however, was the installation in the UdelaR of a platform called EVA (virtual learning environment) in 2008. It is a Moodle platform, which is a free open source package designed to implement online courses. The use of EVA is now widespread through the FCS, although most teachers use only a few features of the system, such as uploading documents or sending messages. Some courses, though, have taken advantage of other features that allow for activities in courses that are not entirely face-to-face. In that sense, a program in the social and artistic unit of the UdelaR is developing a project to train professors in the use of ICT for teaching. Its main goal is to improve the quality of instruction in the context of current University transformations and the incorporation of ICT[26].

The widespread use of new technologies in the learning process has changed the way in which students and teachers interact, but not in an intentional manner. Rather, it seems that ICTs were incorporated in the teaching process "…because suddenly all those electronic tools and platforms were available" (Moser, 2013). But not all the consequences of digitalization have been positive. There also have been negative effects. For example, it has become much easier for students to commit plagiarism when they prepare homework assignments. In this respect, the UdelaR is falling behind because there is no systematic way to detect or prevent plagiarism so the task is left to the teacher. The University should incorporate specific plagiarism detection software and establish more rigorous rules in this regard.

Another deficit is that, in spite of the advances in the use of computer technology for teaching, there are no subjects, either in the political science Bachelor's degree program or in the advanced degree programs, devoted to the study of the relation between politics and new technologies. The only course offered in the political science Bachelor's degree program related to this subject was offered until 2009 by Professor Martín Rivero and it

[26] http://www.asa.edu.uy/programa-de-formacion-pedagogica/

focused on the relation between ICT and development. Other than that, the FCS sociology bachelor's degree program offers a research workshop on the "Information and Knowledge Society", designed for sociology students who are working on their bachelor's thesis. The digital revolution is an issue insufficiently covered in the political science curriculum, but not because of any intentional exclusion. Rather, the relatively small size of the Uruguayan academic community does not allow us to cover all relevant subjects; instead, course offerings depend on individual teachers' preferences and the subjects on which they focus.

5 Research on digital issues in political science in Uruguay

In 2006, the national government created the National Agency for Research and Innovation (ANII). The agency's purpose is to promote scientific research and its productive and social applications. In the context of the ANII, two relevant initiatives for researchers were created: the National System of Researchers (SNI) and the Timbó website.[27] The SNI was created in 2007 as part of the science and technology policy promoted by the government. It aims to "strengthen, expand and consolidate the national scientific community, accompanied by the task of categorizing and periodically evaluating all researchers and establishing a system of economic incentives."[28] Its implementation took a long time; the first call was made in 2008, and by March 2009 the first group of researchers was incorporated into the system. Although the system does not include the entire academic community – because some researchers did not apply and others were rejected – practically all have sought to be included, either because of the prestige that such recognition confers or, simply, to obtain the economic incentive that is granted to its members.[29] All researchers categorized by the SNI have a public CV accessible through the Internet (http://sni.org.uy/investigadores/).[30]

As of December 2018, there were 44 political science researchers categorized by the SNI. This figure includes three associated members, who are Uruguayans living and working abroad. The remaining 41 researchers are classified into four categories. Eight are in the starting category, which means that they are graduate students already working in the discipline. There are three levels above the starting level: 24 researchers at level I, which denotes individuals with PhDs and with recent publications and capabilities to conduct independent research; seven researchers at level II, which denotes more accomplished researchers who have made relevant contributions and have the capacity to train staff, and just two researchers at level III. These latter two researchers are individuals who have an outstanding professional record and extensive international recognition.

Thirty seven out of the 41 researchers belong to the UdelaR, and 33 of them belong to the ICP.[31] The other four political scientists work at the UCU. In other words, 80 % of Uruguayan political scientists work at the ICP, which reaffirms the Institute's quasi hegemon-

[27] The Timbó portal (http://www.timbo.org.uy/) allow all researchers and academic institutions in the country to access different literature sources like SCOPUS, JSTOR, etc.

[28] See www.sni.org.uy

[29] Even though the monetary incentive is small, varying between 350 to 500 US dollars per month according to the category. This amount represents not more than 15 % of the net salary of a full time professor.

[30] The SNI introduced the use of an online CV: the CVUY, which is a public and digital CV, and is taken as the basis for the categorization of national researchers.

[31] The other four researchers of the UdelaR are affiliated to different places: the Faculty of Law, the Faculty of Information and Communication, the Faculty of Medicine and the Institute of Sustainable Development, Integration and Inclusion Social, which is a department located at the interior of the country.

ic role in the discipline. The leadership of the ICP is also clear in terms of the level at which the SNI classifies the researchers, since all level III researchers and all but one level II researchers belong to the ICP, consistent with the ICP's long tenure, in contrast to the rather recent development of the discipline in private academic institutions.

Nevertheless, the department of social sciences of the UCU, despite being more recent and smaller, seems to be more demanding in academic terms; all their researchers have a doctoral degree, belong to the SNI, and have a higher quality record of publications, as will be pointed out below. On the other hand, three researchers of the ICP, who are categorized at the starting level, are still PhD students and work as teaching and research assistants. Additionally, three out of the four UCU researchers obtained their degrees in the US or the UK and one person obtained the degree in Chile. The situation at the ICP is rather different, with just one PhD from the US, one from the UK, one from Canada, and six from continental Europe (four from Spain, one from Germany and one from France). The other 21 PhD-level researchers of the ICP obtained their degrees in Latin America, including eight who obtained the degree in Uruguay.

The following represents a summary of some features of the research production of political scientists in Uruguay. At the beginning of Uruguayan political science, that is, during 1986–2000, publications were primarily national books and articles in non-refereed journals. However, during the first decade of this century, articles in peer-reviewed journals and chapters published in Uruguay and abroad account for more than 80% of the production. That period also saw an upward trend in the publication of chapters abroad, to the detriment of those published in the country (Buquet 2012). Articles in peer-reviewed journals and book chapters published abroad became the typical product of a political science that aspires to international levels of quality. Nevertheless, most of the scholarly work Uruguayan political scientists produce is published in Latin American journals or books, though publishing in internationally indexed journals or books is growing, as Figure 2 shows.

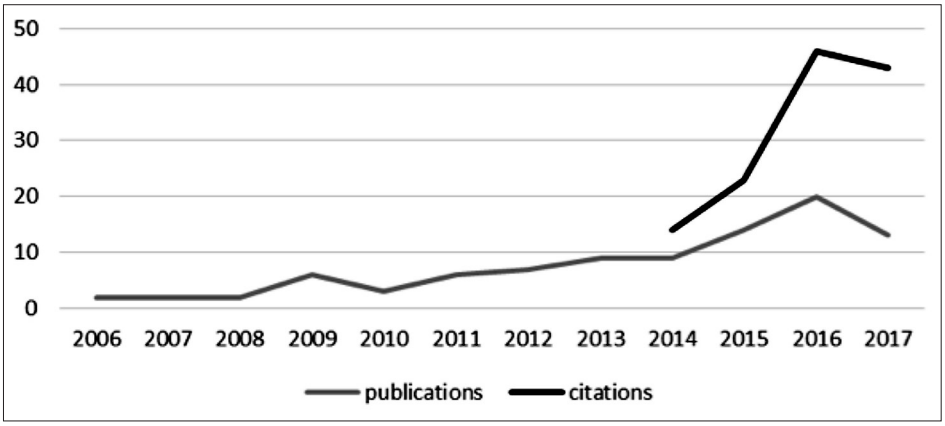

Figure 2. Publications and citations of Uruguayan political scientists registered in SCOPUS
Source: SCOPUS may 2018.

The number of publications registered by SCOPUS for 30 out of the 41 political scientists included in the SNI totals 96 and shows a clear increasing trend during the last ten years.[32] The figures grow from less than five per year during the first decade of the centu-

[32] The other eleven researchers do not have publications registered in SCOPUS.

ry to a record high of 20 in 2016.[33] Moreover, the impact of those publications is growing at an even greater rate than the growth in number of publications. These data reflect, on the one hand, the search for more prestigious publication venues and, on the other hand, the success in achieving greater visibility for Uruguayan political science scholarship. But these achievements are not solely the consequence of the increase in the quality of Uruguayan political science. It is also a consequence of the increasing quality of some Latin American and Spanish journals, which managed to enter SCOPUS. One indication of this mixed causality is the fact that fewer than half of the Uruguayan publications considered are written in English. Regardless, it is indisputable that Uruguayan political science is seeking greater international recognition. This goal, however, is more apparent in the UCU than in the ICP, since the political scientists in the UCU have an average of six indexed publications against only 2.5 for those in the ICP. Most of the publications of the ICP academic staff are still articles and book chapters that are not indexed in SCOPUS.

Finally, it should be noted that political science research in Uruguay practically ignores the subject of digitalization and politics. There are only a few papers written by the then-young scholars María Frick and Martín Rivero,[34] one of them noting the emergence of the subject in Uruguay (Frick 2006). The evidence the author presents is a panel held during the first Uruguayan Congress of Political Science, but the paper presenters in that panel did not further pursue the subject, with the exception of José Busquets, who also published a couple of articles on digitalization of the judiciary and maintains this line of research as a complement to his main interests.[35] In the subsequent national political science congresses there also were some panels or papers on the subject, mainly authored by foreign scholars and Uruguayan students. There is no specific section in the National Association of Political Science nor specific publications on digital politics in Uruguay.

Some topics directly linked to digitalization, such as the CEIBAL plan and digital inclusion, have generated important research interest in Uruguay, but not from political science. Perhaps the most relevant initiative studying digitalization from the social sciences point of view is the project *Observatic*. It is an interdisciplinary group of the UdelaR created in 2007, which operates in the FCS and has the Faculty of Information and Communication as an associated unit. "The main objective of ObservaTIC is to create a multidisciplinary academic space for the generation, systematization and dissemination of specialized knowledge in the field of the information society, information and communication technologies, and their contribution to development" (http://observatic.edu.uy/). The coordinator of the project is sociologist Ana Laura Rivoir, who has an impressive record of publication in the area, including political aspects such as open government.[36] But the overwhelming majority of the group members are sociologists and there is no political scientist among them.

5.1 Research on political science and the use of academic social networks

The use of the Internet has promoted interaction among researchers in different ways. One recent advance in digitalization related to scientific research was the emergence of academic social networks (ASN). By 2015, the ICP decided to encourage all faculty to cre-

[33] It is possible that figures for 2017 were not totally updated by the time in which the information was collected.

[34] María Frick is a former student of political science who published in the discipline until 2009 and subsequently turned to Latin American studies and history of art. Martín Rivero was a part time teacher at the ICP who is currently working on south-south cooperation.

[35] See for example Busquets and Pose (2015).

[36] See for example Rivoir and Landinelli (2017).

ate profiles in academic social networks (ASNs). The networks suggested were Google Scholar (GS), ResearchGate (RS) and Academia.edu[37] because they were perceived as the most suitable.[38] In this kind of network, researchers can create a profile, upload and tag papers and data, interact with each other, and track metrics such as citations. The purpose was twofold: on the one hand, the website of FCS does not allow professors to create dynamic personal websites, so having an ASN linked to one's personal website in FCS allows visitors to access the publications that one has uploaded to that network. On the other hand, there was the conviction that using ASNs gives one's research greater visibility, so faculty were encouraged to make their documents available through those networks.[39] As a consequence, currently 23 of 24 full time ICP professors have a profile in at least one of the above mentioned ASNs.

According to a survey conducted by the journal Nature, researchers' main goal in creating profiles in ResearchGate and Academia.edu is to enable others to contact them. Additionally, the most valued features of those networks are posting content, looking for peers and papers, and tracking metrics (Van Noorden 2014). Moreover, the use of scientific social networks could be particularly beneficial for some underdeveloped countries. For example, Brazil, which was among the top 20 countries for total WoK[40] publications in 2013 – has a very high number of RG members and a relatively high RG score "reflecting particularly active engagement in the site" (Thelwall and Kousha 2015).

In order to describe political scientists' use of ASNs in Uruguay, I analyzed the three networks for the 39 researchers with institutional affiliation registered by the SNI. All but five have a profile in at least one network. The five that do not have a profile include two part time professors of the ICP, one full time professor of the ICP, one full time professor of the UCU and the professor of the Instituto de Desarrollo Sustentable Integración e Inclusión Social of the UdelaR. So, the first observation is that an overwhelming majority of political science researchers in Uruguay (83 %) have a profile in at least one of the ASNs considered. Therefore, we can state that the use of ASNs in Uruguayan political science is widely accepted.

To compare the engagement of scholars with ASNs and some metrics concerning their performance I chose one indicator from two networks: the H index[41] for GS and the RG score[42] for RG. In order to go one step further I will compare performance metrics provided by two ASNs considering the average value for the ICP of the UdelaR, and for the DCSP of the UCU. The average was calculated only for those who have profiles in that ASN. Table 1 shows the average value of the selected metrics for both departments.

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[37] ResearchGate and Acdemia.edu were founded in 2008, and Google Scholar, which already existed as an academic browser, added the possibility of having a personal profile with the academic production and metrics based on citations in 2012.

[38] There are other academic social networks, like Mendeley, Zotero, and CiteULike, but they are primarily citation managers with social networking features (Ovadia 2014).

[39] At least, a study published in 2015 by AE established that papers shared there get 83 % more citations than those which not.

[40] Web of Knowledge or Web of Science. See http://wokinfo.com/

[41] The h-index is a single-number criterion proposed by Jorge Hirsch (2005) to evaluate the scientific output of a researcher. "A scientist has index h if h of his or her Np papers have at least h citations each and the other (Np – h) papers have fewer than h citations each" (Hirsch, 2005:16569).

[42] The RG score is calculated by Research Gate based in four dimensions: publications, questions, answers and followers. Nevertheless, the exact way to calculate it is not disclosed by the ASN. Kraker and Lex (2015) found three shortcomings in the RG score: "(1) the score is intransparent and irreproducible, (2) the score incorporates the journal impact factor to evaluate individual researchers, and (3) changes in the score cannot be reconstructed."

Table 1. Average metrics for Uruguayan political scientists in ASNs.

	ResearchGate score	N	Google Scholar H	N
DCS-UCU	8.68	2	8.67	3
ICP-UdelaR	5.93	29	9.09	23
GENERAL	**6.1**	**31**	**9.04**	**26**

Source: Author's analysis based on information from ResearchGate and Google Scholar

The data show that the researchers from the UCU have a significantly higher RG score than those from the ICP, but the ICP political scientists have a higher H index than those from the UCU. Even though the number of UCU cases is too small to make any generalization, the H index of Google Scholar shows a different reality compared to SCOPUS: the accumulation and the diffusion of the scholarship of the ICP has a greater impact if one take into account more than simply the number of publications registered in SCOPUS.

In terms of how to interpret the selected indicators, is interesting to see that there is practically no relation between them. Figure 3 shows the plot of the scores of the 19 researchers that have a profile in both GS and in RG.

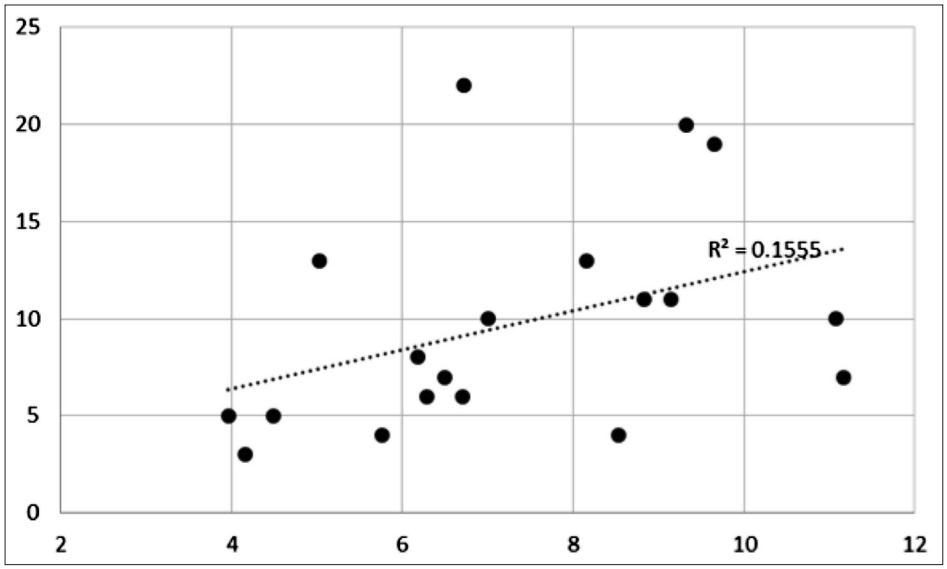

Figure 3. ResearchGate scores and H index in Google Scholar
Source: Author's analysis based on information from ResearchGate and Google Scholar

The distribution of the data points shows no pattern of association and the R^2 value barely reaches 0.15. In that sense, one can agree that the use of RG on the one hand "… broadly reflects traditional academic capital" but, on the other, "… success for individual academics seemed to reflect a combination of academic capital and social networking skill" (Thelwall and Kousha 2015). In sum, even though ICP researchers have accumulated more traditional academic capital, UCU researchers exhibit greater networking skill.

6 Conclusions

Political science developed late in Uruguay, and at its origins the discipline's scholarly approach and work was mainly narrative, parochial and its diffusion was concentrated at the national level. At the same time, however, Uruguay followed international trends in terms of incorporating digital tools for teaching and research in political science. This was possible because of the early development of informatics in the country, which currently ranks very well compared to other countries, not only in the Latin American region but also globally. It is plausible, then, that the rapid incorporation of new ICT into disciplinary activity promoted internationalization, which, in turn, drove the discipline to achieve some basic international academic standards in a short period.

The use of computer technology for teaching is very widespread, and the universities are the main suppliers of the platforms needed for the activity. But the use of ICTs for teaching is far from achieving its potential. Most senior professors are not used to the new features of digital tools and more effort is needed to train them. On the other hand, students are digital natives, which can assist their learning process, but can also encourage cheating. So educational institutions should make serious efforts to deal with these new phenomena.

Digital tools are also widely used for political science research in Uruguay, but in this case specialized government agencies play a significant role. It could be said that by 2010 all the materials necessary for research were on the Internet and the Uruguayan academy had access to it. The main shortage in this context is lack of access in Uruguay to the WoK database. Political scientists in Uruguay are using digital tools to improve teaching and research, but internationalization should go one step further by making internationally indexed publications the main destination for Uruguayan political science scholarship. In this area, UdelaR is behind UCU and has the most work to do.

Finally, the main shortage with respect to digitalization and political science is the paucity of research concerning the links between digitalization and politics in Uruguay, both as a teaching subject and as research topic. The small size of the country and, consequently, the limited resources of its political science academy explains this scarcity. But ICTs are changing politics in various and rapid ways, disseminating information, increasing transparency and altering the way in which the government, political parties and citizens interact with each other. Political parties and politicians in Uruguay are increasingly using new technologies, particularly social networks, to interact among themselves and to communicate to the electorate (Welp and Marzuca 2016). The political science community in Uruguay therefore should invest significant effort in order to catch up with this increasingly important issue.

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Digitalization and Political Science in the USA

Diana Owen

1 Introduction

The digital revolution has significant implications for teaching and learning political science in the American context. The novelty of digital developments, the fast pace at which they emerge, and the volatility and dynamism of the digital environment pose opportunities and challenges for educators. While some institutions are readily adapting, even innovating, many struggle to keep pace. The gap in the availability of ICT and instructional resources between elite universities and less selective public institutions is immense. These inequities are especially pronounced in schools serving low income and minority students as the deficiencies of their secondary education persist through college (Garcia 2018; Owen, Doom, and Riddle 2016).

To prepare students for active citizenship as well as careers related to government and politics, educators are having to rethink core aspects of the political science curriculum. Educating for digital citizenship requires that students gain both technical and educational competencies (Mossberger, Tolbert, and McNeal 2008). Citizenship in the twenty-first century requires digital age skill sets, as ICT has instigated an expanded realm for civic engagement (Gainous and Wagner 2014; Kahne, Middaugh, and Allen 2015; Wells 2015). Students must be able to access and evaluate the quality of information from diverse digital platforms in a news environment that has become increasingly difficult to navigate. They must learn about ever-expanding options for actively taking part in civic life by contributing to political discourse and using technology to accomplish political activities, such as contacting officials, working on behalf of candidates, and organizing for a cause. They have opportunities for collaborating on issues and political events on a local, national, and global scale that were unimaginable a short time ago.

Faculty and students must understand how to adapt quickly to new forms of digital political engagement that are on the horizon. Political science education in the U. S., however, lags behind these shifts in the political environment (Owen, Soule, Nairne, Chalif, and Davidson 2011; Owen 2014; Owen, Doom, and Riddle 2016). Faculty must reassess the instructional pedagogies they employ and reconsider the research methodologies they teach to keep pace with disciplinary and real-world developments.

This chapter begins with an overview of the opportunities and challenges associated with educating students who are digital natives. Students' experience with educational instruction using technology as well as their background in digital citizenship prior to entering post-secondary institutions are important factors influencing a college or university's approach to twenty-first century instruction. There is no one-size-fits-all strategy for integrating digital era technologies into the curricular environment. Specifically, I discuss

the pre-college civic education experience of high-need student populations which is deficient in providing digital civic interventions. Next, I consider the political science curriculum in the digital age. I provide three examples of ways that digital age concepts, practices, and skills can be incorporated into the curriculum – through educating for digital citizenship, teaching students to negotiate e-government, and informing students about defensive use of technology. Finally, I touch on the ways that research methodologies have been shifting in the digital era.

2 Educating digital natives

Today's students are digital natives whose lives are fully immersed in ICT (Cunningham 2007; Palfrey and Gasser 2008; Shah and Abraham 2009; Mihailidis 2014). A 2018 Pew Research Center study found that 90 % of teens are heavily connected to ICT – 45 % use the internet almost constantly and another 44 % go online several times a day (Pew Research Center, 2018). Young people have more advanced technological skill sets than prior generations, and often are more adept at using digital media than their teachers (Celano and Neuman 2013; Hodgin 2016a). Digital natives use new avenues to engage, as social media allow them to align the information they gather from peer-to-peer networks to the political information they encounter through media outlets that foster conversation and the spread of information (American Press Institute 2015). However, a gap exists between young people's understanding of digital media as social tools and their potential for gaining political information and taking part in civic life. Young people may feel adequately equipped to cultivate social networks, but they must learn how these same information sources and networking platforms can be used for meaningful political engagement (Bennett 2012; Mihailidis 2014). They are not oriented towards using technology as an educational tool. Further, they have little knowledge of how to engage digital media effectively and responsibly to conduct research.

2.1 Pedagogies for the digital age

Teachers potentially can capitalize on students' pervasive use of digital media by developing pedagogies that foster digital citizenship skills. They can provide guidance to students as they become critical consumers of online news and information about government and politics. They can offer direction about how to be responsible users of social media for engaging in political dialogue and action. They can devise methods for adapting well-established civics classroom activities, such as contacting to public officials and fielding opinion surveys, to the digital environment. However, these opportunities are not widely employed in the political science classroom. Studies suggest that teachers tend to fall back on the pedagogies with which they have experience, especially when faced with impediments to the incorporation of ICT in the classroom (Murnane and Steele 2007; Hodgin 2016b). This issue is especially pronounced for teachers of students from underserved populations (Owen 2018).

Pedagogies for the digital age emphasize active learning approaches that prioritize interactivity and collaboration. Instruction incorporates project-based learning that encourages interdisciplinary cooperation. For example, a program sponsored by the U. S. Department of State's Diplomatic Rooms provides teachers with digital images of objects from its extensive collection of American political history artifacts that they incorporate into

their civics lessons. Political scientists can collaborate with faculty from other disciplines, such as computer science, the natural sciences, math, public policy, english, history, and American studies, to pool expertise and streamline the teaching process. In this way, digital skills can be integrated across the curriculum. Students can embark on digital projects, create digital portfolios to showcase their work, and develop non-traditional thesis projects, such as websites, films, and multimedia presentations. Faculty can explore using novel pedagogies, such as serious games and simulations. Carefully designed games can be successful in conveying political science skills, such as policy analysis, as they integrate technical, social, and political aspects of policy issues (Mayer 2009).

2.2 Obstacles to adopting digital pedagogies

Educators face serious obstacles to devising pedagogies that go beyond the use of digital tools to look up information. Restricted resources, including outdated technology and inadequate technical support, deter faculty from incorporating digital technology into the curriculum for more than rudimentary purposes (Celano and Neuman 2013). Faculty can be reluctant to devote instructional time to experimenting with innovative pedagogies when the payoff in terms student learning and their own career recognition is uncertain. Because the media environment is highly volatile, and digital platforms and practices frequently change, faculty are unwilling to invest time in course preparations that have a limited shelf life. Digital pedagogies, much like the digital environment itself, become quickly outdated, and it can be difficult for educators to keep pace with shifting trends. Further, integrating technology in the classroom requires teachers to devote greater time to assisting individual students working independently on devices. Teachers are more inclined to use pedagogies that involve the entire class more inclusively (Hodgin 2016a).

While faculty almost universally believe that digital technology is essential in the classroom, they lament the paucity of technology-related professional development opportunities (Hodgin 2016). A study conducted by the Center for Information & Research on Civic Learning and Engagement (CIRCLE) found that an overwhelming majority of instructors felt that teaching digital media literacy is essential for students to become effective consumers and sharers of information in the political sphere. However, just one-third of teachers felt "very confident" in covering media literacy in the classroom. 80% of teachers indicated that they were at least somewhat interested in having more resources for instructing students in digital media literacy (Kawashima-Ginsberg 2014). Faculty also have difficulty finding quality instructional materials that engage digital media (Godsay and Sullivan 2014).

Faculty also must ensure that digital approaches are not simply pedagogic novelties that compromise students' learning. Instructors increasingly find themselves competing with technological devices for students' attention. They are challenged to develop instructional strategies that keep students engaged with the lesson, especially when the lesson involves going online.

2.3 Designing the future(s) at Georgetown University

An example of how an institution is addressing the need to adapt to a changing learning environment and provide a worthwhile educational experience for digital natives is Georgetown University's "Designing the Future(s)" initiative (https://futures.georgetown.edu/). The program was launched in the fall of 2013 and was aimed at addressing broad issues surrounding the value of a residential university education "in preparing students for a life

of professional success, personal flourishing, making a difference in the world" (Groves and Bass 2015: 27). A focus of the program is the need for students to acquire 21st century skills that transfer from the university to the greater societal context. Universities are struggling to remain relevant at a time when the cost of attending brick and mortar schools is skyrocketing and online options are proliferating. Schools must anticipate updating the curriculum to better meet the needs and expectations of graduates. "Designing the Future(s)" considers the nature of a residential college education in a digital world. The project recognizes that changes in the curriculum and pedagogy are needed at an accelerated rate of speed. It acknowledges that the requirements of educating students so that they acquire the information and skills needed to become productive digital age citizens and scholars place increasing demands on faculty time and resources. Importantly, it provides resources for faculty who are reluctant or not equipped to impart digital skills in their classes.

The initiative's goals are broad-based and emphasize thinking outside the box to envision where the curriculum will be years into the future. Participating faculty, administrators, and students work together as creative teams to develop ideas that are not simply curriculum enhancements, but instead "push against and reimagine the formal boundaries of the way we make the curriculum work" (Groves and Bass 2015: 28). The project incubator has come to be known as "The Red House," as activities take place in a small red townhouse near campus. Teams collaborate across disciplinary boundaries to share expertise and efficiently manage updates to the curriculum and the digital pedagogies employed. Projects developed at the Red House focus on the educational experience and are not bounded strictly by the established system of courses, semester-based credits, and seat time. Project- and studio-based modular courses are designed to get away from the standard 3-credit offerings. Students' progress toward the degree is linked to outcomes, such as the completion of digital media projects that promote multimedia literacy, or the ability to create new works using digital texts, images, audio, and video, as well as interactive literacy, the ability to communicate through voice, video, and text in online environments.

Faculty can teach one-credit classes where they can explore new topics and experiment with novel pedagogies. Bridge courses allow students to acquire digital skills, such as data visualization and digital storytelling, that can be applied to specific areas of study. The political science curriculum is well-suited to the type of curriculum innovations promoted by "Designing the Future(s)." Faculty have collaborated on course clusters around public policy areas. A cluster on "Challenges in Childhood and Society" consists of one-credit modules that highlight digital skills, research methods, community-based learning, and policy analysis. "Citizenship in a Globalized World" focuses on the interconnections as well as the fragmentation and inequalities among nation states. Students create podcasts and short video stories where they narrate concerns about social justice issues. They articulate their research findings using digital storytelling techniques and create infographics to display data.

An ongoing initiative allows students and faculty to contribute to the Georgetown Slavery Archive, a digital collection of materials and analysis related to the University's Working Group on Slavery, Memory, and Reconciliation. Items for the collection, which addresses the Jesuits' ownership and sale of slaves to support the University in the early 1800s, are digitized and catalogued, and their historical significance is described. Students engage in innovative digital projects, such as holding a hackathon to translate and interpret a letter written in Latin in 1836 that details the conditions places by Rome on the sale of Georgetown's African American slaves. A digital record of the hack was produced, as students learned about the University library's special collections, Georgetown's history, and the work of the Slavery Archive Project.

3 Disparities in students' digital competencies

It is essential to consider the digital competencies students possess when they arrive at colleges and universities when designing the curriculum. Students' capabilities, beyond the social uses of digital technology, vary vastly across American campuses depending upon the type of university, its financial resources, and the composition of the student body. Differences are rooted in whether the school has a research or teaching focus, is a community college, exclusively an undergraduate institution, or offers graduate programs, and is a public or private college or university. Tremendous disparities exist in the technological resources available across institutions, instructors' backgrounds and experience, and opportunities for teacher education to acquire current instructional pedagogies. The student population served by schools also must be considered, especially high-need students whose preparation for digital age education is scant. In addition, some schools accommodate large numbers of students from countries outside of the U. S., where their relationship to the digital world differs from that of American students.

The disparities in students' digital preparedness for post-secondary political science education originates in middle and high schools. The incorporation of digital skills into the middle and high school civics, social studies, and American government curriculum differs tremendously across schools. Students from more privileged backgrounds not only receive high quality civic education as a precursor to their college experience with government and political science courses, they also are digitally proficient when they arrive on campus. Students at my institution, Georgetown University, generally start off with solid backgrounds in using technology to access information and post content; some arrive with sophisticated digital production skills. They begin their college education ahead of the curve, and leave having had an opportunity to hone their digital skills further through initiatives like "Designing the Futures".

However, the secondary education of high-need students – students living in poverty, displaced students, minority students, English language learners, and special needs students – often is shortchanged. Their substandard civic education exacerbates the "civic empowerment gap" where political influence is concentrated among more privileged groups. High-need students are most in need of the knowledge, skills, and the dispositions required to participate competently and responsibly in political life (Levinson 2010, 2012). The "civic empowerment gap" is expanding in the digital era, as the requirements for effective citizenship have broadened (Bennett 2008; Bennett, Wells, and Rank 2009; Dalton 2008). Digital citizenship has been shown to promote social inclusion, which is an opportunity that is denied to minorities and the poor when they are unable to participate online (Mossberger et al. 2008). With minimal access to instruction, at both the secondary school and collegiate level, that meaningfully incorporates digital citizenship than their more advantaged counterparts, high-need students are further deprived of the skills required to develop political agency. High-need students start from behind and lose ground to their more advantaged counterparts.

3.1 Research on digital instruction for high-need students

I have conducted research that examines how teachers are integrating pedagogies related to digital citizenship into the middle and high school civics, social studies, and American government curriculum. Specifically, I explore the extent to which teachers of high-need students and teachers of more advantaged students incorporate digital pedagogies, activities, and media use skills in the classroom. The study uses data on 700 middle and high school teachers collected in conjunction with the James Madison Legacy Project (JMLP),

a nationwide program designed to provide professional development to teachers of high-need students.[1] The program is implemented by the Center for Civic Education and is based on the *We the People: The Citizen and the Constitution* (WTP) curriculum.[2]

The findings show that teachers were using digital technology in the classroom, but not necessarily in a way that is conducive to promoting digital citizenship. Using technology for getting information was the most prominent digital pedagogy. Teachers were less inclined to use technology to convey civic competencies, like contacting a public official online, creating content to post, using social media responsibly for politics, and engaging with e-government. Teachers of high-need students were significantly less likely to incorporate digital technology into the civics classroom than teachers of more advantaged students. High-need students were less apt to experience active and engaged digital learning pedagogies – which was the case for active forms of traditional pedagogy as well. Lecture was the primary instructional approach that teachers employed with high-need students.

Disparities in the use of digital technology in the classroom were apparent for accessing information as well as civics-related activities, such as using digital tools to create civics related materials, such as newsletters and blog posts. The findings are consistent at both the middle and high school levels. For example, 32 % of high-need middle school teachers had students create digital civics materials compared to 48 % of non-high-need students' teachers. The trend is similar for high school, as 38 % of high-need students created digital civics materials compared to 54 % of more advantaged students. The problem is exacerbated by the fact that schools serving high-need students often lack the technological resources, especially computers, tablets, and software, necessary to incorporate digital pedagogies into the curriculum. In fact, a majority of schools in the study did not have adequate textbooks or basic supplies, like paper and pens (Owen, 2018).

4 The Political science curriculum in the digital age

There are countless ways in which digital age content, practices, and skills can be integrated into the political science curriculum. Three of these aspects are discussed below: 1) digital citizenship; 2) negotiating e-government; and 3) defensive use of digital technology.

4.1 Digital citizenship

Fred I. Greenstein long ago observed that, "No topic of political science has a longer and more distinguished lineage than citizenship training" (Greenstein 1965: 2). Greenstein's statement remains true today, as the digital era has opened up new dimensions of citizenship. Imparting the knowledge, skills, and dispositions that are essential for democratic citizenship in the digital age should be a priority for the political science curriculum. Peo-

[1] The JMLP is funded by a Supporting Effective Educator Development (SEED) grant from the U.S. Department of Education. James Madison Legacy Project: Professional Development for Teachers of Civics and Government. PR/Award Number U367D150010. More information about the research conducted on the JMLP can be found at http://jmlpresearch.org/.

[2] The We the People program was founded in 1987 by the Center for Civic Education in Calabasses, CA. More than 80,000 teachers have taught the curriculum to more than 30 million students. The program is grounded in the foundations of American government, and emphasizes U.S. Constitutional principles, the Bill of Rights, and government institutions. Students take part in a range of learning activities, such as primary document analysis, group projects, and debates, culminating in simulated congressional hearings.

ple who acquire the competencies for digital civic engagement have an advantage in their ability to express their views, participate in the political realm, and advocate on behalf of issues that affect their lives.

Digital citizenship is the ability to participate in online society which includes having regular access to the internet. Mossberger, et al., define digital citizens as "those who use technology frequently, who use technology for political information to fulfill their civic duty, and who use technology at work for economic gain" (Mossberger, et al. 2008: 2). Being competent digital citizens is a necessary precondition for political empowerment. As the foregoing discussion makes clear, developing these orientations is especially pressing for students from high-need backgrounds. Universities should be prepared to address the civic empowerment gap through digital citizenship education.

The ability to gather and process information about government and politics online is a fundamental requirement of digital age citizenship. People who have sufficient knowledge tend to feel more politically efficacious, and ultimately participate more fully in political life (Delli Carpini and Keeter 1996). In addition to teaching students how to access content, the political science curriculum should improve students' ability to critically analyze news and information. Students should develop news literacy skills to help them find reliable information for decision-making as well as to responsibly share news through social media. They should become aware of the choices and challenges facing journalists as they report on a story, including the importance of verification, sourcing, and other journalistic practices and standards. They should examine the influence of business models on the news product. Further, faculty can help students to understand the implications of confirmation biases that compel people to interpret information in keeping with their predispositions for how news and events are perceived. The role of digital technology in prompting the development of "echo chambers," where like-minded individuals get information that is consistent with their views to the exclusion of other perspectives, can be explored.

Providing students with the tools to assess the quality of political content accessed online is especially important, as misinformation has proliferated widely through social media and become more difficult to detect. The notion of "fake news," a slippery concept, has become prominent in the political lexicon. Students can gain a greater understanding of the origins and evolution of the concept, and how they might identify and address misinformation. A colleague has successfully employed a class exercise where students are given a "fake news" story. They are asked to track down its origin and find places where it has been spread. Through this process, students are made aware of the role that they can play as citizen watchdogs by using their critical digital literacy skills.

Civic skills are the proficiencies that enable people to engage actively and responsibly as democratic citizens. They encompass the ability to use digital media to follow and engage in politics and to think critically about societal issues. Technological competencies are now required to enable citizens to express opinions, contact officials, become active participants in their communities, and even to cast a ballot. Direct experience with using digital tools for political and civic engagement can be incorporated into political science classes as well as co-curricular activities, such as internships and workshops. Colleges should prepare young people to anticipate and engage in constantly changing practices of digital political activation facilitated by the affordances of interactive, participant-based media and mobile devices (Bennett and Segerberg 2012).

Sigal Ben-Porath and Gideon Dishon contend that students' acquisition of digital civic skills should be accomplished in tandem with their development of positive civic dispositions. They observe that "individuals must develop early on, the habits and inclinations to act democratically in the civic digital sphere"(Ben-Porath and Dishon 2018). Educational institutions are in a good position to work toward these goals. Civic dispositions are orientations related to democratic character formation. People with strong civic

dispositions show concern for others' rights and welfare, have reasonable levels of trust, and possess a sense of public duty. They embrace their democratic rights, responsibilities, and duties in a tolerant and civil manner. Civic dispositions underpin people's motivations to become civically engaged (Torney-Purta 2004; Campaign for the Civic Mission of Schools 2011). Digital media can contribute to young people developing democratic civic dispositions, including those supportive of marginalized groups, such as the DREAMers (Jenkins, Shresthova, Gamber-Thompson, Kligler-Vilenshik, and Zimmerman 2016), although they also can promote anti-democratic aims and uncivil behavior (Ben-Porath and Dishon 2018). The interconnectivity achieved via digital networks can foster a sense of a shared fate that ties people to citizens in their own country as well as to those in other nations. Digital citizenship can allow people to identify common goals, shared interests, visions and collaborations in a global context. The digital realm facilitates students' working on social justice programs where they can collaborate with and advocate for others beyond physical boundaries.

4.2 Negotiating e-government

The availability of online government resources has increased markedly over the past decade. People can get information, contact officials, register and receive services, access and analyze data, and petition the government using the *We the People* platform on whitehouse.gov. The public's use of e-government resources has grown over time, although it appears to have leveled off. A 2015 Pew Research Center study found that two-thirds of Americans had gone online to find out something about government, a figure that was similar to findings six years earlier. People are still more likely to interact with government offline for things like applying for benefits, reporting problems, and renewing licenses. Individuals from low-income backgrounds are far less likely to access government resources online, which is yet another indicator of the civic empowerment gap (Horrigan and Rainie 2015).

E-government resources are relevant across the political science discipline. Students can explore broad issues of government transparency in an age when more information is available. They can become familiar with the range of government information and services available online. They can assess the quality and accessibility of resources. They also can consider what material is not disclosed to the public, and they can discuss decisions by the government to remove documents and services. Finally, students can examine how e-government works, and explore the ways that citizens can interface with government.

4.3 Defensive use of digital technology

Cathy Davidson (2017) argues that faculty across fields should build "digital defensive driving" – the careful consideration of the role of technology and how it is applied in practice – into the curriculum for all their courses. Students should be instructed in the defensive use of technology so that they develop wise and safe digital practices. They need to be made aware of how their personal information is revealed online, and how it can be gathered and used without their consent. This advice is especially relevant for political science in light of the revelation that Cambridge Analytica, a political firm that was hired by President Donald Trump's campaign and others, gained access surreptitiously to personal data on more than 50 million Facebook users. The data were used to create personality and political profiles of users that were employed to target audiences with digital ads. Broader concerns have been raised about Facebook's role in using its platform to spread propaganda and false information that are important for students to consider (Granville 2018).

5 Research Methods

At a recent American Political Science Association meeting, a senior faculty member who is well-known for his proficiency in research methods lamented that he was becoming increasingly uncertain about what methodological approaches he should be teaching in his classes. He observed that there have been shifts in the methods that are most useful and appropriate for citizens, political practitioners, and scholars in the digital age. The profession, he argued, is at a critical juncture where political scientists need to reconsider the types of methods that will best serve students who are entering the workforce or political science as a profession. Moving forward, political scientists will need to address the questions: How do we retool traditional methodology classes, like statistics, survey research, and content analysis, for the digital age? What new techniques should we add to the curriculum? What well-worn approaches can be dropped from coursework?

As is the case with digital pedagogies, schools differ in their ability to provide resources for teaching and research in the new media environment. Universities have been steadily augmenting their research methods classes with instruction in big data analysis and digital analytics. They have updated courses on survey research and content analysis. They have integrated methods and analytic techniques that employ novel software tools that enable the collection and analysis of data from websites, social networking sites, weblogs, and video sites. In addition to learning new techniques, universities must ensure that students are aware of the requirements for working with human subjects and protecting their privacy rights in digital spaces.

6 Conclusion

There is a desire among faculty and administrators at American post-secondary educational institutions to provide students with learning opportunities that are commensurate with the digital age. However, achieving this goal is challenging, even for schools that are well-resourced. Thus far, most efforts at integrating digital age pedagogies and research methods into teaching and research have been piecemeal. However, successfully adapting to the digital environment involves a wholescale rethinking the basic objectives of a college education. The college curriculum, course offerings, and reward structure for faculty as institutionalized may no longer satisfy the ever-shifting requirements of digital age education, even in the short-term. The solution must include providing professional development opportunities for faculty to update their pedagogy while at the same time finding ways for them to gain digital expertise without impinging further on their time. Professional associations, such as the American Political Science Association (APSA), have begun to step in and assist with this process by providing in-service seminars and workshops.

Political science education should prioritize closing the civic empowerment gap as a fundament goal. Colleges must meet students where they are digitally and ensure that all students are have the requisite digital skills to engage politically. The responsibility for educating students from high-need backgrounds for digital citizenship should not rest entirely with institutions that are already cash- and resource-starved. Instead, well-resourced institutions should engage in outreach efforts to assist schools in their networks and geographic proximity.

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Digitalization and Political Science in Belgium

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1 Introduction

For the last twenty years, political scientists in French-speaking Belgium have been federated under the French-speaking Belgium Political Science Association (ABSP) which is the IPSA representative for Belgium and heir of the once unitary Belgian Institute for Political Science. ABSP just celebrated its 20th anniversary and published a book in French that offers the state of the discipline in terms of teaching, research, and service: *L'ABSP: 20 ans de science politique en Belgique francophone* (Reuchamps et al. 2017). No fewer than 43 political scientists from all Belgian French-speaking universities and from the different fields in the discipline contributed to this edited volume. In this chapter, we build on these insights to present the state of political science in French-speaking Belgium in regards to the digital (r)evolution. Based on longitudinal data and perspectives about teaching, research, and service, we seek to assess how political science evolves in our – small – part of the world, with a special focus on how it has embraced (or not) the digitalization trend in the discipline.

2 Teaching and learning

2.1 Main trends

Four main trends can help describe the evolution of education in the field of political science in French-speaking Belgium[1]: growth, specialization, autonomy, and internationalization. These four trends notably made possible by the digitalization of the discipline, which makes teaching and learning much less dependent on the territory in which it is organized.

The first trend is without doubt "growth", which can be measured by two indicators. First, there has been an important growth in the number of students enrolled in a political science curriculum. This trend affects all disciplines at the university: since 1996, there

[1] Because this article focuses on political science in French-speaking Belgium, and as a consequence of the Belgian federal structure, the article deals with the reforms adopted by the Government of the French-speaking Community in Belgium, responsible for education in French-speaking Belgium.

has been a global 50 % rise of the total number of students enrolled at university. Among other rationales, this can be explained by the so-called "Bologna" reform (in reference to the pan-European Bologna agreement), thanks to which a bachelor program now lasts three years instead of two, and this throughout Europe. But when it comes to political science, the growth is much more important: the total number of enrolled students grew by 84.3 % in the last 20 years (Paye, Pilet & Reuchamps 2017). The other specificity of the discipline is the higher than average percentage of students enrolled at the master level. This specificity can be explained by the fact that many students are opting for a master's degree in political science after having studied for their bachelor in another discipline. Secondly, there is a growing range of available master programs. If there is still only one bachelor's in political science, there are now plenty of different master programs available: European studies, public policy, democratic innovations and transformations, comparative politics, international relations, etc. This trend is growing, for instance with the creation of an inter-university master program in gender and politics.

Moreover, this growing number of master programs also testifies to another trend. It mirrors the gradual specialization of the discipline, also observable when it comes to political science research (e. g. an increasing number of specific working groups and specialized journals, see below). Students are indeed asked earlier to choose a specific field of specialization, either a regional field or a more precise subject of research. This early orientation is made possible by the diversification of courses during the bachelor, even if all students still receive at least an introductory course in each subfield. Students can now choose from a large spectrum of subjects, such as European studies, international relations, or public policy already at the bachelor level.

The third trend is the growing autonomy of the discipline. Twenty years ago, and with the reform of 1996–1997, political science became a distinct field of studies. Before the reform, political science was part of broader programs in social sciences, economics, or law. Consequently, the course offer at the bachelor level today includes more courses from the discipline and less courses from related disciplines such as history, sociology, psychology, or law. Twenty years ago, political science constituted around 10 % of the total amount of courses. Now, this proportion sits around 30 %. These specializations and this strengthened autonomy also reflect in the growing number of political science textbooks designed for a teaching purpose (e. g. Balzac et al. 2014, Delwit 2018) and in the development of an expanding online offer in political science designed by Belgian political scientists (see below for details on MOOCSs and SPOCs).

The last trend is internationalization. On the one hand, the programs increasingly include courses taught in English, to the point that it is sometimes even possible to follow an entire curriculum in English. On the other hand, the profile of the enrolled students is a strong sign of internationalization. Approximately 25 % of the students enrolled in a political science degree in Belgian French-speaking universities do not have the Belgian nationality (Paye, Pilet & Reuchamps 2017). Compared to the average number of international students in other disciplines, this rate is quite high. However, these rates vary from one university to the other. For instance, at the *Université libre de Bruxelles* (ULB), the average rate of international students is higher (around 26 %) in all curricula compared to the five other universities. The proportion of international students enrolled in political science is even higher and averages to 39 %. The picture is quite different at the *Université de Liège* (ULiège), where the rate of foreign students enrolled in political science compared to all curricula are quite similar (around 12 %). The EU enlargements, the vibrant success of the Erasmus program, the Bologna process that standardized the political science curricula for all universities, but also the availability of online information for future students wherever they might be based, all facilitate the circulation of students, de-territorialization and internationalization.

2.2 Digitalization of education

During the last decade, Belgian universities gradually started to use the Internet, numerical and digital innovations as tools to help them reach their educational goals: to stimulate the creation and the diffusion of knowledge. These so-called "tools" are more commonly associated with the broader concept of e-learning devices. The European Commission (2001) defines e-learning as the use of new ICT and the Internet to improve the quality of the learning process by making the access to resources and services easier, and also by facilitating distance collaborations and exchanges. This broad definition usually encompasses a great range of tools, such as online platforms, podcasts, video-conferences, MOOCs (Massive open online courses), SPOCs (Small private online course), televoting and free online publications of scientific articles.

A major e-learning tool used by Belgian French-speaking universities is the online platforms. These are also sometimes called "online campuses", which exactly pictures what one can find on those platforms. It is broadly speaking a virtual desk where students can retrieve all necessary information regarding their courses, reading material, homework, the teacher's contact information, etc. These online platforms began to develop in the 2000s and were shortly after followed by other innovations. Already in 2009, the ULiège and the ULB for instance recorded some courses in order to make them available even for students who were not able to attend classes. These podcasts, recordings of the courses, are made available on the online platform. The *Université de Mons* (UMONS), at approximately the same period, began to develop a system of video conferences to let students take part in the class even if they could not physically attend. The main advantage of such devices is to make teaching more flexible and more accessible to all students. More recently, all the universities have been pressing to make not only the course material but also scientific publications accessible to the greatest possible of number people, for free. Two laws ('decrees' of the Parliament of the French-speaking Community) have been passed: one on the obligation to offer all teaching material to the first-year students (and later on for all students) for free and the other one fostering open access. Therefore, universities are steadily developing tools to allow (or even compel) the authors to publish their articles and books on an online platform where these could be downloaded for free in an open both education and research perspective. In 2016–2017, the ULB launched a project of electronic, interactive syllabus. This new digital tool allows students to edit and enrich or personalize the content of the course material provided by the teacher. Teachers can add videos, links or notes as well to their own course material. This new tool is designed in the perspective of co-constructing a course content, and as a way to adapt the course content throughout the semester. At the individual level, an increasing number of professors make use of televoting, and sometimes also chats, in their classroom. These tools are designed to maintain the attention levels of students and to enhance interactions in large classrooms, which are widespread in French-speaking Belgium.

Some other innovations are following this principle of greater accessibility, but also include additional advantages. These are for instance the MOOCs and SPOCs. A MOOC, as its name indicates, is an online course open to everyone for free. Basically, these combine *ex cathedra* courses (basically a video of teachers giving their course, either in the classroom or in another -more dynamic- setting) and interactive forums where students can ask questions to one another and to the teaching staff and discuss about the course, do practical exercises, tests, etc. Students eventually obtain a certificate, although without any juridical value. This is exactly what makes a SPOC different from a MOOC. The former is only open to a small number of enrolled participants, who therefore get more attention and personalized follow-up by the teacher and, in the end, get a certificate, that can be valued on a résumé. The *Université catholique de Louvain* (UCLouvain) has developed so

far two SPOCs in political science, focusing both on international relations. They offer online certificates in international relations and conflict analysis, and in geopolitical analysis of major powers. These are curricula embodying four different courses with a personalized follow-up, readings, power-point presentations, etc. These curricula lead to a certificate, that can be valued on the labor market and, more recently, can lead to a full online master's degree.

Since their launch in 2007, the MOOCs' popularity has not stopped growing. In 2017, there were 81,000,000 subscribers in the world (all disciplines, courses and platforms taken together). Besides, to respond to the growing demand, more and more courses are developed (1,800 new courses only for the year 2015, 6,850 in 2016 and 9,400 in 2017)[2]. These online courses are now covering the whole spectrum of research fields, from computer science to humanities.

In Belgium, the UCLouvain was the first university to integrate these online tools, in 2014. Soon after, other universities followed (ULB, ULiège). In the first year, the UCLouvain's political science MOOC gathered a great success among both UCLouvain students and international subscribers, as 52,765 people enrolled, according to two distinct profiles of learners: students registered for a course in which attendance to the MOOC sessions are compulsory, and anyone who is interested in the subject of the course.

When it comes to political science, the three largest Belgian French-speaking universities have integrated a MOOC in their political science curricula. The UCLouvain has developed a MOOC, "Discovering political science", dedicated especially to 1st year bachelor students, who have to complete the MOOC as part of one of their "traditional" (class-based) courses. The ULiège has also developed its own MOOC about international migrations and their impact on society. This MOOC is dedicated to master students who chose the "Population and development" option. The ULB also has its own MOOC ("Poll and survey methods"), which can be followed by all students in social sciences, because it regards methods more than content.

Another innovative digital tool that can be used by university teachers to make their courses more interactive is televoting devices. These can take the form of either voting boxes in the auditorium or online platforms allowing votes and comments on a question asked to the assembly, using a computer, a smartphone, or a tablet. These tools are also used during other events, such as public lectures, for instance.

What exactly are the main advantages of these digital tools for teaching political science? First, they allow the teacher to be not only a mere information provider, but rather a person with whom to exchange, discuss, debate and go deeper in the course material during class hours. This is made possible by the fact that the raw course material can be made available to students online – thanks to the MOOCs or Podcasts, for instance – so that when they come to class, they can discuss with their teacher, whose role is thus transformed (Masters 2011) if teachers take the opportunity of using these digital tools to organize a flipped class. A second advantage is the flexibility. With online podcasts and MOOCs, it is possible for students to access the course material whenever and wherever they want (Adamopoulos 2013). Also, their online availability makes it possible to watch the videos over and over again until the material is understood. Even if they demand a huge volume of work to the teachers in charge, MOOCs allow these teachers to think about their course, to change and improve them. Online courses also allow the knowledge produced in our universities to reach all regions of the world for free, to make it available for people who otherwise would not have had the opportunity to take such courses.

[2] Data available at: https://www.class-central.com/report/mooc-stats-2017/ and https://www.class-central.com/report/mooc-stats-2016/, accessed on 03-19-2018.

However, four elements come in the way of achieving a genuine large-scale participation in MOOCs. Firstly, the great majority of students enrolling in MOOCs worldwide and in Belgium is composed of people in their late twenties or early thirties. They also often hold at least a bachelor's degree and work full-time (Baudewyns et al. 2017). If diversity in terms of socio-economic background remains a challenge, the findings regarding diversity of geographical origin are more optimistic. Indeed, on the EdX platform for instance (the one used to host UCLouvain's MOOCs), one can find students coming from at least 150 countries (De Boeck, 2014, Delwit, 2015).

Secondly, the great number of registered students is balanced off by the high average dropout rate associated with MOOCs. Only approximately 5 to 10 % of the people initially enrolled manage to obtain the final certificate at the end of the course (Anderson 2013). This low retention rate can be explained by the fact that a MOOC can only be completed for several weeks (from 4 to 10, usually). The high dropout rate could also be explained by the fact that most students enrolling in the courses are motivated by an interest in the subject of the course, i. e. in acquiring more knowledge (Schiffino et al. 2015). In a way, they do not care about getting the certificate, either because they are still 'regular' students at the home university of the MOOC or that they already graduated from somewhere else and do not feel the need of getting a certificate.

Thirdly, in addition to this low success rate, another element mitigates the hopes raised by MOOCs in terms of knowledge spreading among people who would never have set foot in a university without these tools: it is the typical profile of the students eventually getting the certificate. Active learners who reach the end of the program and get the final certificate are people in their late twenties or early thirties, educated and employed (Breslow 2016).

Fourthly, if there is a great diversity in terms of geographical origin, MOOCs often fail to penetrate in less developed African countries, for instance, mainly because the Internet connection is often not good enough in these areas of the world. The digital divide is therefore a crucial element that has to be worked on in order to help the MOOCs reach their goal of openness and spreading of knowledge worldwide. Another challenge faced by these digital tools is that some teachers and students have to make extra efforts to be able to use those technologies, it can sometimes take a lot of time and energy. Also, platforms and courses are often taught in English[3], although some MOOCs offered by Belgian French-speaking universities are offered in French. Based on all these elements, the "massive" and "open" nature of MOOCs and Podcasts can be put at risk.

The potential offered by digital tools is also endangered by two other elements linked to the quality of the knowledge made available. On the one hand, MOOCs and Podcasts are sometimes said to trigger a movement towards a greater uniformity and standardization of knowledge, as students around the world follow the same courses given by the same teachers and produced by the same universities, with the same content (Durance, Boullier & Kaplan 2014). This risk is for now balanced by the not so "massive" character of these tools (see above).

On the other hand, teaching with a MOOC or Podcast requires specific skills from the teachers, who are most of the time not trained for this purpose. We might be missing the pedagogical opportunities and potential that MOOCs can offer because teachers simply lack the training and the competencies to fully make use of these new digital tools (Durance, Boullier & Kaplan 2014).

[3] 75 % of the available courses (all countries, disciplines and platforms taken together) were in English in 2015: Data available at https://www.edsurge.com/news/2015-12-28-moocs-in-2015-breaking-down-the-numbers.

Overall thus, all universities have been in the process of implementing new tools in the form of virtual campuses, virtual syllabuses, televoting and chats in the classroom, and podcasts and MOOCs. Universities have dedicated resources to set up ICT-learning teams that encourage the teaching staff to introduce these digital tools as part of pedagogical innovations. On top of the impetus from the universities, the French-speaking Community has also introduced two pieces of legislation that are pushing for more use of digital tools in the classroom (as already indicated, one regarding the availability of course material to all students, and one on open access of publications).

These factors have led to a fast-growing use of digital tools in the teaching *methods*. It is striking to see, however, that digitalization has not fully reached significantly the teaching *contents* so far. The traditional political science programs do not offer specific courses on the matter in French-speaking Belgian universities, beyond the classic 'political communication' courses. The extent to which digitalization is covered highly depends on the nature of the course and the willingness of the teacher to integrate these issues in his or her course. No distinct professorships or chairs have been created on the topic.

3 Research

Research in political science has faced the same trends as teaching, partly thanks to the digitalization of research: growing autonomy from other fields and specialization. The digitalization is mainly used as a facilitating tool and has contributed to enhance the visibility of the research output[4]. As for teaching, digitalization as a topic has not fully reached the research output and content produced in French-speaking Belgium.

3.1 PhD

Growing autonomy and specialization can be observed when it comes to PhD training. First, a growing number of PhD diplomas have been delivered between 1990 and 2016 (see Figure 1). These numbers were rather stable until the early 2000s and then rose drastically in the mid-2000s. The highest number of PhD diplomas delivered was reached in the years 2013–2014. This trend is part of a more general trend that can be observed in most European countries and the United States or Japan.

[4] Research in political science in Belgium is mostly done in universities and independent research centers. Most researchers and PhD students maintain a tie with a university. Yet these are not the only sources of funding. In French-speaking Belgium, the Fonds de la Recherche Scientifique-FNRS (F.R.S.-FNRS) supports researchers and plays an important role in shaping the structure and the development of fundamental research. This is of course not the only source of funding available for researchers. Other structures also play an important role in supporting fundamental or applied research. These are for instance the European Union, the Walloon Region, the Brussels Region or the universities themselves.

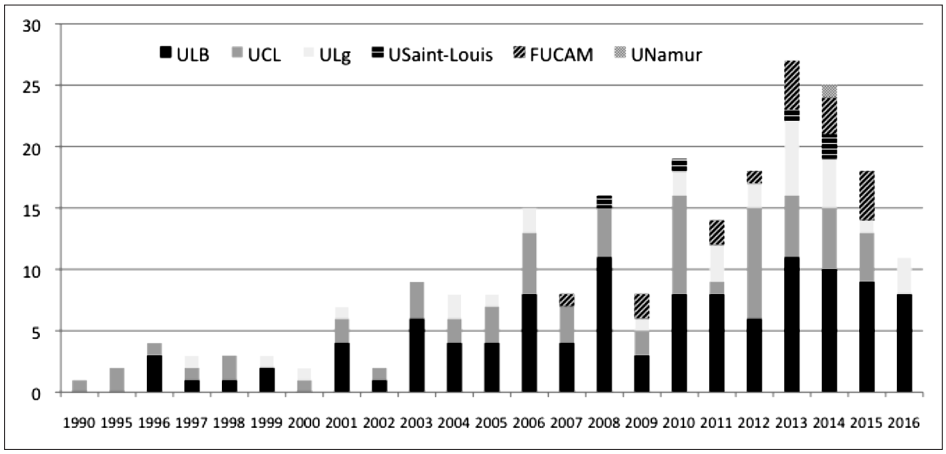

Figure 1: Number of PhD diplomas delivered by Belgian French-speaking universities between 1990 and 2016[5]
Source: Van Haute & Van Ingelgom (2017)

Second, the profile of PhD researchers has changed and has internationalized. PhD students in French-speaking Belgium increasingly choose to write their dissertation in English rather than in French. It can be due to the fact that their knowledge of English is better than their mastering of French, since we observe that many PhD students are not native French speakers. It can also illustrate the fact that the academic world is more and more dominated by English (Laponce 2004). It is indeed the language used when communicating results to international colleagues or when publishing in international journals.

Third, the profile of PhD researchers has become more feminized. The absolute and relative number of dissertations written by women has grown steadily these last 10 years. Between 1995 and 2005, only 27 % of the dissertations were written by women. Between 2006 and 2016, this rate reached 46 %. This trend is, of course, not only affecting Belgian PhDs. At the U. S./European level, the number and proportion of female PhD students are also growing at approximately the same speed[6].

3.2 Visibility

Digitalization has clearly enhanced the visibility of the research output in French-speaking Belgium. We investigate three indicators to measure this visibility: the number of papers published, the number of citations on Google scholar, and the presence of researchers at the main international conferences of the discipline. Here, the data only relies on members of the ABSP, which can be considered as a representative sample of the network of political scientists in French-speaking Belgian institutions.

[5] In 2017, ULg became ULiège and, in 2011, FUCAM merged with UCL and became UCL-Mons (and later on UCLouvain FUCaM Mons)..

[6] Eurostat: Students enrolled in tertiary education by education level, program orientation, sex and age [educ_uoe_enrt02].

3.2.1 Publications

The greater visibility of political scientists in Belgian French-speaking institutions can be measured by their publications in international journals. Three trends illustrate the evolution in this field. First, the number of publications of the ABSP members per year has been constantly growing since 1995. The total number has shifted from around 20 publications per year in 1995, to 50 at the end of the 2000s, and it now exceeds 100 publications a year. Second, among the 32 journals in which there were at least 5 publications of ABSP members, 11 publish in French and the others do so in English, which clearly shows the dual nature of the ABSP, a French-speaking association open to the international. This pattern is rather stable, even if there are other signs of internationalization. Third, publications diversify, thereby illustrating the diversity of fields covered by the members of the ABSP. Aside from some generalist journals, political scientists also publish more and more in specialized journals dedicated to their sub-field. This also reflects the general trend towards specialization of political science. The ABSP, follows this trend by making the creation of working groups possible. There are now 13 different working groups: democracy; elections, political parties and public opinion; Europe; federalism, regionalism and decentralization; gender and politics; migration, cultural diversity and politics; international relations; political theory; public policy; research methodology; social issues/social conflicts; globalization, international governance and mutations of state and nations (REGIMEN). None of these working groups so far focuses directly on the digital in political science. However; memory and politics these aspects are indirectly part of existing working groups, such as the one on elections, parties and public opinion; and democracy. Our analyses of the publication output do not reveal the emergence of a sub-field on digital aspects in specialized journals.

3.2.2 Google scholar citations

Google scholar gives an overview of the visibility of the political scientists in Belgian French-speaking institutions. On average, in August 2016, ABSP members owning a Google scholar account have 440 citations. Nevertheless, there are strong fluctuations around this mean between junior and more senior members (6 senior members do indeed have more than 1,000 citations). This can be explained by the simple fact that the senior members and the junior members are at different stages of their career. Also, it can be noticed that there has been a growing number of citations of ABSP members having an account on Google scholar between 1996 and 2015, which probably testifies to a real growing number of citations but also to the fact that these are more systematically recorded online – what obviously strengthens researchers' profile as they can use these figures when applying for a new job, for instance. Digitalization can thus become an asset on the job market.

3.2.3 International conferences

The visibility of political scientists in Belgian French-speaking institutions can finally be measured thanks to the number of ABSP members present at the international conferences, using the activities of the European Consortium for Political Research (ECPR) as a benchmark. The number of ABSP members taking part in those conferences was quite small from 1995 until the mid 2000s. However, since 2010, the situation has drastically changed. Indeed, in 2011, 47 members out of over 150 took part in the ECPR conferences. Beyond online networking and information spread, this shows that physically attending a scientific conference remains a way through which research outputs are shared and discussed.

3.3 Digitalization of the research

These last 20 years, new ICT tools have penetrated academic research, affecting the work of scholars, their publication strategies, as well as their interactions with colleagues or audience. French-speaking Belgium follows that global trend. The main goals behind building and using digital tools are the same as the ones behind the creation of journals in the 17th century. These tools aim at making knowledge more easily available for a greater number of readers, inside and outside the academic world. Secondly, they aim at building a better and more effective science creation process. This pattern makes it increasingly important for researchers to develop new skills to be able to benefit from such devices. It also reinforces the ongoing trend towards an English-speaking community of scholars, where English is now more than ever the *lingua franca* of scientific research.

3.3.1 Publication process and access

The first major trend affecting scholars' professional life is their growing presence on the Internet and their increasing use of it to get access to resources and data as well as to publish articles. This trend encompasses a strengthened use of Google and Google scholar to find publications or data (Ware 2009), a growing availability of data online, and an increasing availability of publications online. Even if scholars are historically reluctant to share their data (because of competition or lack of time, for instance), some institutions are now compelling them to upload their findings online to make them available for other researchers. This is often the case for statistical data (e. g. survey data) as well as for official texts from institutions (laws, statutes, etc.).

Publications also appear often, if not exclusively, online in addition to or as a substitute for printed journals. When it comes to political science, 1,403 journals are now available in the world, online and in their printed version. 193 are only available online. Among those, 179 are free journals, which testifies of the increasingly important movement towards open access. Open access indeed means that the articles are entirely available for free online. Open access publications can be classified in two different categories, depending on whether they take the "gold route" or the "green route" (Harnard 2008). The "gold route" includes publications put online by institutions or publishers for free (therefore, institutions or publishers have to cover those costs by themselves). The articles are available in their final version, which is not the case for publications following the "green route". This way of making articles available for free is used by scholars to put their publications (even if they were not yet peer reviewed or written as a final version) directly online. This can be a voluntary action or something compulsory: the institution scholars belong to can compel them to publish their research online, as detailed earlier for the Belgian case. Nonetheless, political science still rests a lot on books and less on journal articles compared to other disciplines. Therefore, political science's knowledge is less available online because a big rate of works produced is still made available through books and not through journal articles that could then be published online. Yet, a trend towards making book chapters accessible in an online version is growing, and even sometimes entire e-versions of books (either on the long-term or temporarily at the time when the book is published so as to enhance readers' reactivity).

There are many advantages to the use of online tools by scholars. Firstly, online publication allows having a faster progress in research. Indeed, more and more articles are first published online, in order not to have to wait for a long process of editing and printing to make their work available. Also, academics now work in international teams, which make it possible to edit a paper from the other side of the world without having to be physically in contact with it. Therefore, the writing and publishing processes are going much fast-

er (Nentwich 2008). Second, online publication makes the researchers and their work more visible inside and outside the academic community (Calise et al. 2010). Also, it opens the path for more interdisciplinary research: now, a scholar can indeed very easily have access to data and publications outside its own field. Moreover, online publications make possible to add extra content in addition to the article or book itself, most often additional documents or the data used for this research. But some publishers' websites or scholar blogs are now offering more than that and invite researchers to create podcasts, for instance. These are short videos summarizing and commenting on the article they refer to. Finally, abandoning the printing system also allows to get rid of time and space constraints. Once a paper is published online, it can be read from every corner of the world at any time and will be available "forever", which is not the case for a book that once sold out has to be reprinted to be distributed again.

One distinctive feature of scientific publications is, of course, the process of peer review. This tradition is not likely to disappear any time soon, as scholars still seem very attached to this procedure. However, many critics claim that online open access publications could threaten the quality of publications. This criticism is based on the fact that some publishers are tempted to raise their profits at the expense of the quality of the papers they publish. Some publishers following the "gold route" are funded by fees paid by the authors to have their articles published. Therefore, it is easy to suspect some of them to be willing to increase their revenue by lowering the quality of slow and demanding peer review processes. This process indeed restricts the publishing of high quality articles and can therefore consist of a loss of revenue for publishers relying on authors' fees (Beall 2012). However, some elements can nuance these findings. First, the quality of a paper is indeed medium-independent (Nentwich 2008), because the peer review process is still used, even for online publications (but maybe not for the ones following the so-called "green route"). Second, the Internet, rather than hindering the quality and quality assessment of papers, allows for new ways of rating and commenting, which can be used in addition to the classic peer review system to assess the quality of a paper. These are for instance comment areas where readers can comment on the paper they just read, or rating systems allowing readers to give a note to the paper.

3.3.2 Socialization among researchers

Changes in the way science is produced today not only has to do with the changing production of publications. It also has a lot to do with how academics interact with each other and with their audience. A handful of new devices are now available to allow scholars to better communicate and exchange data, resources, and publications, as well as to increase their visibility.

There are for instance a growing number of academics using blogs to post their work and interact with readers. The ABSP has launched its own blog in March 2018 in order to broadly disseminate the findings of Belgian researchers in the French-speaking community[7]. By posting short summaries of research outputs in French, the blog constitutes a tool to make their research output again available to the public despite the shift of academic research to English. Another tool serving the development of interactions and content sharing among scholars is, of course, the use of social media by scientists. Aside from more mainstream social media like Facebook or Twitter that are sometimes neglected because of their "socialization" and "non-professional" character (Ware 2009), there are now more and more specialized social networking platforms serving professional purposes (Aca-

[7] Available at: https://absp.be/Blog/.

demia.edu or ResearchGate for instance, which are widely used by political scientists). Scholars also use the social bookmarking. This system is basically a library of Internet bookmarks and scientific references scholars can have to build a catalogue of references they can categorize thanks to "tags" and then share with their colleagues. This system allows scholars working on the same project to share one single bibliography and offers them the possibility to discover new literature.

Finally, the use of wikis is more and more frequent inside the academic world. Even if websites like Wikipedia are commonly claimed not to be very scientific, some scholars use quick Wikipedia visits when they have to discover a brand-new field or when they have to make a quick reference to an element of a field they are very familiar with. Aside from Wikipedia, every field of research now has its own wiki, following the same spirit as the original Wikipedia: authors can freely add and remove content from the page. Nevertheless, some of these wikis do have a restricted access policy, which means that only some scholars are allowed to edit it.

Despite the proliferation of new digital tools in the academic world, some scholars are still reluctant to use them in their daily activities. This can mainly be explained by the lack of time and incentives for researchers to use these new devices. Scientists indeed do not all see why spending time (which they already lack) to learn how to use tools that may prove to be good, but not necessarily better than the tools they already use and master well. This pattern is reinforced by the fact that there are often many options serving the same purpose: this can create a sense of competition and dissemination. Also, it makes it difficult for potential users to compare and choose among them. These constitute barriers for scholars to use these new tools. These new ICT are only making their first steps. In a few years, open competition will possibly leave only some platforms to survive, and the benefits associated with these devices may be more perceivable than they are now.

4 Service

The third traditional mission of universities is to deliver service to the society. In Belgium, this mission has gradually been emphasized by public authorities. The idea is that political scientists allow the broader public to have access to expert knowledge and to the required tools to understand today's societal and political issues (Damay et al. 2011). Is so-called "service mission" can mainly – but not only – take three forms: interventions in the media, permanent education activities and North-South cooperation.

4.1 Media

For more than 40 years, the Belgian public has been used to seeing political scientists on television and hearing them on the radio on election days. In the last 20 years, the presence of political scientists in the media has become more and more salient and extensive. They are mobilized by traditional media to intervene and comment on current news subjects. Political scientists have always been more solicited in times of elections or of political crisis. However, nowadays, political issues become more technical and difficult to understand for the public and journalists themselves. That is why political scientists have been more and more solicited these last two decades in order to provide the necessary keys for people to understand what they read or see in the media. In-depth interviews have been conducted with seven political scientists who often appear in the media. Increasingly, dig-

ital tools are used in parallel of traditional media to provide service. An increasing number of researchers are using blogs and online social networks to disseminate their research findings. However, the challenges of online and offline media have so far proven highly similar.

If there is no doubt that political scientists are increasingly solicited, what makes them accept these invitations or be proactive? What motivations do they have to appear in the media? First, they are conscious that it is part of the service mission of universities: making the knowledge available for everyone outside the academic world where it is produced. They also see in these interventions a way to increase their personal popularity and stay in touch with the real world and people outside the academic sphere. Finally, sometimes universities urge their academic staff to make regular interventions in the media to increase their visibility and the one of their academic staff (Sinardet 2009).

Intervening in the (digital) media is not an easy and natural task for political scientists. In other words, this does not go without challenges and fundamental interrogations on the role of a political scientist. It is first important that political scientists, when appearing in the media, pay attention not to overly simplify the issues they are writing or talking about. Sometimes, the vulgarization asked by the media format does not allow to make the necessary nuances. Fortunately, some formats allow to display a greater scientific accuracy (chronicles, press dossiers, etc.).

Political science also has to adapt to new channels of communication. The traditional electoral broadcasting nights still exist and are followed by a great deal of the population, but social networks are becoming increasingly important as well. These social networks allow political scientists to directly publish their work and share their views outside of the traditional news media. They can do so either directly or through an institutional account such as their research center or university account. The ABSP also publicizes its members' research outputs and appearances in the media. Social media, blogs, and the Internet in general have their own codes, and political scientists have to adapt to these codes if they do not want to be absent from these ever more important communication networks.

A third challenge, which can be linked to the development of Internet media, is that everyone can claim to be an expert on a given subject and enter in a debate with academic experts about it. Sometimes, these self-proclaimed experts give the debates a more polemical tone, which can undermine the critical and ethical aspects of deliberation. In this case, political scientists become actors of the debate and step outside their role of information and analysis providers. Nevertheless, the question remains open: should political scientists be involved in debates or should they remain purely neutral? Moreover, it is increasingly difficult to draw the red line between clear analysis interventions and position statements. What's more, ethnic minorities and women are still underrepresented among political scientists regularly appearing in the media. To foster some changes, new networks are created[8] and sometimes new voices make themselves heard and gradually penetrate traditional media.

4.2 Permanent education

Permanent education is also an important part of the service mission of political scientists. This can take the forms of scientific vulgarization, public conferences, training courses, or debates. Political scientists, when they take part in such activities, are in contact with the associative world and the larger public.

[8] See *Expertalia*, http://www.expertalia.be/.

In French-speaking Belgium more specifically, the Centre of socio-political research and information (CRISP) plays an important and particular role in this field. It was founded in 1958 outside the political cleavages that divided the Belgian society at the time. Now, it is still independent from the political world and from the universities. Its general mission is to act as a research center and information provider for the larger public, in order to develop critical spirit and the engagement of the citizens. Therefore, its members are present in the press (i. a. through electoral nights on television since the 1970s) and give conferences in Wallonia and in Brussels. Permanent education too is subject to an increasing digitalization. Here, for instance, the CRISP makes its podcasts of interviews available via its Facebook or Twitter accounts, created in 2013. Some short analyses are also published online on the research center's website[9] and allow for a quick dissemination on social networks or through other digital means. Nevertheless, face-to-face contact remains important: people attending CRISP conferences enjoy benefitting from a direct contact with political scientists, especially if they have heard of them or read the articles they wrote in the press.

4.3 North-South cooperation

North-South cooperation can take two different forms. On the one hand, Belgian political scientists create partnerships with their southern colleagues through projects that support education and research. These partnerships are, of course, inter-university contacts, but the goal is also to strengthen the societal impact of colleagues from the South as actors of local development. Thanks to such cooperation, southern political scientists can also benefit from research and education stays in Belgian French-speaking universities (e. g. in the form of doctoral studies). Also, these partnerships allow them to publish and make their work known in Belgium.

On the other hand, Belgian political scientists conduct research that could help define or execute cooperation policies in Belgium. The goal of these programs is to stimulate the interactions between researchers and political actors to inform the latter via expert knowledge on the orientations the government could take in the field of cooperation policy.

4.4 Political scientists in society

With regards to these elements, it seems that political scientists hold a particular place, quite different from scientists working in other fields. Indeed, political science not only sheds light upon political and societal choices on a technical aspect (like policy advice for decision-making). The main object of political science is decision-making itself. Therefore, interventions of political scientists in the media, the associative world or next to some decision-makers make them adopt a critical stance on the decision-making process, and consequently on democratic challenges. The service mission of political scientists therefore uniquely offers critical views on the democratic system. This can partly explain the great number of invitations political scientists receive to appear in the media or cooperate with associations, and hence the need for political science to be available to the public by all means, including the modern online tools.

[9] See *Les @nalyses du CRISP en ligne,* http://www.crisp.be/category/analyses/.

5 Conclusion

The main aspects depicting the evolution of political science in French-speaking Belgium over the last 20 years have been emphasized in this article. More specifically, the first section of this paper addressed the main trends characterizing the evolution of teaching in the field of political science. The second section highlighted the main evolutions affecting research. In both topics, a special attention was given to "digitalization", in other words, the use of new technologies to improve the education and research functions in political science. The third and final section focused on the service mission of political scientists. More generally, this article highlighted how political science these last 20 years has been portrayed as following two simultaneous movements: an inward movement and an outward movement.

On the one hand, political science has been relentlessly reinventing itself in an inward movement characterized by autonomy, specialization, growth and modernization. When it comes to teaching, political science has now become an autonomous curriculum, detached from the other curricula it once was attached to. The field has also become more complex, leading to the emergence of many specialized sub-fields. Students can now choose among a great range of specialized courses covering all types of areas or topics. This evolution is also to be seen in research, where the growing number of specialized journals and networks demonstrates the increasing specialization of the field. This inward movement of political science in terms of research and teaching is sustained by a growing number of enrolled students and of PhD dissertations.

The strengthening of political science as an autonomous, specialized and growing field is accompanied by a modernization trend, which also takes place in French-speaking Belgium. It is illustrated by the use of digital tools, for teaching as well as for research purposes. Emails, online peer-reviewing, online professional networks and easier access to online databases are a few digital devices helping scholars to make their research progress faster. When it comes to teaching, this modernization is especially visible in the use of online campus platforms, electronic syllabus, MOOCs and SPOCs, or televoting devices, which completely transform traditional teaching methods, the roles of the teachers and of the students, the way they learn, interact and are evaluated.

On the other hand, political science is also characterized by an outward movement. The discipline is indeed more than ever thriving towards greater openness. This openness encompasses internationalization and a desire to open universities to the non-academic world. This article has emphasized three elements when it comes to the internationalization of the discipline. First, Belgian French-speaking universities are welcoming more and more international students. Secondly, this internationalization is also marked by the increased use of English in political science courses, PhD dissertations, and publications. Third, political scientists are involved in various North-South cooperation activities. These can take the shape of programs supporting researchers from the South to achieve better research and make their works known in Western countries. Also, they can act as advisers of the Belgian Government in the field of cooperation policies. As we have seen, digital tools are often depicted as enhancers of this internationalization by doing research and teaching outputs available for people who would not otherwise have had access to it. However, this benefit might be overestimated for two reasons: first, students and researchers from the South often experience difficult access to a proper Internet connection that could allow them to use these tools at their full potential. Secondly, if open access publishing is on the rise, and even urged by political decision makers, only a portion of it is entirely free, thereby maintaining a strong obstacle to the greater availability of knowledge.

When it comes to opening universities to the outside world, have been stressed three crucial elements. First, Belgian political scientists are increasingly appearing in all types

of media, and not only on election nights. As political issues and the political system get more complex, political scientists are more than ever asked to shed light on these multifaceted phenomena. Aside from the media, political scientists use permanent education activities to spread their research findings outside the university. In order to achieve this, they participate in conferences, start a blog, publish their work in open access, participate in debates on online forums and social media, etc.

The role of these digital tools in spreading knowledge outside European universities might have been overrated. Indeed, as discussed in this contribution, scholars often prefer to stick to existing tools to carry out their research and teaching activities. New devices, if they theoretically offer great opportunities in terms of knowledge dissemination, are indeed sometimes difficult to adapt to, from some political scientists' perspective. The new codes of communication one finds on social media, the novelty of professional networking platforms, are often perceived as the costs exceed the benefits of getting familiar with these tools. Also, the digital divide has not completely disappeared yet, making the spreading of digitalization outside Western countries more difficult. In conclusion, we might have overstated the potential of digital devices to make university-produced knowledge penetrate the real world. However, reducing the competition among the (too many) existing tools and a support to southern countries to facilitate their access to these tools might be some encouraging ways to help digital tools deliver their full potential.

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Digitalization and Political Science in Finland

Pertti Ahonen

1 Concepts, methods, and research material

No evolved conceptual framework exists to consider political science research, teaching and learning, nor to consider their relationships to the digital revolution. The challenges involved in elaborating such a framework start from cleavages between different philosophies of science, theories subscribing to these philosophies, and different methodologies of research (Kitchin 2014; Jungherr/Theocharis 2017). This article understands the "digital" in political science to comprise one, two or more of the following items: research on digital topics; research using digital methods; teaching on digital topics; teaching of digital methods; and teaching using digital methods. This clarification proved to be useful while explaining what this study is about to the respondents of the empirical survey that was made to prepare this article.

Questions from the international study of which this article forms a part were sent to a professor or other political scientist with a doctoral degree at each of the six universities in Finland in which political science is studied and taught (more on these universities, see section 2.5. below). The respondents answered questions of this international study in its two thematic domains of research on the one hand, and on the other hand teaching and learning.

The results of the survey and documents were examined. Only publicly available documents are indicated in the bibliography of this study. In addition, databases of published research were consulted to examine the content aspects of the research.

Section 1. deals with concepts, methods, and the research material. Country conditions are introduced in section 2. Section 3. considers research, and section 4. teaching and learning. Conclusions and discussion follow in the final section 5.

2 Country conditions for Finnish political science

2.1 History and disciplinary nomenclature

Political science became an academic discipline earlier in Finland than in most other European countries, receiving its first professors in the 1920s and the 1930s at three academic institutions. Three further universities started political science in the 1950s, 1960s, and the 1980s, respectively (Table 1.; Berndtson 2007).

The disciplinary nomenclature in Finland indicates earlier German influences. The common discipline names *yleinen valtio-oppi* or *allmän statslära* and *valtio-oppi* or *statslära* are direct translations of *Allgemeine Staatslehre* and *Staatslehre*. The briefer name *valtio-oppi* or *statslära* is used even more widely than the longer name version. The faculty name *Valtiotieteellinen tiedekunta* or *Statsvetenskapliga fakulteten* at two universities derives from *Staatswissenschaftliche Fakultät* (for details see section 2.5. below). The widespread Scandinavian term *statsvetenskap* from *Staatswissenschaft* is used in Swedish-speaking Finland but lacks an equivalent in the Finnish language.

2.2 Differentiation

In Finland the major part of political science is comprised of political science in general without differentiation. The most important other part is composed of the compound of international politics, international relations, foreign policy, peace and conflict studies, and world politics – a compound that has been discernible ever since the 1930s. In Master's programs with political science this compound not untypically comprises a track of its own. Reminding of an administrative studies orientation that was lately formally phased out, the University of Helsinki has a Political and Organizational Research track both in its Bachelor's degree and Master's degree programs of political science and communication, the other two tracks being comprised of world politics, and communication (For details of these arrangements, see section 2.5. below).

Public policy never evolved into a strong specialty in Finnish political science. However, occasionally *yhteiskuntapolitiikka/samhällspolitik* (from *Gesellschaftspolitik* in German) earlier called *sosiaalipolitiikka/socialpolitik* (from the German term *Sozialpolitik*) translates its name in Finland into nothing but Public Policy. Political history, included in political science in some countries, comprises its own disciplinary field in Finland and is present at two universities both of which also offer political science.

In Finland the administrative sciences (*hallintotieteet*, *förvaltningsvetenskaperna*) are completely separated from political science despite many commonalities between these two disciplinary fields. The administrative sciences, evolved since the 1960s, currently have a research and teaching personnel comparable with political science in numbers (Ahonen 2014). Examples of the Finnish administrative sciences include administrative science (at two universities; called public administration at a third university and public management at a fourth university), local and regional public management, regional studies, environmental policy, public law, and specialized administrative sciences of health care and social welfare. Three universities in Finland have only political science, three only administrative sciences, and three have both. This situation has evolved from separate developments at different universities rather than government policy or inter-university cooperation.

Politics is in fact is examined, taught and learnt in Finland also in other fields than political science. These include communication studies, sociology, *yhteiskuntapolitiikka/samhällspolitik*, political history, and the administrative sciences, for instance.

2.3 The academic degree system and the institutionalization of teaching and learning

Finland generally applies the three-cycle system of the European Higher Education with a 180 ECTS credits Bachelor's degree and a 120 ECTS credits Master's degree as its core parts (EHEA 2018). It is the rule in Finland that universities offering degree studies in academic fields do so both at the Bachelor's, Master's and the Doctoral levels. This applies also to political science. Despite the principles of the second stage of the Bologna process,

the entrenched standing of the Master's degrees is likely to continue and the Bachelor's degrees are unlikely to become soon the foremost degrees enabling entry to the labor market. Despite that students can take their Bachelor's degrees in one field and apply to take their Master's in another and also change university, this Bologna objective is unlikely to come widely true soon, either. However, international students necessarily comprise an exception (for these trends, see Välimaa/Weimer 2014).

Doctoral training is separated from the Bachelor's and Master's programs in Finland. From the mid-1990 until 2010 keen inter-university co-operation existed in doctoral training in the shape of national doctoral graduate schools with government funding for full-time doctoral student posts and doctoral training courses. Political science also had its national doctoral school with funded national doctoral training courses, and the national doctoral school of the administrative sciences allocated some funding for doctoral student periods in political science.

By 2010 the national funding for doctoral student posts and doctoral training courses stopped, the inter-university cooperation died out, and each university was obliged to establish its separate researcher schools, doctoral schools, and doctoral training programs. Some doctoral students in political science as in other academic fields occupy full-time salaried doctoral student positions, others move from temporary academic job to another until the dissertation is ready, but the majority carries out doctoral studies beside full-time work or other activities outside academia with substantial drop-out risks. Statistics on the share of doctoral students in each of the categories unfortunately do not exist. Doctoral studies in political science are currently organized in four fundamentally different ways, the university size standing out as one of the influences upon the institutional arrangements (for more on each university, see section 2.5. below):

- The university has several researcher schools (*tutkijakoulut*), and most political science doctoral students are admitted to one of the doctoral programs (*tohtoriohjelmat*) common to several disciplinary fields within one of the doctoral schools (*tohtorikoulut*) (UHe 2018a).
- The university has a single researcher school, and most political science doctoral students are admitted to a given doctoral program of this school that includes all or some of the social sciences and possibly other disciplinary fields in addition (ÅA 2018a; UTa 2018a; UTu 2018a).
- The university has a researcher school divided into doctoral schools by the university faculties, and political science is one of the participants in one of the doctoral programs that mostly includes social sciences in one of the doctoral schools (UJy 2018a).
- The university has a researcher school subdivided into thematic doctoral programs and a general program from among which the latter is further subdivided by the faculties; political science doctoral student may be admitted into any of these programs (Ula 2018).

2.4 University funding

Finland's fourteen universities comprise independent legal persons removed from the government budget without the entitlement to funding that government organizations enjoy. Government discretionary grants currently comprise over 80 per cent of total university funding and are likely to do so also in the nearest future. According to the funding formula until 2020 and since 2020, Bachelor's and Master's degree output objectives weigh 39 (42) per cent, doctoral degree objectives 9 (8) per cent, scholarly publication output objectives 13 (14) per cent, objectives concerning competitively acquired research funding 9 (12) per cent, other research-related objectives 2 (0) per cent, and diverse education and science policy objectives 28 (26) per cent (Halonen 2016; MEC 2018). Other funding

sources include donations, grants from private foundations, revenue from business activities and, since 2017, fees from students from the outside of the European Economic Area.

The Finnish universities have few research funds of their own. The government research funding agency Academy of Finland allocated 437 million euros to universities and other recipients in 2017, and is the foremost research-funding source for political science by far (AF 2018a). The other government research funding agency Business Finland hardly allocates resources to political science (BF 2018). The Strategic Research Council allocates 55 million euros annually, and the Finnish government research and development funding instrument adds an annual 10 million (SRC 2018; COS 2018). Political scientists have won funding from these two sources with reasonable success.

2.5 Institutionalization of political science

In Finland, the six universities that offer political science employ about 130 persons in this discipline according to what can be calculated from websites (Table 1.; UHe 2018b; UTu 2018b; ÅA 2018b; UTa 2018b; UJy 2018b; ULa 2018b). However, there are also political scientists who work outside academia and are therefore not included in the indicated numbers, such as people with the docent degree but without a salaried university position, or professors emeriti still are active in research. The survey respondents estimated that the figures may somewhat underestimate the numbers of political science personnel, especially in lower levels of organization hierarchy.

Table 1. Institutional characteristics of political science in Finland, November 2017.

	University of Helsinki	University of Turku	Åbo Akademi University	University of Tampere	University of Jyväskylä	University of Lapland
1. Students	32 000	25 000	7 000	23 000	14 000	4 000
2. Faculty or equivalent with political science	Social Sciences (A)	Social Sciences (A)	Social Sciences (A) & Economics	School of Management	Humanistic & Social Sciences (B)	Social Sciences (B)
3. Teaching program in which political science is offered	Politics and Communication	Political History and Political Science	Statskunskap (Orientations: Political Science; Public Management)	Political Science	Social Sciences (B) and Philosophy	Political Sciences and Sociology
4. Professors	7	4	3	4	4	2
5. University lecturers	7	1	3,5	5	1	4
6. Lecturers and comparable	0	2	2	1	2	0
7. Others	25	10	2	26	18	1
8. Total personnel	38,5	17	10,5	36	24	7

Explanations: Sources: UHe 2018b; UTu 2018b; ÅA 2018b; UTa 2018b; UJy 2018b; ULa 2018b. Fractions indicate positions divided between academic fields. Political science is offered only at the university main location except for Åbo Akademi University, whose branch in the city of Vaasa also offers it.

1. Student total without conversion to FTEs (full-time equivalents), rounded to the nearest 1 000.
2. Social Sciences (A) = compare with the German *Staatswissenschaften,* Social Sciences (B) = compare with the German *Gesellschaftswissenschaften.*
3. Both Helsinki and Tampere have two political science tracks in their programs offering political science. These tracks are titled Political and Organizational Research on the one hand and on the other World Politics in Helsinki, and *valtio-oppi* (*Staatslehre;* Political Science) and *kansainvälinen politiikka* (International Politics) in Tampere. *Statskunskap* (Swedish) = compare with the German *Staatslehre.*
4. Tenured and tenure-track professors, all filled by means of an external expert procedure. For the specificities of the Finnish system in which tenure is loose rather than tight, and the characteristics of the Finnish equivalent to tenure-track positions, see Pietilä 2018.
5. University lecturers *(yliopistonlehtorit)*, tenured; filled with or without an external expert procedure depending on the university.
6. Lecturers *(lehtorit)* and university teachers *(yliopistonopettajat)*, tenured or non-tenured.
7. Research directors, postdoctoral fellows, salaried doctoral students, researchers in projects, etc. This is the hardest to estimate group for such reasons as some universities not indicating the disciplinary field of many of their researchers.
8. Total from 4. to 7. No administrative personnel are included. The figures do not include professors emeriti or docents not employed at the university. However, many docents are university lecturers, lecturers or university teachers, and therefore are included in the figures.

At Åbo Akademi University and the University of Tampere political science is situated in a dedicated Master's program of its own, and at two universities it comprises one (University of Jyväskylä) or two (University of Helsinki) tracks in a program that also offers one or more other disciplines (ÅA 2018c; UTa 2018c; UHe 2018c; UJy 2018c). The situation at the University of Turku is analogous but not quite identical with the situation in Helsinki and Jyväskylä (UTu 2018c). The small collectivity of political scientists at the University of Lapland works closely together with other disciplinary fields, including the sociological social sciences in the sense of the German term *Sozialwissenschaften* (ULa 2018b).

3 Political science research in Finland facing the digital revolution

3.1 General

Has a digital revolution taken place? – Some respondents questioned the notion of a "digital revolution", indicating an instrumental or gradual transformation rather than a fundamental turnaround. However, other opinions also came up, such as "(i)t is an essential aspect that needs to be integrated in research", or that important changes have been taking place, but there are "problems in the ongoing transition period".

Remarkable changes after all? – Several respondents saw it as an important development that articles, e-books and datasets are nowadays available online and that e-communication between scholars and between scholars-teachers and students has been mainstreamed. However, some respondents estimated that not many Finnish political scientists examine digital research topics or utilize digital research methods. This conclusion could be substantiated in the examination of literature done for this article.

Limited rather than profound changes? – For none of Finland's political science professors does digital politics comprise more than one of his or her fields of interest, and for most, it hardly is a field of interest all. For a few other scholars-teachers, digital politics comprises their main study object. The same concerns a handful of salaried doctoral students and project researchers. One of the respondents concluded: "I would definitely call it an increasingly important and visible area. I am aware of a number of publications, ongoing projects, and project applications."

Going through of the hundreds of funding decisions taken by the Academy of Finland in 2017 and in 2018 by mid-August did not reveal a single project, a single academy professor or senior researcher period or other funding item in which digital political themes or using digital methods in political science would have been present (AF 2018b). Going through the likewise hundreds of funding decisions of the foremost private foundations supporting research in Finland was not within the means of this study.

3.2 Content aspects of research

Not ample, and with thematic concentration. – Finnish political scientists have not published widely on digital topics thus. Notably, all authors with international contributions taken up here are Finnish- or Swedish-speaking males working in Finland:

- Digital or other computational examination of the contents of political documents (Karlsson/Wiberg 2010a, b; Winter/Wiberg 2016; Ahonen/Koljonen 2018)

- Political studies on and around social media (Strandberg 2013, 2015; Strandberg/Carlson 2017; Carlson et al. 2014; Berg 2017, which comprises an introduction and reprints of four previously published international refereed articles)
- Political studies on other digital themes (Ahonen 2015; Ahonen 2017; Vuori 2018)

Digital studies of politics by others than political scientists. – In research dominated by others than political scientists, contributions to Finnish research on politically relevant themes have exceeded that which political scientists have been able to accomplish thus far both in quantity and international outreach. Notably, there are numerous female scholars among these other contributors unlike in the case of Finnish political science. The studies by the others can be concisely summarized under a few themes:

- The Internet (Sassi 2000; Pietilä 2002; Aaltonen 2015; Pajala et al. 2018)
- The information society (Castells/Himanen 2002; Inkinen 2012)
- E-government and e-cities (Anttiroiko 2004; Kasvio et al. 2005; Anttiroiko/Mälkiä 2007; Anttiroiko et al. 2014; Eranti 2016)
- Cyber and related security (Sillanpää et al. 2014; Limnéll 2015; Virta/Branders 2016)
- Social media (Lagus et al. 2015; Näsi et al. 2015; Sormanen/Dutton 2015; Vepsäläinen et al. 2015; Laaksonen et al. 2016; Pantti 2016; Nelimarkka et al. 2018)
- Other themes (Heikka 2015; Jääsaari/Hildén 2015; Aitamurto & Landemore 2016; Nieminen 2016; Purhonen/Toikka 2016; Lindblom/Räsänen 2017)

3.3 Institutional aspects of research

Little institutional change. – Institutionally, the digital revolution has hardly have an impact on Finnish political science thus far. The Finnish Political Science Association has no sections, and therefore it cannot have a digital section, either. However, in the annual conference of this association workshops on digital themes have been organized. During the five years from 2014 to 2018 the 2016 and 2018 conferences had dedicated digital politics workshops, the former on research on digital themes and on digital methods, and the latter on the power of algorithms (UHe 2016; UTu 2018d). Papers on digital themes have also been given in multi-theme workshops too numerous to consider in this paper.

The Finnish markets for academic publications are minor, and series of publications are rare. No such series has evolved on digital political themes. Individual books on digital themes have been published, however, including books that include isolated contributions of political analysis by political scientists or others. Only one general political science journal exists in Finland, *Politiikka*, and no national markets can be foreseen for a political science journal on digital themes (VTY 2018). *Politiikka* issue 2 of 2018 did include a special section on computational methods from the viewpoint of political science meaning more intensive attention to digital themes than ever before in this journal. Journals are published in Finland on foreign policy-making or world politics, but none has a specialization in digital themes.

Influences of incentives to publish internationally. – The attraction to publish political science research in the few Finnish scholarly journals on digital themes is limited, although such publication has occasionally taken place. The incentives to publish in international refereed journals predominate despite that the university core funding criteria rate publications in established domestic refereed journals substantially higher than the journal impact points would indicate (JUFO 2018). However, as seen above, the number of international refereed articles on digital themes by political scientists working in Finland is limited thus far.

No political science research centers or such centers with substantial political science participation on digital themes have evolved in Finland. This is understandable given the limited scale, the regional dispersion, and the small unit size of political science in this country. Political scientists certainly may participate in such activities as those of the evolving Center of Computational Social Science at the Faculty of the Social Sciences of the University of Helsinki, although only in a pronouncedly limited scale thus far.

Blurred dividing lines between political science and other academic fields. – As indicated above, other scholars working in Finland rather than political scientists have produced relatively high numbers of refereed international publications on digital political themes, either using digital or other methods. Co-authorships of refereed publications between political scientists and researchers from other fields have also taken place.

Political science and communication are more interconnected at some Finnish universities than others. There are signs that political scientists and scholars of communication, and especially those of the younger generation, more frequently find each in joint research (see Table 1).

3.4 Desiderata, positive perspectives, and risks

Tight funding situation. – The Finnish universities must have competed for scarce government funds with each other ever since New Public Management reforms concerning the universities took place during the early 1990s, and they have to do the same nowadays even more both as concerns their core funding and the project funding that their researchers may win. The regional spread of the Finnish universities and the small scale of all units of political science including the two largest ones comprise aggravating influences. Virtual contacts cannot fully substitute what shared location would provide, and moreover, small units of political science have limited momentum to win economies of scale to apply for research funding in a serial way supported with a solid professional grip.

Opportunities. – One of the respondents offered the following deliberation:

> As a technologically advanced Northern, peripheral, sparsely populated country, Finland can both win and lose from digitalization. Much depends on the ownership and control of the platforms, whether globally concentrated or locally de-centered, private or public. Public debate and even civil society itself increasingly takes place on digital platforms. I think there is a willingness to see the impact of digitalization in this respect. At the very least, Finland could be an interesting case example; more than that, it could be a forerunner of some aspects of the study of the digital aspects of politics and civil society.

Challenges. – Consecutive Finnish governments have launched digitalization policies over the years. At the end of the 1990s and the beginning of the 2000s Finland was supposed to become the world's leading "information society" or "knowledge society" (Castells/Himanen 2002). The government that gained office in 2015 announced a "digital leap" forward, which should also influence university teaching among many other domains (PMO 2015: 27–29). In 2017, the same government launched preparations for a national artificial intelligence program, which was to be finalized at the end of the four-year electoral period by March 2019 (TEM 2018; VM 2019).

4 Teaching and learning political science in Finland facing the digital revolution

4.1 General

Gradual rather than revolutionary. – Several of the survey respondents denied that a "digital revolution" would have taken place or be taking place in teaching and learning political science in Finland. "The question is about gradual movement towards using ever more digital tools in teaching", was one of the views received.

Changes were seen to continue with further moves towards digital communication between university teachers, in delivering teaching materials to students, and in organizing examinations for students. Less change was seen to take place in the background thinking, as lectures, seminars and written examinations still take place, and student essays, theses and dissertations are still written, although digitalization does play increasing roles. The continuing importance of face-to-face teaching methods was also emphasized.

Many changes anyway. – Many subsidiary procedures of teaching and learning have been digitalized. These include, for instance, student registration to study units, courses and examinations, the Intranet documentation of study requirements, e-learning platforms, and many of the examinations that the students take. Digital technologies have also added channels along which teaching can be offered. However, these digital means are generic, and not intrinsic to political science. Moreover, no more than a few of the political science scholars-teachers can be seen to have evolved into digital natives thus far; some have taken steps within the limits of their competencies, interests and time; some have been cautious; and a few prefer traditional methods such as classroom lectures for small or large audiences and examinations of books to prove mastery of the extensive prescribed material.

Political science at Finland's foremost Swedish-speaking university Åbo Akademi University comprises a somewhat special case in that it has a subsidiary in another town 330 kilometers from its main location in Turku. Videoconferencing is extensively utilized in overcoming this distance, which also includes such learning occasions as doctoral seminars.

Limits, again. – Digital themes are no longer rare in Master's theses of political science in Finland, but they have been only occasional in Doctoral dissertations thus far. In political science computational research methods have already been used in Master's theses, but rarely if ever in Doctoral dissertations. In preparing this article detailed empirical stocktaking on these issues was beyond the means given the high numbers of theses and dissertations that should have been examined. The survey suggests that not many scholars-researchers in Finland concentrate on digital questions in their teaching, which poses questions concerning supervisory and assessor competence, should students appear who examine digital themes and use digital research methods.

The survey suggests that in teaching political science in Finland, digitalization has made pronouncedly many advances in rationalizing previously non-digital practices. However, an examination taken in front of a computer is still an examination to answer questions prepared by the teacher who will grade the answers. A syllabus is a syllabus even if made available in an electronic platform, and a student paper is a student paper also when made available only in such a platform.

Each scholar-teacher of political science in Finland can freely choose to digitalize his or her teaching with strong integration of digital tools and consequent changes in course delivery, to introduce such changes only to some extent, or to digitalize as little as possible. The generic learning environment Moodle certainly comprises the most common e-learning platform used in political science in Finland. All scholars-teachers use e-mail and such administrative applications as Doodle to agree upon meetings or Skype for vir-

tual meeting participation. Some scholars-teachers actively tweet to the general public, write blogs, or use Facebook for communication with colleagues and possibly students, and also participate in Linkedin. However, there are others who distance themselves from such applications with reluctance to reveal aspects of their career or their spontaneous reactions to the daily newsflow or to messages posted by others.

Uneven change. – The survey indicated some teachers of political science who have utilized such resources You Tube clips in their teaching, and others who have organized courses in computational methods. Political science MOOCs could not be traced in preparing this article. However, "network courses" (*verkkokurssit*) distributed over the Internet have certainly been organized in Finnish political science as indicated in the survey responses.

Some survey respondents pondered if digital tools have been too rarely used to do things that are really new. For instance, teaching and learning new computational methods is currently patchy in Finnish political science, although there are signs that an expansion is taking place step by step. Extensive digital or digitized datasets are hardly used widely, although instances of their utilization do exist. Moreover, it may be one thing to utilize such datasets in research and another to utilize them in teaching and learning.

Steep digital learning curves. – Digital tools of teaching and learning and computational and other digital methods may pose steep learning curves to scholars-teachers and students, was the opinion of some of the survey respondents However, the steepness is also dependent on the characteristics of the particular tools.

One of the respondents replied to the question on improving the digital tools as follows:

> I think they could be [improved]. Sometimes they should be simpler instead of more sophisticated; the majority of teachers and students would probably be happy with a rather limited selection of simple but reliable and effective tools, something like the original philosophy of Apple. Very often minor obstacles like difficulty [to] get authorizations, multiple passwords, menus with "too many buttons", insufficient instructions, etc., seem to prevent more widespread use.

Technical problems with the digital tools were also mentioned in the survey. Sometimes the applications were "down," and "bugs" had appeared. Lack of user-unfriendly interfaces comprised another problem, as did the multiplicity of programs and applications hard to coordinate with each other. Experiences on whether new digital tools and applications save scholar-teacher time were mixed. The predominant conclusion was that the tools made the preparation and the delivery of the teaching more laborious, although there were also assets, such as keener control over the workflow of the students.

Despite differences, substantial homogeneity. – Differences including substantial differences prevail between the organization, contents and scale of political science at Finland's different universities (Table 1). However, what one of the respondents indicated is likely to hold true to a wide extent:

> I do not think that the differences are very big. To my knowledge, most universities use broadly similar teaching tools, databases, etc. This is probably because of the remnants of the old state university tradition, similar financial models and incentives, and attempts to coordinate or centralize service acquisitions in order to save money or for better compatibility.

Strategies have existed and exist for introducing, strengthening, or complementing digital teaching and learning tools in Finland. According to a survey reply:

> On the national level, a highly ambitious and expensive project called the "virtual university" was introduced more than a decade ago [from 2001 to 2006, addition by Pertti Ahonen], but it was large-

ly a failure. Since then, the efforts have been more modest and gradual, such as encouragement to use open access publishing or the recent investments in digital humanities. Some of them will probably lead to the development of new digital teaching and learning tools.

As a recent development, the Finnish government that started its term in 2015 indicated "spearhead projects" in its general political program (PMO 2015). One of many from among these projects involves the digitalization of teaching and learning at the universities. In actual practice, the project has been implemented by means of the results contracts that the Ministry of Education concludes with each university. The resources come from the national and university-level strategic development funding paid from the government budget to the universities.

4.2 Teaching and learning contents

Slow rather than rapid changes. – Even after receiving an explication on what is meant by the term "digital", some respondents saw the notion of a "digital revolution" to represent jargon rather than an adequate characterization of an ongoing or expected transformation. Digital themes were seen to come up among other themes rather than stand alone. The same was seen to be true of computational and other digital methods.

Available sources enabled on overview on the digital contents of political science teaching and learning at Finnish universities (ÅA 2018b; UHe 2018b; UJy 2018b; ULa 2018; UTa 2018b; UTu 2018b). During the academic year 2017–2018 such contents were best-established at Åbo Akademi University and the University of Helsinki, and more latently at the University of Jyväskylä (Table 2).

Table 2. Digital contents in political science programs in Finland, academic year 2017–2018.

	General studies for two or more disciplines or program tracks	Bachelor's level studies	Master's level studies
University of Helsinki	Not visible in the published course contents	Electives offered by the discipline of Communication for political scientists in the Bachelor's Program of Politics and Communication delivered in the Finnish language	Compulsory courses and electives in the English-language Master's Program Global Politics and Communication
University of Turku	Not visible in the published course contents	Brief course on computer-assisted text analysis	Not visible in the published course contents
Åbo Akademi University	Not visible in the published course contents, but available as electives	Study unit titled Politics Online	Study unit titled Politics Online
University of Tampere	Present	Not visible in the published course contents, but available as electives	Not visible in the published course contents, but available as electives
University of Jyväskylä	Not visible in the published course contents	Available as electives, such as from the minor field titled Digital Life	Available as electives, such as from the minor field titled Digital Life
University of Lapland	Not visible in the published course contents	Not visible in the published course contents	Not visible in the published course contents

Explanations: See ÅA 2018b; UHe 2018b; UJy 2018b; ULa 2018; UTa 2018b; UTu 2018b.

Not mainstreamed yet. – One respondent expected that multi-method teaching and learning would lead to the coexistence of computational, other digital and non-digital methods, and to mutual augmentation of the different methods. According to another respondent, superficiality is a threat once digital methods are taken up in teaching and learning because of the ease of using methods without truly understanding them. However, one can

question if digital methods are more risk-prone than entrenched statistical methods or more demanding qualitative methods.

According to the survey, some digital themes of teaching and learning have been mainstreamed rather than others, but earlier themes have also been embedded into newer themes. For instance, as one respondent indicated, earlier specific e-democracy courses were offered, whereas the theme was later embedded in courses on democratic innovations.

In the survey, opinions varied concerning the sufficient inclusion of digital themes and methods in teaching and learning. According to some of the respondents, the coverage is sufficient, some respondents wished for moderate additions, whereas some saw serious gaps to fill.

Obstacles and gaps. – Lack of textbooks in the digital domain came up in the survey on the one hand. However, on the other hand courses in which fresh article literature is intensively and successfully used have been organized.

4.3 Institutional aspects of teaching and learning

No professorships or university lecturerships have been founded in Finland thus far in such fields as politics and the Internet, e-government, or the computational analysis of politics. Possibly the very first professor's position in computational social research in Finland was filled in 2017 at the University of Helsinki, but this occurred outside political science, and a candidate with a doctorate in technology was nominated.

E-learning programs developed in Finland do exist, such as the *FUNET Tiimi* program of the government research-supporting company CSC, Ltd. (CSC 2018). However, as indicated, Moodle comprises the staple e-learning solution. Adopting e-learning environments is in no way limited to political science, which, as indicated, tends to use solutions that the faculty or the university make available.

As indicated, MOOCs have hardly ever been organized in political science in Finland. However, as also indicated, *verkko-opetus*, "network teaching," has been common, including, for instance, distance learning by means of recorded lectures distributed over the Internet. Opinions differed as to the virtues of such practices if there is no possibility of personal student-teacher feedback during the learning. However, to enable such feedback may prove to be costly, as it requires the immediate availability of a teacher should student questions arise.

4.4 Desiderata, positive perspectives, and risks

As indicated, the Finnish government had projected to have a national artificial intelligence strategy formulated by March 2019 (TEM 2018). It looks as if these opportunities would have been barely acknowledged in political science at least thus far.

The hard core of digital advances, such as computational methods to utilize for examining "big data" and "small data," appears to advance in Finnish political science in an uneven and patchy way. It is hard to see easy solutions to issues like this.

According to one of the survey respondents, teaching and learning should not be contemplated on the principle of "tools first". According to the respondent, one should rather start from the goals and objectives of the learning and next consider how to advance. However, it is not clear what the current goals and objectives of political science learning are, and these goals and objectives are also likely to be different at different universities. It may not be easy to agree upon the direction of revising these goals and objectives, either.

5 Conclusions and discussion

This article has examined research and teaching in political science in Finland as part of a project building on the assumption that an international digital revolution has been taking place and will continue in our discipline. However, the Finnish evidence is mixed concerning if such a revolution has occurred or if smaller steps have rather accumulated and continue to do so. An initial ambiguity was perceived in the key term "digital" of the notion of a "digital revolution," which is why this key term was briefly explicated at the beginning. This elaboration proved to be useful given that some of the survey respondents indicated that they were at a loss as concerns what the "digital" might be comprised of in general and in Finnish political science.

According to the results of this article, the number of political scientists in Finland with international refereed publications on digital themes is low thus far, and the number of such publications is minuscule as well. It is others rather than political scientists such as communication scholars who are the Finnish volume leaders in internationally disseminated studies on digital politics and studies using digital methods. It derives from the incentive structures of academic publication that in both groups the number of refereed academic publications on digital themes or using digital methods is too low seriously to examine. As concerns teaching and learning political science in Finland, digital themes and methods have a presence, but only alongside of other themes and methods. At some universities, teaching cooperation with other fields such as communication and sociology has enabled political science students to opt for minor subjects with a digital orientation. Future will show if political scientists will win any say in such new institutions as the Center of Computational Social Science at the Faculty of the Social Sciences of the University of Helsinki.

The present situation has characteristics that derive from the relatively small total number of scholars-teachers in political science in Finland, the limited size of the largest let alone the smaller concentrations of political science in this country, the regional dispersion of political science into six units in five towns and one subunit of one of the units in a sixth town, and the internal divisions of political science most importantly separating political science in general on the one hand, and on the other international politics or world politics. Moreover, the ruling interpretation in Finland has been that the national implementation of the second stage of the Bologna process calls for heavy-handed transcendence of established academic disciplines. This has contributed towards the thinning of Finnish political science because of newer Bachelor's, Master's and Doctoral programs built on the assumption that each existing discipline should give way to multidisciplinary teaching and learning contents represented to resolve numerous problems that have been claimed to exist. In these circumstances the opportunities that political scientists have to define collaboration ties with their domestic disciplinary colleagues in research and teaching, limited also until the present time, have turned into an ever more endangered species.

There are also tendencies deriving from diseconomies of small scale that push Finnish political scientists towards being generalists rather than focused specialists in their research and their teaching. These tendencies can be seen as obstructing concentration upon such newer research and teaching themes as digital politics and the extended use of computational and other digital methods, and therefore delaying even such changes as should wished welcome.

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Digitalization and Political Science in France

Anaïs Theviot

1 Introduction

In 1995, there were fewer than one million internet users in France, whereas by 2017, over 88 % of the French population had internet access at home (Eurostat). Digital practices have spread widely and the "digital divide" has gradually been eliminated in many different fields of research as well as in Universities. Learning and teaching practices have in turn begun to make use of more digital tools and the web has, albeit belatedly, become a subject of research and has given French political scientists a new angle from which to investigate the changes currently taking place in politics. Could digital technologies be a useful tool in the modernization of higher education, particularly when it comes to revitalizing teaching methods? How have the digital practices of students and teachers evolved in recent years, and to what extent do these practices influence our expectations when it comes to learning and our perception of teaching? In which fields has French research in political science focused on the challenges of the digital age? Can big data revolutionize the research methods used by political scientists? The aim of this work is to summarize these new experiences and to explore what might be unique about the situation in France.

2 Digital technology: between financial investments and educational uses

2.1 Investment from the Ministry of Higher Education and from French Information and Communications Technology (ICT) researchers

French government bodies were quick to invest in modernizing higher education, with programs such as the "Plan d'action gouvernemental pour la société de l'information" (Government plan of action for the information society (PAGSI)) which began in 1997: "the fight for intelligence begins at school, from kindergarten to PhD, where the development of ICT has to meet a twofold objective: to give future citizens the skills to use vital communication tools and to use the wealth of multimedia to modernize education". This was followed by other initiatives such as "digital campuses" (2000, 2001 and 2002), the creation of "Digital working environments" (Environnements numériques de travail – ENT, 2001) and "Digital regional universities" (2003). Seventeen digital regional universities were thus set up in order to pool and coordinate the development of digital technologies in universities in a given area. Following this initiative, a program at Bordeaux Universi-

ty began to diversify teaching methods, whereby people wishing to gain a diploma granting them access to university can do so in person, remotely, or by combining in-person learning and remote learning. At the same time, French universities were encouraged to equip themselves with MIPE operations ("Micro-ordinateur portable étudiant" – Student portable micro computer – and "Mesures incitatives pour les établissements"- Incentive measures for institutions), associated with a student training policy such as the "Certificat Informatique et Internet" (C2I, Computer Science and Internet Certificate). Created in 2002 by the French Ministry of Higher Education and Research, the C2I is a national qualification that focuses on the digital skills that students need in order to train and find employment. This qualification involves training young people in the basics of digital tools and provides proof of their computer skills for future employers. With the goal of making higher education more modern, projects supported by MINES (the Digital Mission for Higher Education) as well as the incorporation of new tools have continued to multiply on French campuses – digital tablets, interactive whiteboards, 3D printers, etc. – without questioning how much such devices are actually used or their benefits for teachers and students.

Since 2008, the involvement of French government bodies has further intensified, but this time also taking into account digital training for teachers. The goal is to go beyond the technology-centric vision that dominated previously, to turn digital technology into a vital tool for improving the quality of teaching and research (Hutte and al. 2010). After a phase in the late 1990s and early 2000s that was mostly devoted to infrastructure, materials and resources (Endrizzi 2012), public policy turned towards considering and assisting teachers in the use of digital technologies in education – an enriched classroom experience, hybrid devices and remote devices. In 2012, the government's willingness to develop online classes led to the creation of the "France Université Numérique" (FUN) (France Digital University) to promote MOOCs (Massive Open Online Courses) and make up for France's perceived "lateness" in this field. According to the French Ministry of Higher Education and Research, two thirds of France's public universities have created some type of structure dedicated to assisting teachers in the development of these new practices (with the creation of services to support digital technology (TICE) and university teaching, etc.)[1]. In the spring of 2015, the annual conference of university presidents had a significant focus on "University 3.0". Ten proposals were made, here are listed some of them: establish infrastructures for public control of research and training data; organize an open and participatory science with the circulation of data for research and innovation; establish incentive funding for research on societal changes and digital innovation; training in e-citizenship from kindergarten to PhD, for a culture of the digital environment; encourage teachers to invest new pedagogies for students with ease of service, career and continuing education; develop places of learning to foster collaboration and innovation.

The recent French law, "Pour une République Numérique" ("For a digital Republic"), which was passed on 7 October 2016, contains a section on higher education and intends to facilitate access to public data for research purposes, to enable free access to publicly-funded research projects, and to reinforce "digital education". These various state injunctions for going digital have been met with concern by several people working in education: "At university, as elsewhere, the concept of a digital utopia multiplies off-site promises and becomes a permanent injunction to innovate, in other words to adapt to the rhythm and needs of the market. Faced with a future that seems more and more uncertain, our economic, academic and political leaders seem to blindly rely on futurists from Silicon Valley and continuously call upon their contemporaries to yield to the need for inno-

[1] http://www.enseignementsup-recherche.gouv.fr/cid89439/le-numerique-au-service-d-une-universite-performante-innovante-et-ouverte-sur-le-monde.html

vation and technical progress, which has now taken digital form" (Bouchet and al. 2016). Could the development of digital technologies at Universities in fact be beneficial to education?

2.2 Are there benefits for learning and teaching?

In France, as demonstrated by Barbot and Massou (2011), our approach to education is evolving slowly despite highly incentivizing public policy. The context in which university education takes place has been affected in many different ways by the introduction of ICT: from the simple use of emails or document submission via an online platform, to the creation of remote collaborative projects, discussions between students on forums created by teachers, and even the creation of additional educational content on YouTube, etc. According to the digital barometer 2016 published by the CREDOC[2], the share of people who claim to have used an Internet training has stagnated since 2011, around 14 %, while, at the same time, the number of MOOCs has increased, in the world, from a mere ten to nearly 5,000. And at the beginning of 2019, the number of courses available in the world catalog is 10,000. If it has not revolutionized the education system in France and too few MOOCs are really integrated in academic paths, organizations continue to create and disseminate these content certifiers. There have been more than 350 MOOCs broadcast in France in 2019, almost 1 MOOC launched every day! 78 % of users surveyed by the CREDOC are convinced that the Internet is a good tool for training.

Some teachers are still wary of ICT and do not feel at ease with these techniques, fearing that they will be surpassed by students and potentially putting their authority at risk. ICT can certainly lead to a breakdown of the teacher-student relationship if used as part of traditional teaching (with its time constraints, high student numbers, and the prescriptive and transmissive attitude of teachers). The democratization of the Internet is changing the teacher-student relationship as the teacher is no longer the sole source of knowledge and must be able to react when faced with knowledge acquired by students elsewhere. The use of digital devices should go hand in hand with a change in approach, one that focuses on co-construction and sharing. At Bordeaux Sciences Po University, for example, teachers are encouraged to use the platform Moodle to put lesson materials online: not only their lesson plan and reading list, but also videos and radio programs to diversify the teaching resources and assist the learner by offering different ways of memorizing information (visual memory, auditive memory, etc.). At Paris Sciences Po University, some lectures are filmed and made available online on the Moodle platform, allowing students to access their course content at any time. To prolong this process of continued learning, Sciences Po launched its first "mobile classes" in October 2017, a free application that provides access to eight "seasons" of the entitled "Sociopolitical challenges of digital technology". Each season comprises six two-and-a-half-minute videos that introduce a concept and provide three examples. This format was selected to adapt teaching to the materials – online devices that are only consulted on a screen can lead to disengagement and thus make it even more difficult to focus (than in in-class lessons, for example). The lesson videos thus aim to be very rhythmic using editing, background music, visual aids and text, as this makes them a more appealing tool for young people. This type of initiative requires funding and time in order to develop the necessary technique, and is not necessarily the objective of all universities, which are often forced to set priorities. For example, some

[2] CREDOC pour le CGE, l'Arcep et l'Agence du Numérique, Baromètre du numérique 2016, novembre 2016.

people prefer to invest in software for use on high-quality computers, with free access for all students.

In my personal experience of teaching I have tested several digital devices that seemed to be of very high quality. For example, I have set up forums to be used alongside lectures I was giving in political communication. The idea is to take advantage of the interactive nature of technical tools to improve exchanges with students. They could then talk to one another on these forums, particularly in the lead-up to exams, in order to help one another. Time spent learning was extended to an online platform and became collaborative. I would regularly read the messages posted by students and provide more information if needed or correct any errors in their understanding of my lessons. I think that a lot could be done with digital technology to diversify lesson materials and make students want to take their learning further. Digital technology is also an opportunity to welcome new audiences or at least to assist them in remote learning, such as high-level athletes and working students. Developing experimental teaching devices such as these is precisely my vision of teaching: to renew one's approach, to look for ways to make sometimes very theoretical classes more appealing, and to avoid falling into a routine, to share our passions with students. In my opinion, it is also important not to dive head-first into the digital simply in order to be modern. The use of these tools should be seen as part of an educational contract with students, defining rules and a specific approach. The technical device must therefore be a tool to make education more dynamic and is not always necessarily useful if it is not thought of as such in advance and is included as simply a gadget.

From the learner's perspective, digital technology seems to have several advantages: these tools are supposed to make learning more personal, enable large-scale customization, encourage informal practices, support collaborative work, connect educational communities, favor collective intelligence, etc. To others, ICT has the potential to multiply learning opportunities. According to Eurostat, 31 % of Europeans have used the Internet to find information with the intention of learning in 2018, whereas only 5 % have taken an online course at the same date. However, the teacher must guide this search for information in order to give students the keys to independent learning. The Internet provides a wealth of information, but first it is important to learn how to find sources, select them, and take a critical approach. The rise of "fake news" online is testament to the potential risk of fully virtual learning. Digital technology offers an interesting extra dimension, making it easier to publish, exchange, and participate in a wider project in collaboration with other classes or individuals. But in all aspects, the role of the teacher remains vital to the organization of the educational activity or scenario.

2.3 A university offering that is developing in the digital field

University-curriculum political science classes focusing on the Internet and politics (e. g. Sociology of Digital Worlds, Sociology of the Internet, Digital Communication, Digital Cultures), are multiplying, whereas there are still only a limited number of master's courses available in this field in France. There are in fact many more master's courses in the field of information science or communication sciences, as well as interdisciplinary master's courses in "Digital humanities"[3]. But such courses tend to be developed when new professions connecting data with political science arise. One example is the creation, in September 2017, of a new master's course at Sciences Po Paris titled: "Innovation et transformation numérique" (Innovation and digital transformation). The first year of this course takes

[3] Rennes 2 University, Montpellier 3 University and even Paris 8 University have launched Masters courses in Digital Humanities in this way.

place in the High School of Management and Innovation and is based on fundamental teaching structured around digital humanities and management. The program also offers specialization courses (data sciences, digital economies, design, scientific and technological culture) which extend into the final-year work project. The final year is broken down into two branches: "Management, innovation, digital" takes the form of one semester of classes at Télécom ParisTech (a prestigious French digital engineering school), followed by one semester of classes at Sciences Po, and the "Management & Innovation by Design" branch takes the form of a double degree (3 years in total, master's qualification included) with Strate (a design school). It is highly likely that political science departments in other French universities will follow suit. The difficulty still lies in the technical aspect: the aim of the course is to train digital strategists who are also able to understand the basics of coding and computer tools. This is only made possible through interdisciplinary master's courses that include partnerships with communication, design or computer science schools. Such collaboration is becoming more and more common, particularly in master's courses in journalism or political communication that choose to create these collaborative relationships and multidisciplinary perspectives in order to keep up with the changes in professional practices brought about by digital technology (with data-journalism in particular).

3 French research into web politics is expanding and becoming more structured

Long neglected in political science studies, the subject of "web" research is now all the rage. French political scientists have been slow to turn their attention to this research subject, preferring to leave it to other disciplines such as information and communication sciences (ICS), language science, and computer science, which focus on themes similar to those studied in political science (for example public opinion, interpersonal influence and elections). This partitioning of disciplines is not productive to research, and in the 2010s was overtaken by political scientists, who have now largely commandeered this field.

3.1 The late 1990s: the first works of French political scientists focusing on digital technology explore its effects on political participation among citizens

The first political scientists to focus on digital technology as a subject of research in the late 1990s explored the question of the renewal of citizen participation in politics and investigated the relationship between the Internet and democracy (Cardon 2010). At the time, ICT was seen as a solution to the "crisis of representation" and to citizen disenchantment regarding traditional forms of political engagement and participation. Originally, the web was seen as an alternative space, one that could favor the development of individual or collective action outside of institutions and away from the eyes of the state. Over approximately the past ten years, this component of research has largely developed around the notion of citizen empowerment (Bacqué and Biewener 2015) and, more recently, that of community organizing (Carrel and Lepinay 2016) which has been relatively successful among French political scientists. Social movements and collective protests are also being organized on social networks more and more often (Pleyers 2013), whilst also being expressed in the traditional media (Lefébure and Sécail 2016).

Initially focusing on non-institutional forms, the first studies devoted to the web and its political form were characterized by technical determinism and were often filled with optimistic beliefs (Serfaty 1999). With this tool of communication and information exchange

on a global scale, anyone online could, in theory, debate and remotely share text, documents, videos etc., and thus initiate collective action with no geographical or time constraints. F. Granjon discusses the "religion of technical progress" in which "information and communication technologies […] are becoming the new fetishes of economic competition, social competition, and the ideology of communication" (Granjon 2009, p. 53). This creation of the imaginary (Flichy 2001), combined with technical innovation, can be distributed among the first users and contributes to the incorporation of digital technology into projects. In other words, "the imaginary is a fundamental part of the process of innovation" (Coutant 2012, p. 18). The novelty of this has been injected into analyses of digital technology. T. Vedel highlights the fact that research focusing on electronic democracy is characterized by a certain idealism that is related to a lack of empirical data regarding its concrete methods: "The idea of electronic democracy is still a relatively new and idealist one, and can sometimes be forgetful of history" (Vedel 2003, p. 245).

The theory of mobilization and inclusion is born from this idealistic vision: those who uphold it see the Internet as a way of attracting new audiences. The accumulation of empirical analyses produced in the mid-2000s in France counteracted idealistic theories and largely contributed to deconstructing the imaginary aspect of the Internet. The upholders of this critical vision state that only individuals who are already interested in politics will know how to find political content online and thus multiply their information sources. In France, a 2009 survey conducted by CEVIPOF (Centre de recherches politiques de Sciences Po (Sciences Po center for research in political science) – formerly Centre d'études de la vie politique française (Center for Studies into the Political Life of France)) and CARISM (Centre d'Analyse et de Recherche Interdisciplinaire sur les Médias – Center for Analysis and Interdisciplinary Research on the Media), confirmed these results, finding that citizens who were already politicized were better able to use the web as a source of information and as a space to express their political engagement (Le Hay et al. 2011)[4].

These controversies brought about the theory of differentiation, which puts forward the idea that interactive use of the Internet varies depending on several factors such as the sociodemographic characteristics of the user, the setup of the technical devices, etc. In France, a survey carried out in 2009 by the Marsouin research group[5] highlights the fact that education level is a determining factor in the degree of information obtained: 69 % of people questioned (in a representative sample of the Breton population) had searched for information on administrative sites in the past, with a thirty-five-point gap recorded between those with a university degree and those without (Trembembert 2010). More recently, the works of Rémy Rieffel (2014) have supported this theory, viewing the Internet as a "new repertoire of collective actions", whilst simultaneously indicating that it is a "symbol of the reappropriation of public debate among the most politicized citizens".

3.2 The institutionalization of the political web with the creation of reviews and research networks

In the early 2000s, the interest of political scientists in the effects of digital technology on the political world began to go beyond simply non-institutional political participation to question the "digitization" of political parties. There was indeed a distinct lack of research

[4] This article focuses on the survey conducted as part of the ANR Médiapolis project: "they [those who are interested in politics] use the Internet more (67 % log on at least once per day compared with 57 % of those with little to no interest in politics)".

[5] M@rsouin is a multidisciplinary network made up of human and social sciences researchers from eleven Breton laboratories. http://www.marsouin.org/

looking into the ways digital technologies were beginning to shape French political parties. In the 1990s, this lack of interest from French researchers in the digitization of political parties (Ollitrault 1999) – despite the popularity of the subject in the media[6] – is in part understandable in that the advent of digital technologies in France came later than in Anglo-Saxon countries[7]. Nonetheless, in the early 2000s, French political parties began to take more interest in the web[8]. A small number of publications on the use of the Internet by political parties were then published[9], but these went virtually unnoticed[10].

The many works regarding political parties carried out by French political scientists generally focus on studying Western democracies. Research conducted in the late 1990s and early 2000s regarding Internet use focused more on American political parties (Serfaty 2002).

The 2007 French presidential election campaign marked a turning point, as the main focus of several publications at this time was the use of the web by political parties. It must be stated that, in reality, candidate initiatives involving digital technology continue to multiply and can no longer be ignored by political scientists, particularly with the creation of the Désirs d'Avenir (Desires for the future) platform. The ambition of this platform is a theme of works on the political web in the "current climate"[11], of interactive democracy and political discussions online. The majority of surveys concerning the use of the Internet during the 2007 French presidential election campaign – such us those of N. Desquinabo (2008) and F. Bousquet (2011) - focus on analyzing the debates that took place online on the interactive website of the candidate Ségolène Royal. The inclusion of a chapter on the web seems to have become unavoidable in any collective work studying the 2007 presidential election (Vedel and Cann 2009, Bousquet 2009). But such chapters are always centered on the analysis of tools – whether these are blogs (Pène 2007), forums, or websites (Bastien and Greffet 2009) – and the interactions that take place in these spaces, without taking into account the intentions and strategies – whether conscious or unconscious – of those who set them up. The significance of partisan organization and the sociological aspect are indeed neglected in the majority of works regarding web use by political parties.

The 2012 presidential election campaign appears to have been a turning point for digital political scientists. Several research programs were created in the autumn of 2011 to analyze the use and content of digital spaces during the 2012 presidential election campaign. These interdisciplinary programs welcomed ICS researchers and political science researchers alike. The "enpolitique.com" project, initiated in December 2011 and directed by F. Greffet (Lorraine University) and T. Giasson (Laval University), studies Internet use by political parties and French (and Canadian French) candidates through continued analysis and mapping of the "cyber-presence" spaces used by candidates, semi-structured interviews with digital strategists, and an online questionnaire sent to citizens who are ac-

6 In the late 1990s, several journalists wrote articles about awareness of the web among political figures such as: Bernard Sananès, "Internet et les partis : cyber-renouveau ?» («The Internet and political parties: cyber-renewal? "), *Le Monde,* 10 February 1998 and Raphaël Richard, "Chirac cyberpresident" ("Chirac, cyberpresident"), *Le Monde,* 3 September 1998.

7 In 1995, the National Front (FN) was the first party to launch an official website.

8 In a newsletter dated 22 March 2002, L. Jospin stated that "leading differently" begins with "campaigning differently", and that, in his opinion, the Internet was "one way to campaign differently".

9 In 2005, an issue of the magazine Terminal was devoted to the relationship between the Internet and politics (Lamarche and Villalba, 2005).

10 However, academic interest in this research subject began to grow with the creation of an "Observatoire de la Net-campagne" ("web campaign monitoring center") in 2002 (Université d'Arras).

11 This expression is borrowed from A. Mazeaud (2010, p. 10) who states that "the interactive theme is part of the "current climate" in the political-administrative world as much it is in the academic world".

tive online. Furthermore, one component of the 2012 TriElec project[12] focuses on the communicative interactions made possible by Twitter. This task was entrusted to two ICS researchers whose original training was more technical (Doctorate in Computer Science Applied to Social Sciences): F. Papa and J.-M. Francony (Pacte joint research unit, University of Grenoble). These researchers looked at Twitter in terms of the "processes of circulation" of content produced or shared by its users in order to identify the networks of relationships established between candidates and citizens through their accounts. To do this, they established a corpus of records from Twitter taken at certain key moments of the French presidential election campaign in order to retrace "streams", identified as polyphonic units of discourse. Their more technical training and expertise in computer science are evident in their analyses (Papa and Francony 2012). Groups of researchers (who were not part of a research program) also worked on the use of the web by political parties during this campaign (De Luca, Theviot 2014). Once again, these were mostly ICS researchers[13].

The timetable for the fifth annual conference of the network of French-speaking political science associations (De Luca and Theviot 2014) held in 2013, with its large number of panels discussing ICT, illustrates a new passion for digital technology among political scientists when researching current political changes[14]. Specialist publications in this field of research have been created, such as tic&société[15], which was set up in 2007[16], RESET[17], and Interfaces numériques[18] which were created en 2012. The creation of the Démocratie Electronique (Electronic Democracy / DEL) research network[19] is part of this movement. This network aims to make French research projects visible abroad and to make them part of a transnational thematic research network. One indirect consequence of this wave of interest was the funding of several political science theses focusing on the use of the Inter-

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12 TriElec is a network that brings together three FNSP laboratories, the Centre Emile Durkheim, the Center of European studies, and PACTE. The TriElec research project is founded on the premise that elections today should be understood through a multitude of coordinated tools that provide an understanding of the vote as a whole in the short, medium and long terms and at the national and local level, by integrating the logics of supply, campaign effects, new media, and networks of voter knowledge.

13 For example, one can cite the works of N. Pignard-Cheynel and B. Sebbah (2013) regarding the use of social networks by candidates, or those of A. Frame and G. Brachotte (2012).

14 Bernard Fournier and Vincent Tournier, «L'engagement politique des nouvelles générations à l'heure des réseaux sociaux» [«Political engagement among new generations in the age of social networks»]; Patrice Bigombe and Augustin Loada, «'Révolutions arabes' et (re)configuration des régimes politiques en Afrique» [«'Arab revolutions' and (re)configuration of political regimes in Africa»]; Sidi Hida Bouchra and Guebsi Moncif «Le sursaut arabe? Transitions au prisme des changements dans les pays du Maghreb» [«The Arab awakening? Transitions through the prism of changes in Northwest Africa»]; Clément Franz and Michel Lallement, «Systèmes d'Aide au Vote (SAV) et études électorales. Une intégration inéluctable? « [«Vote Support Systems (SAV) and election studies. An inevitable integration?»]; Clément Mabi and Anaïs Theviot, «S'engager sur Internet. Trajectoires de mobilisations et pratiques politiques à l'aune du numérique» [«Online engagement. Processes of mobilization and political practices in the light of digital technology".]

15 The journal is devoted to analyzing the relationships between ICT and society. http://ticetsociete.revues.org (accessed 14 January 2014).

16 This online journal includes political scientists such as Thierry Vedel in its scientific committee.

17 "The RESET journal: REcherches en Sciences sociales sur Internet [Social sciences research online] is a biannual scientific journal. Its objective is to publish studies in which the Internet was a useful and necessary field of study when it came to understanding certain social phenomena. The journal thus seeks to fill a gap in the French editorial landscape. " Text found on the website for the RESET journal, http://www.journal-reset.org/index.php/RESET The editorial board is essentially made up of media sociologists.

18 *Interfaces numériques [Digital Interfaces]* is an international scientific review specializing in digital *design*.http://rin.revuesonline.com/accueil.jsp It intends to enable dialog between researchers and professionals in digital design and the majority of its review committee has an ICS background.

19 The DEL network works to promote research projects investigating the connections between democratic processes and digital technologies. The main disciplines represented in the DEL are ICS, political science and sociology. http://www.reseaudel.fr/

net by political parties during the 2012 presidential election campaign (Boyadjian 2016, Neihouser 2016, Theviot 2018, Renault, thesis ongoing) and research projects (ANR on politique.com; Algopol[20]; RPONU[21]) Finally, several recent publications have contained an article devoted to political engagement online (Pleyers 2013, Mabi and Theviot 2014), or even to electoral big data (Boyadjian et al. 2017, Theviot and Treille 2019).

3.3 Digital technology, a methodological resource and a new level of visibility for research in political science

The potential of digital technology, and of big data in particular, raises questions about new survey methods (Ollion and Boalaert 2015). Dominique Boullier (2015) speaks of "third-generation social sciences" when describing the new ways of practicing social sciences in the digital age. Until very recently, the methodological practices of political scientists using digital technologies were not widely discussed. Publications available in French about digital methods did not previously explore political issues specifically – this is the case for the recent issue of Réseaux (Networks) about digital methods (Venturini et al. 2014), as well as the Manuel d'analyse du web (Web Analysis Manual) (Barats 2013). From this perspective, things are changing, with new epistemological and methodological investigations recently published in the Revue française de science politique (French Political Science Journal) (Boyadjian 2017) and with the creation of new fields of expertise in digital engineering within research laboratories.[22] Nonetheless, these publications focus on analyzing digital footprints, in other words analyzing the data produced when Internet user activity is recorded. They tend not to question other aspects such as the adaptation of traditional methods to make use of the Internet (Skype interviews, for example), the relationship between online and offline methods for the same purpose, the routine practices of researchers involving the Internet (email correspondence for example), and ethical challenges (Theviot 2013). However, it is common for the Internet to be used to address a subject of research that is mainly observed offline, or to contact groups or people. For research fields that are geographically distant from one another, for example, digital technology can be used to maintain contact at times when it is not possible to be physically present. In a more general sense, the web is a resource for searching for information. We can assume that these different ways of using the Internet modify the way in which research is conducted in the field of social sciences. However, in research, these methods are used behind the scenes and are rarely part of detailed and reflexive protocols.

[20] Algopol is an application created as part of a research project funded by the Agence Nationale de la Recherche (French National Research Agency), on the "politics of algorithms" (algopol.fr – ANR-12-CORD-018). The project brings together sociologists and computer scientists from several research centers: the Laboratoire d'informatique (LIAFA, Computer Science Laboratory) at Université Paris 7, the Centre d'analyse et de mathématique sociale (CAMS, Center for analysis and social mathematics) at the Ecole des hautes études en sciences sociales (School for Higher Studies in Social Sciences) and the CNRS (National Center for Scientific Research), the usage laboratory at Orange Labs (SENSE) and the company Linkfluence.

[21] UCO research program entitled «Réenchanter la démocratie avec le numérique? " ("Reinvigorating democracy through digital technology?"), coordinated by Anaïs Theviot.

[22] Médialab, created in 2009, is used by different Sciences Po centers "to assist researchers who are struggling with new data for which there is not yet a well-established methodology". http://www.medialab.sciences-po.fr/fr/about/

France remains behind its European partners in terms of research in the field, being ranked 5th in Europe in terms of the number of publications on Big Data, and 12th in the world[23].

The democratization of digital technologies and the rise of online libraries have greatly changed the ways in which we access academic content. It is now possible to keep up with current developments in French and international research much more quickly by reading academic articles online. These sources also make up the body of large journal archives or of the computation of individual citation indexes, which are part of an atmosphere of academic competition and publication harmonization.

4 Some conclusions on the specific challenges for the French case

French universities are facing a demographic boom of about 30.000 additional students each year. Some sectors are becoming increasingly saturated. Forecasts show that France could reach 2.9 million students in 2025, 350 000 more than in 2015. The Internet can be a resource to better guide students and encourage the emergence of new pedagogies and a professional integration more accompanied. The spread of new technologies in learning and teaching can be a chance, if rigorously and vigilantly exploited, for a massive and diversified diffusion of the means to learn.

The challenge of digital technology is deeply societal: understanding computer thinking will be essential to not be left behind in a society where connected objects and algorithms will take a considerable place in the years to come. Hence the importance of not only teaching IT and the code to the youngest, but truly IT thinking itself, as advocated by Sophie Pène, vice-president of the National Council of Digital. Faced with these challenges, individual initiatives are multiplying, driven by start-ups, teachers and institutions. However, even in a university invested in digital as is Paris Descartes, only 10 % of teachers today base their lectures amphitheater on the BYOD (bring your own device), says his task manager EdTech Thierry Koscielniak. This is the main challenge now facing digital education stakeholders: scaling up, so that everyone can step into this revolution. This scaling up is likely to be difficult. Thus, the president of the Paris-Sorbonne University, Barthélémy Jobert, recalls initiating a project to renovate two amphitheaters to equip them with digital equipment two years ago already … And always tells to wait, for technical reasons and the implementation of works whose budget is well planned and available[24]. The challenge is therefore important. And the means to implement this digital university divide and make debate. For some, university autonomy appears to be an effective tool for accelerating the movement of university digitization, while others resist the principle of university autonomy which, according to them, presents more risks than benefits.

[23] Elsevier, SciVal (données Scopus), *Analyse des publications françaises dans le domaine du numérique au service de l'éducation*, 2017.

[24] http://defisdamphi.blog.lemonde.fr/2017/03/13/education-et-numerique-quels-enjeux-pour-demain/

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Digitalization and Political Science in Germany

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1 Introduction: digitalization in Germany

Digitalization is one of the major disruptions and trends globally. Nevertheless, it appears different within different cultural contexts. The analysis of teaching and learning as well as academic research strongly depends on the level of digitalization within the society. On the one hand, one must consider path dependency factors such as the history of a society and on the other hand the national structure of the university system. These two factors define the role of digital revolution in teaching, learning and research, in Germany.

The following overview can only present a brief sketch of the different initiatives in the past and in recent times. It is obvious that especially in the last decade, digitalization became one of the leading societal trends, which changed social life tremendously. An analysis and even a rough overview of digitalization in teaching and research in political science seems to be problematic for two reasons. Germany is a relatively big country with a large number of universities, which makes it difficult to get a comprehensive overview. Compared to other OECD countries, Germany is a latecomer to a certain extent and some important developments started only recently and therefore lack documentation. The reason for this backward position will be described and analyzed in the following article. The status of a latecomer includes and implies problems when it comes to very recent changes and developments. Since the number of political science institutes and scholars working on this hot topic is growing, numerous scholars and academics are (re-)focusing on this topic. Here it is obvious that some scholars seem to have a longer research and teaching track, others are reinventing and mirroring the international debate of the last two decades while other colleagues are contributing new fresh ideas to the international academic community. This brand-new development makes it difficult to get a proper overview.

Despite the phenomenon that the comparatively affluent country of Germany was always relatively late when it came to digital innovation, globalization enforced most of the trends, which Germany in time also implemented. This becomes obvious when considering the government structure and the stage of the policy field digitalization in Germany. Digital media were not accepted or were accepted late. In 2016, there were around 40 million smartphones users. In 2015 almost 24 million persons had Facebook accounts. Other social media such as Twitter are used by 4 million users. In recent years, other instruments such as WhatsApp have reached around 33 million users. In the same year, it can be shown that Germany lagged behind some smaller countries with better public infrastructure such as Estonia, but also behind larger countries, such as France or the UK (ARD/ZDF 2017).

1.1 Digital infrastructure

In Germany, digitalization has not advanced as much as other infrastructure (roads, electricity grid etc.). Only a few projects were implemented at the national level and coordinated and planned by national ministries, such as national roads or autobahn. Public infrastructure in traffic as well as energy, water, sewerage, etc. is predominantly employed at the local level by strong, efficient and effective local administrations. German administration has a very good reputation in delivering infrastructure for its citizens. This can be seen as one reason that the strong new public management approaches affected German municipalities relatively late and predominately after Telekom and the railway were privatized. Meanwhile most other public services are still local and have become local again.

The development of digitalization and digital infrastructure fell into a period of strong privatization in the 1980s and 90s. After the privatization of the telecommunication sector and the dissolution of the Ministry of Post and Telecommunication, digital infrastructure was predominantly in the hands of a very small number of private companies (Telekom). This can be regarded as being one reason for the very low coverage of broadband infrastructure. But, compared to other countries, Germany, with its approx. 80 million people living in a context of high population density, performed badly and Germany was way behind in broadband infrastructure. A decade ago, the government promised to have a 25 Mbit broadband in each household in most areas by 2018 (BMVI 2017). This goal was not achieved at the household level. Besides the relatively good "old" infrastructure as well as deficits in public choice, people were very hesitant and reacted with negative sentiments against digitalization highlighting all its problems regarding safety and security (see below).

This was also obvious in the educational sector. The German educational system is regarded as one of the driving forces behind the economic development in the 1960s (German Wirtschaftswunder). Most school infrastructure derived from the educational reforms in the late 1960s and 70s. In this educational system, digitalization could only sporadically be regarded as a success story. In most of the schools there was (and still is) a long debate as to whether pupils should be allowed to bring their cellphones into the classroom or even on to the school premises. Modern educational instruments such as whiteboards or tablets are rare or barely exist. The same verdict applied to higher education in universities and the technical colleges, which will be described in detail later on.

1.2 The development of a policy field and digital executive and legislative

In Germany, digitalization is a relatively old trend but not adequately implemented in the governmental, political structure. At all government levels, the institutions always seemed to have a reactive attitude against crisis phenomena, but did not deliver a long-term master plan. At the national level in Berlin, the government did not create a leading coherent ministry focusing on digitalization. Digitalization is considered an important task in all ministries. Thus, it plays a highly important role in the Ministry of Transport and Digitalization, the Ministry of Labor, the Ministry of Economy, and the Ministry of the Interior. To coordinate regional initiatives at the national level, consultative institutions were developed (IT Planungsrat). In 2017, additionally a Minister of State for Digitalization at the Federal Chancellery was installed, and in 2018 an expert group (Digitalrat) was set up to advise the national government. Until 2018, most Laender did not create a sole Ministry for Digitalization. The government responsibility was and is divided within the different ministries and governmental institutions. In the following years Hesse, Bavaria and other Laender implemented state ministers on digitalization.

With the development of the Internet (in the 1990s) as well as new instruments such as social media (in the 2000s), it could be observed that the government did not react timely and adequately towards this new trend. In the early 2000s, the Ministry of Economy was highly interested in becoming the leading actor internationally, regarding new developments in this policy field. Here, especially the German emphasis was on security and safety topics. After the privatization of the German Post and Telecommunication, it was the Ministry of the Interior (Home affairs) in Germany which was highly interested in being a part of the process of new government structures as well as constructing symbolically important instruments for national branding, such as online voting. Besides the temporary Parliamentary Enquete-Commissions, until 2014, there still was no Commission for Digitalization in the German Bundestag. The responsibilities were split up and the digital infrastructure was allocated to the Ministry of Transport as well as to the Ministry of Economics. This happened in a period when in the field of the civil society, new organizations were established (e. g. Netzpolitik.org). Nevertheless, in the following years, the German debate paid more attention to safety and security issues as well as copyrights (against child pornography, length of data retention). In 2014, a commission on digital agenda was implemented. Here, national and European scandals played an important role as well as the strong emphasis of the German constitution (*Grundgesetz*) in protecting individual rights against any interference from private or state actors. This slow implementation applies also to the development of digital infrastructure.

This hesitant development of a policy field influenced also the development of digitalization within schools and universities. Safety first was the main principle and impeded many private and individual initiatives, and hindered digital experiences within the universities.

2 Political science and digital professorships: the structure of German universities

Traditionally, Germany displays an urban structure with only some six metropolitan cities or areas, such as Berlin, Munich, Hamburg, Stuttgart, Frankfurt as well as the region of Ruhr and its neighboring city Cologne, while there is a large number of municipalities in smaller cities. Remarkably, most of the 79 cities with more than one hundred thousand inhabitants have universities. However, historically universities exist in smaller, older cities and towns (e. g. Marburg 80,000 inhabitants including 25,000 students). In the German federal system, the responsibility for universities is at the provincial level (Laender). In the 1970s, some Laender created new universities because of regional strategies in order to develop more remote areas and to strengthen certain regions. In the following years, some new universities were established in remoter areas. Some new universities were built in Hessen (e. g. Kassel) and in North Rhine Westphalia (NRW), for example in Bielefeld or Bochum. In the 1960s and 1970s, most teacher training colleges (pädagogische Hochschulen, PH) were also restructured and either changed into universities of applied sciences or incorporated into bigger university structures. The trend for new universities continued in the 1990s, where universities of applied sciences in schools for administration were built even in smaller cities. Altogether there are now 108 universities (with PhD programs) plus another 320 universities of applied sciences as well as schools for administration (no PhD programs). These include 16 newly founded private universities (with PhD programs).

Political science departments were created after the Second World War as institutions to assist "re-education" programs after the Nazi dictatorship. From the 1960s until now, there was a growing demand to study social science and political science in particular. The

number of students in these departments are very high. Most of the 100 larger German universities have a department of political science. In view of the growing studentship, most departments struggled with very poor professor-student ratios and the academic austerity programs. The very large departments in the 1970s and 80s – such as Berlin with more than 30 full professors – had to reduce staff to a third after unification. Also, other departments experienced severe budget cuts. Only a few could stabilize their number of full professors. The position of assistant professors (the German title is 'Juniorprofessor') did not exist until the new millennium, and was only introduced in the year 2002.

Political science, in some universities, is – together with sociology – part of the faculty of social sciences. At some universities, it is totally separated from institutes of political communication, which is often allocated in other departments and part of other faculties. This split is also reflected in the overarching structures of German academia and funding institutions like the German Research Fund (DFG), where communication, sociology and political science are strictly separated. This separation is even stronger when it comes to other competing faculties such as in geography, law and economics or informatics and computer sciences.

In Germany, there are around 350 professorships in political science. They follow the traditional differentiation in political theory, political system of Germany, comparative politics, and international relations, often also didactics (always when the training of school teachers is involved).

2.1 "Digital professors"

Digitalization and the Internet are a recent phenomenon and the study of Internet and politics has not been included in the curricula. Only in recent years has digitalization been included in the curricula of digital humanities and in social science faculties and departments. Digitalization was not reflected in professorships in political science until 2012. There is only one exception in Germany, namely the University of Hildesheim, where an assistant professorship for Internet and Politics (*Juniorprofessur*) was installed in 2012 at the Department of Political Science. Another newly established professorship is Political Data Science at the Technical University Munich. It can be shown that in recent years some professorships in the field of informatics started analyzing social phenomena, but still have a strong emphasis on computer science. In political science, the number of colleagues working on digitalization is rather limited. In Germany's political science, digital politics has been regarded in recent decades as a kind of playing field for early career scholars.

The professors, who are working in the field of Internet are based at eight universities and in addition to the Internet have other main focuses: thus, Sigrid Baringhorst (Siegen) and Stefan Marschall (Düsseldorf) have their expertise in comparative politics, Andreas Busch (Göttingen) in comparative politics and political economy; Marianne Kneuer (Hildesheim) besides comparative politics also covers aspects of international politics; Norbert Kersting has been concentrating on comparative politics and local and regional politics. Christoph Bieber (Duisburg-Essen) holds a professorship on ethics, and Gary Schaal (University of Hamburg) on political theory. Even if other colleagues are publishing increasingly more on related topics, they do not have a long research track or a strong concentration on digitalization and its impact on politics. Their digital research will be described in the following chapter in detail.

2.2 Teaching and learning

Due to strong austerity measures in recent decades, most political science departments have tried to implement the core curriculum centering on the most important political institutions and processes. In general, it can be observed that some international academic trends could strengthen certain groups within the departments. For example, because of globalization, the field of international relations has become more important and it has slowly refocused as well on comparative politics. A strong emphasis on regional integration has influenced research concentrating on European studies. New incoming professors also highlighted most of these trends. Nevertheless, due to the financial restrictions, megatrends, such as sustainability, are only recently being mirrored in the curriculum of some departments of political science.

In 2010 as part of the Bologna process, Germany introduced three-year Bachelor and two-year Master programs (BA, MA). Around 50 German universities have fully fledged Bachelor and Master programs in political science. All in all, there are no programs on digitalization or Internet politics. In some political science departments, however, BA and MA programs cooperate with programs on political communication and thus give importance to digital media.

Generally speaking, the digital revolution has not been covered appropriately in the curricula of German political science departments. Similar to primary and secondary education, blended learning through a combination of online and offline instruments is relatively rare. Digital support for the lecturers and students mostly reflects older self-made software. Digital learning tools such as Massive Open Online Courses (MOOCs) are seldom offered in most faculties at university level. Digitalization in teaching has been taken up very reluctantly at the departments of political science.

Nevertheless, under the broader labelling of political science, some of the modules/courses refer to digitalization. Often led by an individual interest in this field, some scholars pushed to introduce modules on digitalization, for example, in Marburg, Münster, Hildesheim, or courses in Munich, Humboldt University Berlin, Mainz, Konstanz etc. Covered topics are e-democracy, e-participation, e-voting, big data and the role of social bots, Internet governance, online campaigning, social movements and online interaction, data security.

It has already been mentioned that the role of digital media in teaching and in learning is very basic. Mostly, there are only a few digital tools included in the communication and interaction within the classroom. Here, the students as well as professors predominantly use online publications, where the formerly highly ranked German university libraries are losing ground. One important aspect in this regard is the very high costs of political science books in Germany. Here political science publishers have gone through the process of amalgamation and merger. In the last years, publishing houses have changed ownership and become more international. Nevertheless, some of these publishing houses have contracts with the university libraries and offer free access to political science books and journals for students and staff.

3 Research

Research in the field of digitalization in Germany, followed existing political developments and trends and international, national and German discussions. Meanwhile, in the 1990s an administrative and democratic innovation became popular (Kersting 2017, Lucke 2017).

At this time, online voting as an instrument to enhance declining voter turnout, was discussed. Later in the 2000s the deliberative turn brought more instruments, which tried to transfer the political arena into the digital sphere. In the following years, open government and open data as well as smart city approaches became much more important. Since the Obama election in 2008 the German discussion on political online campaigning was important during the national as well as the regional and European Union elections. The stronger emphasis was continuously oriented towards safety and security, the problems of social media and analysis of social bots. The new trend towards populism affected Germany, during the election in 2017 when the new political right wing populist party AfD entered the Bundestag. This triggered an analysis of Internet discussions on populism and research about the way in which right-wing parties use the Internet. These different trends in political science can also be seen in the number of publications deriving from different research projects.

3.1 Publications on digitalization

With very few exceptions, publications on digitalization and the use of the Internet started in the early 2000s. Here Siedschlag (2003) produced one important edited volume. Others concentrated on the change of the public sphere (Leggewie 1998) or concentrated on public administration and participation ("Orwell in Athens" van de Donk 1995).

E-administration and Internet governance

In the late 90s and in the early 2000s a couple of articles were published in the field of public e-administration and e-government (Kubicek et al 1997). Here, the focus was predominately put on the local level (Klaus Lenk, Hermann Hill). In the following years, different reforms, such as the freedom of information, influenced research and articles on open government data were published. It can be seen that in 2010s, issues like government and Internet politics became more important (Schünemann/Weiler 2012), as well as open government and smart cities (Baldersheim/Kersting 2012; Kersting 2016; Wewer/Wewer 2019). Other aspects referred to the net neutrality debate (Schünemann/Steiger/Stier 2015). The discussion on Internet and privacy (Schwanholz/Graham/Stoll 2018, Busch 2012) concentrated more on traditional and regulative aspects. Due to the often unregulated policies in the field of digitalization, which were lacking proper institutions in the 2010s, the new literature was dedicated to regulation and information (Reiberg 2018; Busch et al 2019; Klenk/ Nullmeier/ Wewer 2019).

Digital divide and representativeness

The digital divide has been important in international studies with the development of the Internet. Because of the backwardness of Germany regarding some of these indicators (broadband, social media usage), a stronger attention was on the use of online participation in certain social groups, such as seniors (silver surfer etc.), youth (digital natives etc.) (Ritzi/Wagner 2016). Other studies evaluated online participation by politicians, local administration as well as citizens (Kersting 2016).

E-discourse

Early approaches trying to analyze the discourse quality of such forums were using Habermas' criteria for deliberation (Kersting 2005). In the following years, online participation

in comparison to offline participation as well as participation in the invited and the invented space were analyzed (Kersting 2014). With the deliberative turn, new deliberative as well as direct democratic participatory instruments started to be analyzed (Sossdorf 2016; Escher 2013; Voss 2014). Some international comparative data analyzed the use of new Information and Communication Technologies (ICT) in democratic and autocratic systems. Some scholars explicitly dedicated to the implications of online discourse and deliberation for the enrichment (or not) of democratic processes and the question of democratic quality (Kersting 2012; Kneuer 2016). This was examined against the background of the longstanding and open question, whether digitalization would be able to revitalize democracy.

E-campaigning and inner party democracy parties

A major thread in scholarly research referred to the use of ICT within the political parties as well as between political actors and the citizen in online campaigning through political communication (Zittel 2010; Jungherr 2017). The role of the Internet and the trust in social media had already been analyzed in the late 1990s (Marshall 1998, 1999). Other scholars in political communication studied Internet campaigning and the use of the Internet by political parties (Römmele 2001, 2003). In the following year, these scholars additionally concentrated on the role of the new ICT within the political parties (for party 2.0 see Gibson, Römmele, Ward 2003, Marschall 2012, Reichard/Boroucki 2015, Bieber 2014a; Fitzpatrick 2018). With the development of the Pirates party, there was often a focus on the mobilization of citizens within representative democracy (Römmele, Gibson, Lusoli, Ward 2004). Some colleagues analyzed the influence of the new digital instruments of direct democratic participation, offering "liquid democracy" tools for inner party democracy (Bieber 2014a).

Early comparative studies analyzed political parties using the Internet at local and national level, others on individual political actors using the new ICT. Here, not only candidates for the regional parliaments were analyzed, but also the national online and offline campaigns in Germany (Boroucki 2016, 2018, Faas 2003, 2006, Partheymüller & Faas 2015 on the elections of 2005 and 2009). Likewise, the usage of social media by heads of government and the German chancellor became research subjects (Boroucki 2014).

E-voting and electoral monitoring

In the early 2000s, there emerged an intense discussion on online voting with the front-runners USA, UK, Switzerland, and Estonia. Online voting was regarded as one form of online political participation, which enhanced the role of the new ICT as an instrument of political information, political communication and political participation (Kersting & Baldersheim 2003). On the basis of online and offline surveys, Schoen and Faas (2005) criticized the low substance and lack in methodology of online campaigning and e-voting. Due to the critical discussion of online voting in Germany, there was a refocusing on the use of digitalization within the administration of elections, as well as the use of new technologies in monitoring election and election observation (Shayo/Kersting 2016).

Voting advice applications

Since 2002 the Federal Agency for Civic Education (Bundeszentrale für politische Bildung, BpB) sponsored and supported a Voting Advice Application VAA (Wahlomat), which was highly successful and had a huge number of users. It was predominately organized by Stefan Marschall (Düsseldorf) who is involved in an international group of VAA research-

ers. In 2010s it included regional and sporadically even local elections, and it was confronted with smaller local competitors (Wahlkompass etc.). The possibilities to analyze the enormous set of data produced was strictly regulated due to data security issues.

Ethical questions of digitalization

In recent years, data security has become an important issue in the public debate and also in the scholarly attention (Bieber 2012). In Germany, there also prevailed a strong emphasis on ethical questions (Jacob/Thiel 2017; Bieber 2014b). From a more journalistic perspective, first analysis on the blogosphere and on social media were presented (Maier/Faas 2006; Holler, Vollhals & Faas 2008). At Mannheim University, Faas and Schoen (2006) additionally analyzed the role of online surveys and criticized the misuse of these instruments.

Data safety, manipulation

One aspect of data safety and data security pointed to privacy in the public space. Here, political theory became an important contributor (Schaal 2004, 2014; Ritzi 2018). In addition, practical aspects of cyber security predominated here (Schünemann/Baumann 2017). The misuse of the Internet and social media brought other ethical aspects such as cyber justice and human rights and good governance on the agenda. Furthermore, some colleagues studied manipulation of social media using social bots on Twitter (Hegelich/ Janetzko 2016, Thieltges/Hegelich 2017).

Social movements and digitalization

The so called Arab Spring and the then emerging new social movements like Occupy and other indignation movements inspired a considerable work on these phenomena (Baringhorst 2009, 2014, Kneuer/Richter 2015). Another thread of scholarly attention was on net activism of NGOs and on especially on net protest based on political consumerism (Baringhorst 2009b, 2012, Yang/Baringhorst 2016). Here also the new possibilities for depicted petition and the aspects of personalization of political protest were analyzed (Baringhorst 2015).

3.2 New book series and new journals

Digitalization is not just underrepresented in the policy arena but it also lacks organizational structures in the academic research in political science. Until now no new journals have been established, which would cover this topic. Nevertheless, it can be seen that some of the well-known journals in political science published special issues on this topic edited by scholars from political communication and journalism (Pfetsch/Marcinkowski 2009). In 2013 the chair of IPSA Research Committee 10 on e-democracy, Norbert Kersting published a book on "Electronic democracy" in the IPSA series "State of the discipline". This brought together political scientists of the Research Committee 10 focusing on the main topics in this field digitalization (Kersting 2013). Furthermore, a couple of edited books deriving from national and international conferences were published (such as Leggewie/ Maar 1998; Kersting/ Baldersheim 2002; Kneuer 2013).

However there are other structural reasons for the under-representation and the absence of journals. Most of the German journals in political science are published in German and are also for this reason, not represented in important social science citation indices (ISI,

Scopus etc.). Nevertheless, due to the relatively high number of journals on the German market, academic scholars seem to be hesitant to introduce new journals on digitalization.

Under the economic pressure of the big German publishing houses over decades, a strong process of monopolization has become obvious. Alongside only a few, smaller, older publishing houses, a number of publishers finally became a part of the major Springer Nature group. Although some academic scholars have been planning book series on digitalization and politics in Germany, there was no book series until 2018 (the series "Politics in the digital society" edited by Jeanette Hofmann, Norbert Kersting, Claudia Ritzi und Wolf Schünemann was established in 2019). But it is quite obvious that there is a strong cooperation with departments of communication, developing interdisciplinary research.

In the public arena and in national media coverage of digitalization, political scientists do not seem to be relevant, when it comes to experts from the media, such as TV or radio. Here, predominantly representatives from civil society and NGOs in the field of digitalization are presented on television. One reason for this may lie in the lack of contacts to journalists. But this is also the case in Germany, on the typical split between the field of journalism on the one hand and the field of science on the other, where public intellectuals are viewed skeptically and are often criticized by their academic peers.

3.3 Research institutions and new research initiatives

In the area of digitalization, a couple of research institutions, which are predominantly sponsored by the Ministry of Higher Education (Bundesministerium für Bildung und Forschung), already existed or exist. These research institutions are mainly working together with scholars from informatics working on more practical political issues but they have incorporated a few political scientists. Here, for example the Karlsruher Institut für Technologie (KIT), Institut für Technikfolgenabschätzung und Systemanalyse (ITAS) in Karlsruhe, Fraunhofer-Institut für Kommunikation, Informationsverarbeitung und Ergonomie (FKIE), Wissenschaftszentrum Berlin für Sozialforschung (WZB) have branches on digitalization.

At university level, organizations outside of political science are relevant in the field of digitalization, such as Leibniz University Hannover, the Institut for Law and Informatics (IRI); Technical University Dortmund (TU Dortmund), the Faculty of Economics and Social Science (WiSo); at Munich University (LMU), IOM (Research Institute Information, Organization and Management) at the University of Bonn; the Informatics Department at the University of Bochum; the Psychology Department (Kognition) of the University Duisburg/Essen; Muenster University, the Economy European Research Center for Information System (ERCIS), the Institute for Telecommunication und Media Law. Most of their staff do not have a political science background.

Within the German Political Science Association's (DVPW) section on Politics and Communication, some scholars worked more on media in general and communication and later on digitalization. But this DVPW working group organized and supported important publications in 2009 (Pfetsch/Marcinkowski 2009, Emmer/Strippel 2015). There are strong ties and sometimes an overlapping between political science scholars and scholars of the German Communication Association (DGPuK) and the other German speaking Swiss Association of Communication (SGKM). Here political scientists were sporadically part of important research networks (Schwerpunktprogramme, Forschergruppen) which had an emphasis on digitalization and Internet research such as "Mediatisierte Welten (Mediatised worlds)" and "Politische Kommunikation" (Political Communication).

The German Internet Institute and the selection process

Different national and provincial regions tried to foster research on digitalization. Here, some were highly influential and triggered broader engagement in all Laender (provinces). In 2014, the grand coalition government between the Christian Democratic Party (CDU) and Social Democratic Party (SPD) incorporated in their coalition treaty a new research institute for their digital agenda 2014–2017. A publicly financed research institute was planned, which was to have an interdisciplinary science approach to analyze ethical, legal, economic and participative aspects of the Internet and digitalization. The idea was that the German Internet Institute should become a think tank institute analogue to the Oxford Internet Institute, Berkmann Institute and others. This Institute concentrates on aspects of social media, its effects on young and older users, the role of big data and privacy, and lastly on possibilities to participate politically. During the process, the approaches also included more researchers working on legal and economic issues.

In September 2015, the German Federal Ministry for Higher Education presented its call and promised 50 million Euro for five years. In the following month, the new German Internet Institute was supposed to be detected in a two-step process. In most of the German Laender, academic scholars working on digitalization in the field of social sciences built up strong networks for presenting their applications in the selection process. Finally, nearly all German Laender (11 of 15 Laender) presented a proposal. During a following selection process, a shortlist was developed. This included Berlin with different universities from the metropolitan area, Bavaria with the Bavarian Academy of Science, (Bayerische Akademie der Wissenschaften), Lower Saxony with Gottfried Wilhelm Leibniz University in Hannover, Baden Württemberg with Karlsruhe Institute for Technology and finally North-Rhine Westphalia (NRW) with the consortium of Heinrich-Heine University Düsseldorf (HHU), University of Münster (WWU), University of Bonn (Uni Bonn), Grimme Institute as well as Bochum University (RUB) and GESIS (Open Science Center). All networks had to present future research areas as well as national and international partners. The winner was the Berlin consortium, which included the Free University Berlin, Humboldt University Berlin, Technical University of Berlin, the Berlin University of Arts and Design, University of Potsdam, Fraunhofer FOKUS and Wissenschaftszentrum Berlin (WZB). These partners founded the new Weizenbaum Institute for the Networked Society – the name that was given to the Berlin consortium – was incorporating other initiatives in the capital city. Nevertheless, this completion produced positive effects in the other Laender. In NRW for example, the Center for Advanced Internet Studies (CAIS) was founded in 2016 by the consortium of participating NRW universities.

Lack of political science organization

German political science scholars and academics are organized in the German Political Science Association (DVPW), as well as in the smaller German Society for Politics. In the early 2000s, the Ph. D. student Alexander Siedschlag developed the idea to build up a thematic group (research committee) within the German Political Science Association. His book on Digital Democracy is regarded as an attempt to bring the various colleagues together, who worked on digitalization (Siedschlag 2003). Nevertheless, most of these colleagues did not have their own chairs or even a permanent position at their department. Therefore, the attempt to build up a thematic group, which could have become a working group within the German Political Science Association, failed and most of the scholars involved in the book did not get an academic position at a German university or changed their thematic orientation over the years.

One reason for this failure was the ignorance of most faculties and departments, when it came to the development of a new policy field in the area of digitalization. Due to the

fact, that there was no new professorship and no new positions for other relevant areas in the field of Political Science, it was obvious that it could be hard for a new research field to be implemented. Most universities experienced regulation of the kind that introduced academic austerity and had to reduce staff. Many struggled to save the old relevant professorships and none were willing to give up their new professorships. The same happened in the field of new research institutions. Meanwhile, in communication, the trends towards digital and online communication have been reflected by some new research groups and networks in political science. There was hardly any development of research organization.

One attempt to start more institutionalization and organize research, happened in the late 1990s and early 2000s at the University of Giessen. Here, Claus Leggewie and his assistant, Christoph Bieber were part of the new interdisciplinary Centre for Media and Interactivity at Giessen University. Together with other faculties, they started research on digital rights and Internet politics. This was very closely related to a growing field of NGOs (politik.digital) and organizations in the field of digitalization. Most of the debates focused on political communication, but also on the development of the policy field. In the meanwhile, more such initiatives came up and installed centers in the field of digital topics (such as the Institute for Information-, Telecommunication- and Media Law (ITM), Ferdinand-Steinbeis-Institut (FSTI); Bavarian Research Institute for Digital Transformations (BIDT) to name but a few).

The new thematic group became a DVPW Working group „Digitalisation and Politics" in 2019. It has strong links to the European Consortium for Political Re-search, as well as to the International Political Science Association and its Research Com-mittee 10 on Electronic Democracy, which was chaired by Norbert Kersting. At the IPSA conferences in Poznan in 2016 and in Brisbane 2018, it could be seen that the number of German scholars contributing to the RC 10 panels rose sub-stantially compared to older IPSA conferences At the European Political Science Association (ECPR) scholars such as Isabelle Borucki (University Duisburg- Essen), Jasmin Fitzpatrick (Mainz University) are involved in its Standing Group Internet and Politics

4 Positive developments and future risks

It can be shown that there is a direct correlation between the policy field of digitalization and research in this field. Digitalization has often been neglected at the policy level and there is a lack of organizational structures, such as ministries, etc. at the national as well as the sub-national levels. This situation mirrors the development of digitalization as a research field of political science. Due to the lack of financial resources, most political science departments could not adequately integrate a professorship on digitalization. It is also obvious that most departments of political science did not include digitalization in their curricula. Most of the scholars in political science working on digitalization are also teaching in related fields, such as online participation, etc. In this regard, digitalization is less represented than other research fields, as for example, sustainability or European Studies. The lack of these new subjects in the curriculum comes together with a higher specialization on new methodologies. In recent years, most universities changed from qualitative approaches towards more quantitative or mixed methods curricula. Traditionally, classical statistical software as in SPSS was used. To analyze big data, new software programs of methodologies and linguistic software programs such as "R" facilitate analysis. This program has become much more popular in most German universities.

In the field of publication, a very small number of political scientists actually have a long research track on digitalization in political science. This number slightly increased from 2010, when another half a dozen political scientists published more in this research field. With the national call for German Internet Institute in 2015 in all Laender, most of the universities gathered colleagues working in this area, but most of them came from neighboring fields, such as political communication, geography, law and economics. Nevertheless, these initiatives brought a strong push towards more publication of research projects in all faculties especially in the faculty of political science.

Digitalization means a stronger co-operation, not only with the departments of communication, but also with other faculties, which are closely related to informatics. In contrast to some disciplines, this kind of informatics has already been incorporated in the curriculum of departments such as geo-informatics, economic-informatics. In political science, a cooperation with the department of informatics has yet to be developed. This is a much more cumbersome process because of different cultures within these disciplines.

In 2018national government as well as Laender government changed legislation on digitalization (Onlinezugangsgesetz). New research projects evaluated the pilot projects and model regions and cities tested new research methodologies. The semantic net strengthened new methodologies in the field of computational social science. Political science departments developed new interdisciplinary research projects and planned new interdisciplinary curricula.

At university level, the number of MOOCs in political science is very small. Nevertheless, the Internet is used – in its old way – as a memory for institutions. Here, programs such as "learnweb" and others, are also assisting lecturers and professors in distributing academic articles, PowerPoint slides of the lectures and video streaming, even though it has not been used to a large extent. In this regard, European and German copyrights often can be regarded as an obstacle for these platforms.

For publications in this field there exists only a small number of – mostly not appropriately indexed and accredited – journals. Nonetheless, the number of publications in Anglo-Saxon journals written by German authors is growing. In Germany, there are no journals aiming predominantly at digitalization and politics, but books, as well as edited books, still have not lost their value and are used by authors and PhD students to publish their papers. In Germany, a new book open access book series on Politics in the digital society was established in 2019 by transcript publisher.

The field of digitalization is in some respect predominated by strong NGOs and civil society. Academic colleagues often cooperate with a small number of these older think tanks but also with younger NGOs (Bertelsmann Foundation, Open Knowledge Foundation etc.). The new networks cooperate with civil society groups, who are working on open knowledge, the open government data etc. Here, a stronger, more practical cooperation is strengthening ties between political scientists and practitioners.

Due to German history and the experience of the Nazi regime as well as the GDR, skepticism about the misuse of information technologies is very high and the protection of privacy is of utmost importance for the public as well as for politics. Therefore, regulations in the area of data safety and data security are strict and have been developed in the wake of certain European and German scandals in recent history. It is predictable that German Political Science research will put its emphasis on the area of blended democracy and the combination of online and offline institutes, as well as on the area of regulations for digitalization. The new organizational structures within the German Political Science Association gives some hope that a stronger co-operation between the scholars of digitalization can be realized and that this can elicit more engagement in teaching, as well as in research.

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Digitalization and Political Science in Poland

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1 Introduction

Digitalization of many areas of social activity to a large extent also enters the field of science, both as a subject of research as well as affecting the way it functions. Political sciences in Poland do not remain indifferent to this process and undergo evolution. In this paper, we consider digitalization of political sciences from the perspective of applying online tools in the teaching process and conducting research. For the purpose of this study, we narrow the analysis down to our own experience and the results of research carried out among people involved in this discipline in the teaching process and academic research at Polish universities.

This study is the first attempt to diagnose this problem based on the opinions of Polish political scientists. Previous investigations of the state of political science research in Poland have not addressed this issue (Krauz-Mozer, Borowiec, Ścigaj 2011, 2012, Żukowski 2006) or discussed digitalization of political sciences from a different perspective than the one we assume in this paper (Żukiewicz, Fellner 2015).

The aim of the study is to present key aspects related to changes in teaching and research in political sciences in the perspective of digitalization. The main research questions concern three aspects: Do Polish political scientists see changes related to digitalization in their approach to teaching students? Do Polish political scientists see changes related to digitalization in the postulates of students? Do Polish political scientists use online tools in their teaching and scientific research?

The basic source of data are 141 opinions of Polish political scientists from 16 academic centers, obtained through an online survey (Google Forms) distributed electronically. The research was carried out in April 2018. The content and selection of questions resulted from the authors' concept and general determinants for research questions formulated by the editors of this book (see *Introduction*). Due to a considerable number of responses from all Polish political scientists, as well as the diversity of respondents in terms of gender and academic degrees, it can be assumed that the answers constitute a significant voice of the community of political scientists in Poland. However, taking into consideration that the survey was distributed via Internet, it should be noted that some people – those who use the Internet less for communication – may not have completed the questionnaire. Therefore, we assumed that it would be reasonable to use the term respondents, not Polish political scientists.

Structure-wise, the study consists of five parts. After the introduction discussing the research assumptions, the main themes shaping the current institutional state of political sciences in Poland will be presented. Then, opinions on the subject matter will be discussed.

The study will be completed with conclusions from the conducted research along with an indication of potential areas for further in-depth studies.

2 Origin and development of political science in Poland

The institutional genesis of political science in Poland goes back in history as far as the beginning of the 20th century (Żukowski 2006: 23), because in 1902 the School of Political Sciences was founded in Lviv, and in 1911 the Polish School of Political Sciences was established at the Faculty of Law of the Jagiellonian University. In 1914, the Political Science School in Warsaw was established (renamed the Academy of Political Sciences in 1939). In the interwar period, the scientific, organizational and educational development of these three schools was noted and two political centers started taking shape: Lviv-Cracow and Warsaw. In the latter, preliminary work on the encyclopedia of political science began.

During World War II, activity in the field of political science was limited to underground education and correspondence courses. A few years after the end of the war, political science became highly dependent on the communist ideology. In 1950, academies of political science in Warsaw and Cracow were closed, and a year later, education in the field of political science was discontinued. Instead, "Basics of Marxism-Leninism" was introduced into the curriculum. Nevertheless, after World War II Poland along with Yugoslavia were the only countries of the Eastern Bloc in which the subject of "Scientific Communism" was not taught. The unfavorable political climate meant that political science as a separate research discipline ceased to exist, and its representatives added to the ranks of related disciplines.

After the events of October 1956, the revival in Polish political science could be clearly felt, and actually researchers dealing with political phenomena and processes started integrating in the internal as well as the external dimension. An institutional framework in the field of science and academic education was created. In 1957, the Polish Political Science Association (Polish: Polskie Towarzystwo Nauk Politycznych, PTNP) was established as a federation of specialist scientific societies concerned with research in the world of politics. PTNP became a member of the International Political Science Association (IPSA), within which it was very active.

Teaching "Basics of Marxism-Leninism" was abandoned in 1955, and from the academic year 1963/1964 the subject of "Basics of political science" was introduced (textbooks for this subject were prepared in larger academic centers). In 1982, the subject of "Political science" was introduced into the system of higher education. In the second half of the 1960s, political and scientific institutes in Cracow, Poznań, Lublin and Warsaw started to be established as research and teaching units. In 1967, the Institute of Political Sciences at the University of Warsaw was established (transformed into the Faculty of Journalism and Political Science in 1975).

In the 1970s, the process of further institutionalization of Polish political sciences continued. In 1972, the Political Sciences Committee of the Polish Academy of Sciences was established which showed the extent of consolidation of this young discipline among other sciences. A year earlier, the Central Methodical Center for Political Science Studies was established, which initially dealt with education, and later with methodological and theoretical studies in the field of political sciences. In the 1970s, five-year MA studies in political science were launched at universities in Gdańsk, Katowice, Cracow, Poznań, Warsaw and Wrocław. In the second half of the 1970s, the first doctorates in political science were defended, while the first habilitations in political science were defended in the 1980s.

The 1980s, and especially the turn of the 1980s and 1990s, which witnessed the systemic transformation, revealed a crisis in the functioning of political science (the closing down of several political science institutes, including those in Łódź and Toruń), which was partly due to the fact that this scientific discipline had an ideological function. The 1990s, especially its second half, and the next decade brought institutional development of political science, which was accompanied by a sort of fashion to study political science, as well as international relations and European studies. Majors in political science began to be offered by smaller academic centers (including Olsztyn, Opole, and Zielona Góra). New institutes and political science faculties were established, and they were granted the right to confer doctoral and postdoctoral degrees in political sciences.

At the beginning of the transformation, i. e. in the academic year 1989/1990, 3486 people studied political science in Poland (Krauz-Mozer, Borowiec, Ścigaj 2011: 174). In the following years, the number of students in this field grew and in the academic year 2004/2005 reached a record number of 55674 people. Political science has become a very attractive field of study – in the years 1999–2006 one in almost thirty students in Poland was a graduate of political science (Krauz-Mozer, Borowiec, Ścigaj 2011: 175). In the following years, the number of students dropped, especially in private universities (in 2008, there were 44270 people at political science studies in Poland, and only 25054 in 2012).

The group of political science academic teachers has also been strengthened, especially in the last dozen or so years. Earlier in Poland 10 to 30 doctorates were awarded annually in the field of political science, e. g. in 2000–28 doctorates, while in the following years this number increased, for example in 2010–155 doctorates. The number of habilitated doctors promoted in political sciences was also growing rapidly, e. g. in 2000–3, and in 2012–33.

According to the official data, in June 2014 there were 2388 scholars with an academic degree or title in the field of political science. This number breaks down into 152 professors (including 23 women), 292 habilitated doctors (including 67 women) and 1944 doctors (including 808 women) (Krauz-Mozer, Borowiec, Ścigaj 2015: 371). The emerging map of research interests within Polish political science is pluralistic, rich, and internally varied, although its core elements – the historical and institutionalist/neo-institutionalist approaches – are dominant, as expected (Krauz-Mozer, Borowiec, Ścigaj 2015: 374). In recent years, significant changes have occurred in the organizational and scientific structuring of political sciences, which was mainly caused by the declining number of students applying for political studies. In addition, the discipline was excluded from the humanities and included in the area of social sciences (2011).

Currently, political science is taught at almost all Polish universities (with the exception of Białystok and Kielce). 19 academic political science centers have the right to confer doctoral degrees in political sciences. The number of conferences, journals and publications has increased significantly. Nevertheless, the state of Polish political science is not satisfactory.

3 Teaching and learning

Changes related to the increasing availability of online tools have influenced the selection of teaching materials and tools in the field of political sciences in Poland (Table 1). A significant change in the approach to teaching, due to the general processes of digitalization and access to online tools, is noticed by 70 % of respondents. However, 26 % say "rather yes." A considerable minority note that it is "difficult to say" (3 %) or "rather not" (1 %).

Table 1. Perceptions of lecturers regarding changes in the approach to their own teaching and acquisition of knowledge among students

N=141 %	Definitely yes	Rather yes	Hard to say	Rather not	Definitely not
Do you see changes in your approach to teaching in connection with the general processes of digitalization and access to online tools?	70	26	3	1	0
Do you see any changes in students: behavior related to access to online solutions and how they acquire knowledge?	67	26	5	2	0

Focusing on the acquisition of knowledge among students, lecturers also notice a change. In the opinion of the overwhelming majority, "definitely yes" (67 %) or "rather yes" (26 %), one can notice changes in students' behavior related to the way they acquire knowledge, which results from access to online tools. However, lecturers do not feel strong pressure from students to introduce online solutions to the teaching-learning process (Table 2). According to half of them, students insist on increasing the role of online solutions in teaching. They feel this with varying intensity, however, because their answers included "definitely yes" (16 %) and "rather yes" (37 %). On the other hand, this pressure is not significant, because other lecturers do not observe such a trend. This allows us to draw a general conclusion that changes associated with digitalization of political science in Poland have significantly influenced the design and implementation of the teaching process. Lecturers' opinions indicate that they see changes in both their own and their students' behavior. It seems, therefore, that the current state of applying online tools in teaching is satisfactory for students, as the surveyed lecturers do not receive unambiguously strong signals to radically change their approach.

Table 2. Do you think students insist on increasing the role of online solutions in the teaching-learning process?

N=141	Definitely yes	Rather yes	Hard to say	Rather not	Definitely not
%	16	37	27	20	0

When it comes to detailed solutions, it is worth paying attention to the frequency and type of applying broadly understood online tools. According to respondents, the most frequently used online tools in the teaching-learning process, that is those applied at least once a week, include e-mail (88 %) and websites (82 %). The least often used are all kinds of instant messengers, which the vast majority never use. It is also worth noting the popularity of Google documents and forms and the YouTube channel, which are used at least once a week or once a month by about half of respondents.

One of the most important tools in the teaching process today are e-learning platforms. Their use is declared by 34.8 % of respondents, while the remaining ones do not use them to conduct classes. On the other hand, the vast majority of respondents (74.5 %) declare that their university has an appropriate tool to conduct classes through an e-learning platform. Only 17 % of respondents do not know whether their university has a platform for e-learning, while 8.5 % state that their university does not have one. So far, no Massive Open Online Courses (MOOCs) in political science have been recorded in Poland.

It appears there is no need for digital tools to become more sophisticated, as at present they fully meet students' and teachers' expectations. Considering the opportunities offered by the current online tools, it seems that they fulfill their role in the teaching-learning process in the field of political sciences. The opportunities to work on documents simultaneously in groups or to present multimedia content fully match the number and variety of

Table 3. Do you use online tools in your teaching?

N=141 %	At least once a week	At least once a month	At least once per semester	Never
e-mail	89	9	2	0
Websites	82	13	4	2
Documents / FormsGoogle	30	21	23	26
You Tube	30	30	25	18
Facebook	22	8	8	62
Twitter	7	6	6	80
WhatsApp	5	3	3	89
Skype	5	5	11	79
Others	19	13	10	57

incentives necessary to conduct classes in a proper and interesting way. The general trend increasing the role of digitalization at universities is similar throughout Poland and it is difficult to notice significant differences between individual universities. The situation is the same regarding political science as well as other fields of education and does not present any distinct differences.

Universities in Poland provide a technical possibility of using digital tools in the teaching process. Computers and software fully ensure the potential for using the Internet and digital tools. This is all possible because public computers in libraries as well as open access to the Internet through the Eduroam network enable the use of wireless Internet in the vast majority of universities in Poland. However, universities do not show any clear initiative to provide trainings in the use of technical infrastructure and software. Such trainings would be particularly useful for employees whose teaching experience is long. Most processes related to the course of studies are carried out via the Internet. Significantly, one of the symbols of studies in Poland, that is the paper version of the 'student record book' (Polish *indeks*), has been removed.

The main online tools include:

- IRK – Online Registration of Candidates. Its main task is to conduct the whole process of recruiting candidates for studies electronically.
- USOS – University Student Service System. It is the entire IT infrastructure which collects and stores all the information about the course of studies of each student, such as: registration for subjects, curriculum, grades, etc.
- APD – Archives of Diploma Papers. With its help, supervisors and reviewers check and approve the thesis and issue reviews.
- OSA – Open Anti-plagiarism System. It is used to check the authenticity of the diploma thesis in terms of its similarity to other works or the content of websites.

Digitalization is not sufficiently covered. The excessive use of digital tools in the teaching process is prevented most importantly thanks to the emphasis on direct contact and interaction between lecturers and students. General standards for the design of curricula of studies in political science require planning an appropriate number of student contact hours with lecturers. The specified number of hours must be implemented in the form of lectures or classes. In addition, students have a certain number of hours allotted to work on their own at home. Therefore, lectures and classes cannot be replaced by online contact. On the

other hand, it can be presumed that the remaining studying time, referred to as self-study, serves precisely as individual education without the participation of a lecturer. That is why, it is difficult to find time and methods to increase the share of online tools in the study process in the current formal conditions at Polish universities.

Thus, one can identify two main limitations related to the progress of digitalization. First of all, universities do not conduct advanced online tools-oriented workshops for academic teachers. Secondly, general standards and indicators of academic curricula impose a certain number of hours for each course during which students and teachers have to direct contact, which considerably impedes the development of e-learning.

Employment at a Polish university does not involve creating an individual position – a professorship with a specific denomination like – in the context of digitalization – Politics and the Internet. Therefore, it cannot be demonstrated that such positions are created or that they are not created, for example, because of the university's lack of interest in the subject. Employees are employed as a result of contests for a particular vacancy, but in most cases a candidate is obliged have a wide specialization, preferably within specific sub-disciplines, such as electoral systems, political parties or foreign policy. So far Politics and the Internet as a sub-discipline has not become so popular and formalized as a field of study that one can see vacancies for people with such academic interests and research achievements.

In the Polish circumstances, there is a tendency to create institutional foundations in the form of organizational units at universities, such as institutes or departments, and not individual professorships. Analyzing the organizational structure of particular departments that conduct research and education in the field of political science, it can be stated that none of them has an organizational unit dealing with connections between politics and the Internet. Therefore, there are no formal conditions for institutionalizing research in this field of study.

Also, the Polish Political Sciennce Association, among ten research sections, has none related to the Internet and digital problems. There are only: methods, techniques and research tools; east asia research; political thought; administration and public policy; political leadership; international relations; political parties and party systems; electoral research; asia research; quality of democracy. The Political Sciences Committee of the Polish Academy of Sciences, among sections delineated in its internal structure, does not have any devoted to digital issues. A positive manifestation of teaching activity in the context of digitalization is the example of the Institute of Political Studies at the University of Łódź. In the field of political science 35+, which is addressed mainly to the elderly and economically active, some subjects are carried out via the Internet (on an e-learning platform).

To sum up the part regarding teaching and learning in political science, it is worth emphasizing that the essence of teaching is achieving goals. Digital tools are extremely helpful in this and are constantly gaining in importance. This is mainly thanks to the new generation of students who grew up in a digital environment and the need to adapt teaching methods and techniques to their needs. One can observe constant positive progress in digitalization of political sciences. Considering present trends, it can be said that its further development will concern a few aspects, the first being an increasing role of online tools in the teaching process. Secondly, the range of subjects related to digitalization of political life will be greater, especially those concerned with e-government and e-voting.

The main threats stemming from digitalization of political sciences include paying excessive attention to online tools in comparison to the focus on interpersonal relationships between students and teachers. It is worth remembering that digital tools should remain supportive tools, not the main tool and goal of the teaching process in which the purpose and content of the teaching are secondary.

4 Research

A minority of respondents have their accounts on social networking sites and use the Internet to promote their own research. Out of all respondents, 27 % declare to have their own website which they use to present their scientific content and their own scientific achievements. The vast majority of respondents use scientific websites (Table 4) at least once a week, websites (94 %) and e-mail (90 %). Frequently used online tools also include Google documents and forms, and to a lesser extent Facebook and YouTube.

Table 4. Do you use online tools in scientific work?

N=141 (%)	At least once a week	At least once a month	At least once per semester	Never
Websites	94	6	0	0
e-mail	90	8	2	0
Documents / forms Google	40	19	26	15
Facebook	28	12	8	52
You Tube	19	29	22	30
Twitter	9	6	8	77
Skype	4	10	20	66
WhatsApp	3	7	3	87
Others	19	14	11	56

Table 5. Do you use your accounts on social networking sites to promote scientific content?

%	Definitely yes	Rather yes	Hard to say	Rather not	Definitely not
Facebook (N=116)	24	19	4	15	38
Twitter (N=92)	10	9	2	9	74
YouTube channel (N=95)	3	5	2	13	77
Instagram (N=90)	0	1	1	7	91
Others (N=104)	18	11	2	9	60

Another aspect is the use of social and scientific websites to promote their own scientific activity (Table 5). Among respondents, the latter enjoy greater interest.

When it comes to social networking sites, it can be said that they are not popular as tools for academic work. Respondents most often use Facebook to promote their own academic activity (definitely yes – 24 %, rather yes – 19 %). Twitter is respectively less popular (definitely yes – 10 %; rather yes – 9 %). Scientific websites are much more popular, as in total about half of respondents (Table 6) use them. According to the surveyed researchers, they most often use Google Scholar Citations (34 %), Academia.edu (32 %) and ResearchGate.net (26 %), while Figshare.com (1 %) is the least popular.

Table 6 Do you use scientific websites to promote your own scientific activity?

N=141 %	Definitely yes	Rather yes	Hard to say	Rather not	Definitely not
Google Scholar Citations	34	18	5	18	25
Academia.edu	32	16	3	18	31
ResearchGate.net	26	14	4	18	38
Figshare.com	1	0	3	19	77
Others	6	7	6	18	63

The last of the issues to be analyzed is publishing in open access. Planning the place of publication, respondents consider free online access of readers to the journal (Table 7). This aspect is definitely taken into account by 34 % of respondents, while 18 % say that they rather consider it. 25 % definitely do not pay attention to this issue.

Table 7. When planning a place of publication, do you take into account free online access of readers to the journal (Open Access)?

	Definitely yes	Rather yes	Hard to say	Rather not	Definitely not
N=141 %	34	18	5	18	25

This question is important in the context of the digital evolution of Polish scientific journals and the desire to share content in open access. Our own observations clearly indicate that in the last decade all journals have significantly expanded their presence on the Internet. Two factors influenced such a state of affairs. First of all, this is the dynamics of the impact of digitalization processes on political sciences discussed here. Secondly, these are the requirements of the Ministry of Science and Higher Education with reference to awarding points to scientific journals for the purposes of parameterization. Individual faculties of Polish universities are subject to periodic parameterization and are compared among each other in specific areas. One of the criteria is the score of the publications published by the faculty staff. Points are obtained depending on the place of publication. It is therefore important to publish in journals with high scores. And one of the requirements in the evaluation of academic journals is an active website, e. g. with the list of reviewers, or the declaration regarding the original version in paper or digital form.

Taking into account Polish political science journals (Table 8), we can state that the vast majority of them – 28 titles – share their content in the open access formula. Only six of them require purchasing the published articles. Such a proportion seems to be very beneficial from the point of view of readers and authors, because it gives both academics and students of political science the opportunity to freely circulate current research results and access knowledge.

In the context of conducting research in the field of political science and the impact of digitalization on it, it is worth mentioning the use of digital tools or the Internet as an object and subject of research. Using the available databases, we can identify theses for academic degrees included in the "Political science, Politics" classification (Table 9). After narrowing down the search to theses containing the term "the Internet" in the title, we get 15 results. The first thesis for the doctoral degree was: "The role of the Internet in the development of democracy in Poland". The thesis was written by Maria Nowina Konopka, supervised by Arkadiusz Żukowski, and defended at the Faculty of Political Science and Journalism, University of Warsaw, on June 28, 2006. Until now, however, there has been no thesis on the subject of the Internet for the degree of habilitated doctor or professor.

Table 8. Polish political science journals

Title of the journal	Points	Open Access
Annales Universitatis Mariae Curie-Skłodowska, sectio K – Politologia	12	YES
Annales Universitatis Paedagogicae Cracoviensis, Studia Politologica	7	YES
Athenaeum. Polskie Studia Politologiczne	14	YES
Civitas. Studia z Filozofii Polityki	7	NO
Chorzowskie Studia Polityczne	9	YES
Cywilizacja i Polityka	9	YES
Gdańskie Studia Międzynarodowe	4	YES
Historia i Polityka	10	YES
Krakowskie Studia Małopolskie	5	YES
Krakowskie Studia Międzynarodowe	9	YES
Kwartalnik Naukowy OAP UW „e-Politikon"	8	YES
Pogranicze. Polish Borderlands Studies	8	YES
Polish Political Science Review	6	YES
Polish Political Science Yearbook	13	YES
Politeja	13	YES
Polityka i Społeczeństwo	9	YES
Prawo i Polityka	4	YES
Preferencje Polityczne	9	YES
Przegląd Geopolityczny	6	YES
Przegląd Politologiczny	14	YES
Przegląd Sejmowy	11	YES
Res Politicae	4	YES
Społeczeństwo i Polityka	8	YES
Stosunki Międzynarodowe – International Relations	12	NO
Studia Europejskie	12	YES
Studia Politicae Universitatis Silesiensis	7	YES
Studia Politologiczne	13	NO
Studia Polityczne	13	NO
Studia Wyborcze	9	NO
Sprawy Międzynarodowe	12	NO
Środkowoeuropejskie Studia Politologiczne	14	YES
Świat Idei i Polityki	5	YES
Wrocławskie Studia Politologiczne	7	YES
Zeszyty Naukowe Uniwersytetu Szczecińskiego Acta Politica	9	YES

In addition to the subject of the Internet and digital tools, it is worth pointing out examples of the use of the open access formula when publishing a monograph. In the field of political science, using the creative commons 3.0 licenses, for example, these are the following books: Maciej Hartliński, *Political leadership. Introduction*, Olsztyn 2012 (Hartliński 2012) and Przemysław Żukiewicz, Radosław Fellner, *Polish political science in the face of the challenges of digital science*, Wrocław 2015 (Żukiewicz, Fellner 2015).

What is more, when buying books on websites of both university publishing houses and other publishers, one has the option of choosing whether to buy books in the paper or electronic form. The latter is usually cheaper by around 10 % than the former. It is also worth

mentioning that electronic questionnaires for surveys are increasingly often used and distributed via the Internet. The best example is the questionnaire used for the purposes of this study.

Table 9. PhD dissertations in the field of political sciences on the subject of the Internet

Author	Title	Date
Maria Nowina Konopka	The role of the Internet in the development of democracy in Poland	28/06/2006
Dariusz Skalski	Policy of counteracting online crime in Poland	11/07/2006
Anna Maria Przybylska	Internet as a new medium as compared to well-established patterns of political communication in the local community	12/12/2007
Daniel Dariusz Mider	Forms of political participation on the Internet	11/06/2008
Jakub Krzysztof Żurawski	The Internet as a modern means of electronic election communication and its application in Polish parliamentary campaigns	20/01/2009
Jacek Wyszyński	Social implications of the phenomenon of unlawful violations of intellectual property on the Internet	28/10/2009
Michał Bukowski	Political communication on the Internet. Government websites of selected countries of the world	24/11/2009
Andrzej Lasota	Manipulation of information on the Internet	25/10/2010
Krzysztof Kowalik	The Internet as a contemporary form of the local Agora. Official websites of the Świętokrzyskie Voivodship (Holy Cross Province) communes as a place for the implementation of the citizens' right to information	26/01/2011
Magdalena Bierzyńska-Sudoł	The process of maintaining the national identity of contemporary Polish migrants in the Internet space (a case study of Great Britain and Ireland 2004–2011)	18/09/2012
Katarzyna Jolanta Młyńczak-Sachs	Internet elections and legitimization of democratic processes	26/10/2012
Przemysław Piotr Baciak	Political participation on the Internet and its implications for the democratic political system in Poland	4/07/2013
Paulina Wiśniewska	The image of woman in the Internet media. A comparative analysis of the Polish and German online press addressed to women at the end of the first decade of the 21st century	21/10/2013
Marcin Domagała	The image of the conflict between Georgia and Russia over South Ossetia and Abkhazia in August 2008 in the Polish printed press and on the Internet	23/03/2014
Monika Tatiana Kożdoń-Dębecka	The role of Internet tools in presidential election campaigns in the USA in the years 2000–2012	9/07/2014

Source: http://nauka-polska.pl/#/results?_k=tf8fv0 [Accessed: 2-Jan-2018].

Political scientists collaborate with scholars of communication or media science more often than before. This stems from the origination of new research subjects, but also from the currently spreading trend of interdisciplinary cooperation. Establishing research teams and publishing in collaboration are yet primarily caused by sharing research interests and the need to look at digitalization in a broader perspective. Apparently, there are no new research centers in or beyond universities dedicated to the issues of political science and digital aspects. Research cooperation takes place in a definitely non-institutionalized way, as it is based mainly on informal research groups of scholars who share academic interests.

An important premise for digitalization of political science in Poland are the nationwide guidelines for online databases for all scientific disciplines. In the context of obtaining academic degrees, which are awarded in Poland according to the same procedures in all disciplines and all eligible universities, the most important is the database on proceedings concerning the academic degrees of doctor, habilitated doctor and full professor. The website of the Central Commission for Academic Degrees and Titles (http://www.ck.gov.pl) contains data concerning: the candidate, the committee members, the contents of the review, resolutions on awarding or refusing to award a degree or a scientific title.

An important source of information is the Information Processing Center – National Research Institute (https://www.opi.org.pl). It collects, analyzes and provides information about the research and development sector. In comprises the following elements:

1. "Science in Poland," which consists of the following collections:
   1.1. "Institutions" – scientific and research and development institutions (state and private universities, units of the Polish Academy of Sciences, research institutes); institutions and organizations supporting science (archives, libraries, museums); central administration bodies as well as institutions and non-governmental organizations responsible for the shape of the state's scientific policy; societies; scientific associations and foundations acting for science.
   1.2. "People of science" – Poles (having at least a doctoral degree); Polish scholars abroad; foreigners working in Polish scientific and R&D institutions and foreigners who are members of the Polish Academy of Sciences and the Polish Academy of Learning, as well as supervisors and reviewers of Polish research works.
   1.3. "Research works" (the SYNABA system) – scientific and research and development works; PhD and habilitation theses.
   1.4. "Scientific conferences, fairs and exhibitions" – events organized by Polish science-related institutions.
   1.5. "Archival projects" – research projects a scientist authored and supervised, development projects, commissioned projects and specific projects.
2. "POL-on" collects all data on all Polish scientific units, which can be accessed pursuant to the laws and regulations of the Ministry of Science and Higher Education. These are registers of higher education institutions, information on academic majors and profiles, aggregated numerical data on students, researchers, etc.
3. "System of supporting the selection of reviewers" collects information on potential reviewers and presents evaluation proposals appropriate for a specific scientific article or research application.
4. "Database of research equipment" is a generally available, free database of information on research resources of research centers. One can search for a device taking into account its name, year of production, technical specification or scope of application. The process of applying for research grants from state funds is carried out exclusively via the Internet. This is done through the Integrated Services System for Science / Stream Financing Services (https://osf.opi.org.pl). The system is designed to register and handle applications for financing science which are received by the Minister of Science and Higher Education, the National Science Center, the National Center for Research and Development.

Digitalization of political science research is heading in the right direction. Polish political scientists notice these changes and modify their research to take digitalization into account, which finds its reflection in a growing number of e-publications. Moreover, applying new research tools, and most importantly addressing issues which are most current in the worldwide perspective have a positive effect on the development of political studies in Poland. That is why, beyond any doubt, one should emphasize that digitalization exercises a positive effect on these studies. At present, it is so positive that it might be difficult to identify potential threats and problems which researchers could encounter.

5 Conclusions

The conducted research, although preliminary, allows one to draw the first conclusions on digital change affecting political sciences in Poland. Polish political science, regarding the process of education and conducting research, successfully adapts to changes related to digitalization. The study shows that the majority of respondents observe changes in their approach to teaching work in connection with general processes of digitalization and access to online tools. In almost identical proportions, changes in students' behavior regarding the way they acquire knowledge are noticed.

Political scientists in Poland use the Internet in their teaching and scientific work. The most frequently used online tools include e-mail and websites. The popularity of Google documents and forms as well as the YouTube channel is also significant. The teaching process is handled with the help of the Internet, starting with registration for selected subjects, through entering grades from exams, to the procedure related to the defense of the diploma thesis. Note worthily, 28 out of 34 political science journals in Poland make their content available in the Open Access formula. This clearly signals that they are adapting to the process of digitalization and open access to the latest results of scientific research.

Both the obtained data as well as the proposed conclusions are therefore a valuable source of information. They also constitute a good starting point for further research in the field, both in the context of time and in-depth analysis within selected research subjects.

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Digitalization and Political Science in Portugal

Carlos Jalali

1 Introduction

In the late 1990s, famed management guru Peter Drucker predicted that the Internet revolution would transform higher education, going so far as to predict that, within 30 years, the residential model of higher education would disappear, with university campuses becoming vestiges of an outdated model, their structure "hopelessly unsuited and totally unneeded" for the Internet age (Drucker in Lenzner and Johnson 1997).

In this chapter, we analyze how digitalization has impacted on political science in Portugal, examining it both with regards to the teaching of the discipline and the research carried out. This chapter begins by presenting the broader context of the digital revolution in Portugal in terms of Internet usage and penetration in general; and then characterizing the country's higher education system as well as analyzing the position and evolution of the discipline of political science within Portuguese higher education.

The chapter then examines the impact of the digital revolution on the teaching of political science in Portugal. In this regard, we find that, while Drucker's prediction is still almost a decade away from its expiry, forecasts of a radical transformation of higher education teaching in general – and of political science more specifically – appear to be greatly overstated. Rather, Portuguese higher education institutions have largely adapted their modes of operation to incorporate new digital technologies in teaching, without fundamentally altering the nature of teaching.

While the impact on teaching appears to be mitigated, the same cannot be said with regards to research in political science. As this chapter will show, political science research on digital topics in Portugal is well above the international average, and researchers have been very adept at incorporating digital tools in their work.

2 The digital revolution in Portugal: the broader context

In the mid-1960s, Portugal was aptly characterized as a "dual society" (Nunes 1964), a reflection of the country's high levels of political, social, educational and economic inequality, dividing the more resourced populations in large urban centers from those in considerably less developed rural areas.

While democratization in 1974 has significantly reshaped Portuguese society, remnants of this dual society persist. The country is one of the most unequal of the European Union in terms of income. In the most recent comparative data, Portugal has the third highest Gini index of Western Europe (only marginally below Greece and neighboring Spain); and the 7th highest of the EU-28 (Pordata 2018a).

Educational attainments are also very unequally distributed. More than half (52 %) of the population between 25 and 64 years of age has not completed secondary education, placing Portugal at a level that is more than twice the EU-28 average (22.5 %) and with lower attainments than all EU countries bar Malta (Pordata 2018b). This inequality is further evidenced when we consider the other extreme. While the proportion of higher education graduates aged 25–64 in Portugal is also below the EU average, the difference is much smaller: 24 % in Portugal, against an EU-28 average of 31.4 % (Pordata 2018c).

This duality percolates through to the digital arena also. The most recent data for 2016 showed that 70 % of the Portuguese population had used the Internet from any location in the last three months, with the country ranking 67th in the world, below countries such as Moldova; Belarus; Trinidad and Tobago; Saudi Arabia; Kazakhstan; Azerbaijan; Puerto Rico and Lebanon, inter alia (World Bank 2018). This proportion is also more than 10 percentage points below the average for the EU (81 %).

The data on more intensive Internet usage is very similar. In 2017, 71 % of residents in Portugal had accessed the Internet at least once a week, a full 10 percentage points below the EU average of 81 % (Pordata 2018d). However, this average in Portugal masks considerable variance within the population, consistent with the notion of a dual society. Thus, practically all – 98 % – of residents in Portugal with tertiary education accessed the Internet at least once a week in 2017, a proportion that is higher than the EU average. However, Internet access levels are considerably lower for individuals with lower educational attainments. In the case of individuals with at least upper secondary and post-secondary non-tertiary schooling, 63 % accessed the Internet at least once a week, against an EU average of 83 %; and for those with educational attainments below that, the proportion fell to 52 % in Portugal, against an EU average of 61 %.

Indeed, this duality may help explain the gradual decline of Portugal in the international rankings on Internet access. In 1995, Portugal ranked 26th in the world. By 2000, it had dropped to 35th; then to 49th (2005) and 54th (2010), before its current ranking of 67th in 2016 (World Bank 2018).

In terms of age, unsurprisingly it is among the young that Internet access is highest in Portugal, with 99 % of 16–24-year olds and 97 % of 25–34-year olds accessing the Internet at least once a week in 2017, with Portugal above the EU-28 average in both cohorts (Pordata 2018e). While Internet access in Portugal remains high at 91 % (and equal to the EU average) among 35–44-year olds, older age groups have substantially lower levels of Internet access, and deviate considerably from their European counterparts. Thus, Internet access was of 71 % among 45–54-year olds in Portugal, against an EU average of 83 % in 2017; of 52 % in 55–64-year olds (EU average: 69 %); and stood below a third (29 %) in those aged 65 and above in Portugal, well below the EU-28 average of 48 % in that age cohort.

Overall, then, Portugal is a country marked by a significant digital divide, a reflection of wider inequalities. While Internet access has grown significantly, it remains unequally distributed, being concentrated in those with higher levels of educational attainment and younger cohorts.

3 Higher education and political science in Portugal: a brief contextualization

Portuguese higher education institutions are divided in universities and polytechnics. Both universities and polytechnics can be public or private[1]. Until 2018, only universities were allowed to provide doctoral degrees, with masters and undergraduate degrees provided by both universities and polytechnics.

In 2017, Portugal presented a total of 286 higher education institutions, of which 121 (42 %) are universities and 165 (58 %) are polytechnics (Pordata 2018f). However, the bulk of students are in universities. Of the 361,943 students enrolled in higher education in 2017, 65 % (235,214) were in universities, against 35 % in polytechnics (126,729) (Pordata 2018 g). The total number of enrolled students represents some 3.5 % of Portugal's population of a little over 10 million.

The majority of higher education institutions are public: 180 (63 %), while private ones account for 37 %, numbering a total of 106 (Pordata 2018h). This disproportion is even further accentuated when we take the number of students into account, with 84 % enrolled in public institutions and 16 % in private ones (Pordata 2018i).

Let us now turn our attention to political science courses in Portugal. When we consider political science as a whole, with its various subfields, we can identify a total of 92 degree courses being offered in Portugal in June 2018 that include political science. As table 1 shows, the majority of these courses are Master's, with 39 at this level. These Master's degrees are typically two-year courses, with a total of 120 European Credit Transfer and Accumulation System (ECTS) credits. The next most common type of degree involving political science are undergraduate degrees (known in Portugal as *Licenciaturas*). These are typically three-year courses, with a total of 180 ECTS credits. As table 1 also shows, more than 75 % of all degrees are offered in public institutions, with public universities cornering a greater proportion of degree courses as we move up to Master's and PhD levels.

Table 1: Degree courses that include political science in Portuguese universities in 2018

	Undergraduate	Master's	PhD
Public institutions	22	30	18
Private institutions	11	9	2
Total	33	39	20

Data compiled using the information on degree courses that have been approved by the Portuguese Agency for Assessment and Accreditation of Higher Education (*Agência de Avaliação e Acreditação do Ensino Superior* – A3ES) and were listed as functioning by the A3ES in July 2018. The criteria for classifying a degree as political science were the same as used in Vaz-Pinto et al (2015) and Camerlo, Cristo and Koçak (2017).

As noted, this total encompasses courses across all sub-fields of political science, as well as courses that have include a political science element in combination with other disciplines (such as the PhD in Territory, Risk and Public Policy; the undergraduate degree in Languages and International Relations; the Master's in History, International Relations and Cooperation; or the various interdisciplinary European Studies courses, often taught by Literature Faculties).

Courses that are solely in subfields of political science account for two-thirds of this total (61 degree courses). These 61 degrees are offered by a total of 19 higher education institutions (HEIs), of which 18 are universities and one is a polytechnic (the *Instituto*

[1] The Catholic University is the one exception here, having a hybrid status, characterizing itself as a non-State public university. As its courses do not receive public funding, we will classify the Catholic University as a private university in this chapter.

Politécnico de Leiria, which has both undergraduate and Master's degrees in Public Administration).

Out of these 19 HEIs, 10 are public (*Instituto de Ciências Sociais – Universidade de Lisboa, ICS-UL; Instituto Politécnico de Leiria; Instituto Superior de Ciências Sociais e Políticas – Universidade de Lisboa, ISCSP-UL; ISCTE – Instituto Universitário de Lisboa, ISCTE-IUL; Universidade dos Açores; Universidade de Aveiro; Universidade da Beira Interior; Universidade de Coimbra; Universidade de Évora; Universidade do Minho; Universidade Nova de Lisboa, UNL*); and the remaining nine are private (*Universidade Autónoma de Lisboa; Universidade Católica Portuguesa; Universidade Fernando Pessoa; Universidade Lusíada; Universidade Lusíada Norte; Universidade Lusófona; Universidade Lusófona Porto; and Universidade Portucalense).*

Table 2 provides an overview of the degrees that are exclusively in sub-fields of political science. As can be seen, the largest group are degrees in international relations, followed by those in political science. In total, there are 44 degree courses in political science and international relations, either separately or together, a total that is almost half of the 92 degree courses in political science as a whole.

Table 2: Degree courses solely in political science sub-fields, 2018

	Undergraduate	Master's	PhD	Total
Political Science	4	6	5	15
Political Science and International Relations	5	2	2	9
International Relations	8	8	4	20
Public Policy	0	1	2	3
Public Administration	4	4	1	9
Political Philosophy	0	1	0	1
International Relations and European Studies	3	1	0	3

Notes:

1. Data compiled using the information on degree courses that have been approved by the Portuguese Agency for Assessment and Accreditation of Higher Education (A3ES).
2. The political science degrees include the undergraduate degree in political science and Electoral Studies offered by the private Universidade Lusófona do Porto; and the PhD in Comparative Politics offered by the ICS-UL.

As figure 1 shows, the number of degree courses in political science has grown steadily over the past decade. This increase is all the more remarkable if we take into account that this period saw a considerable retrenchment in Portuguese higher education, with some 1,500 degrees being closed between 2010 and 2013, a number that represented about a third of all higher education degrees in 2010 (Silva 2013).

The increase in the number of degree courses is also reflected in the increasing number of students in political science as a whole. Analyzing the data in Camerlo et al (2017:51), we can find a 21 % increase between 2007 and 2012 in the number of students enrolled in political science degree courses. This increase in political science outstrips the rise in the overall numbers of students in higher education in Portugal as a whole by some 15 percentage points, with the latter increasing 6 % over the same time period (Pordata 2018j).

Overall, then, political science is a discipline in stark growth in Portugal. This increase is all the more remarkable when we take into account the late development of political science in the country. The first degree course in any sub-field of political science was only established in 1975, with a degree course in international relations at the University of Minho; and by 1998 – year in which the Portuguese Political Science Association (*Associação Portuguesa de Ciência Política*, APCP) was founded – only 13 degree courses had

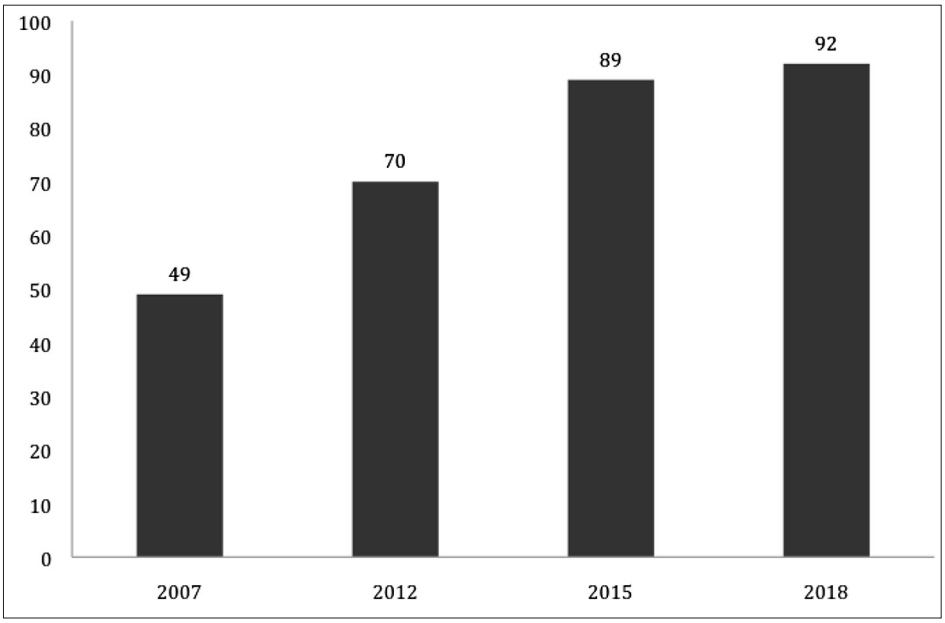

Figure 1: Number of political science degree courses offered in Portuguese universities

Notes:

1. The numbers for 2007 and 2012 obtained from Vaz-Pinto et al (2015:387).
2. The number for 2015 was calculated from the data in table 2 of Camerlo et al (2017:48–49), correcting for the double counting of two PhD programs in that data (the PhD in political science that is a consortium between the Universities of Aveiro and Beira Interior; and the PhD in Territory, Risk and Public Policy, that is a consortium between the Universities of Aveiro, Coimbra and Lisbon).
3. The numbers for 2018 were obtained using the information on degree courses that have been approved by the Portuguese Agency for Assessment and Accreditation of Higher Education (A3ES) and were listed as functioning by the A3ES in July 2018 (data compiled from: http://www.a3es.pt/pt/acreditacao-e-auditoria/resultados-dos-processos-de-acreditacao/acreditacao-de-ciclos-de-estudos). The criteria for classifying a degree as political science were the same as used in Vaz-Pinto et al (2015) and Camerlo et al (2017).

been created in the core sub-fields of political science and international relations in Portugal (Camerlo et al 2017:47), less than a third of what these sub-fields now represent.

The growth of Portuguese political science in terms of teaching is also reflected in terms of research. Figure 2 presents the number of publications in political science (including the sub-fields of international relations and public administration) authored by researchers based in Portuguese institutions that are indexed in the Web of Knowledge database. Figure 3 has the number of PhDs in political science completed in Portugal as well as those registered in Portuguese universities but carried out abroad.

Overall, we can identify three broad periods in this data. The first, from the mid-1970s till the end of the 1980s, can be described as a period of emergence for political science, with sporadic publications and few PhDs. As figure 2 illustrates, the first article in political science indexed in Web of Knowledge by a researcher based in Portugal dates to 1977; and, until the end of the 1980s, the number of publications in the discipline was 14. While this does constitute an average of just over one article per year over the 13-year period from 1977 to 1989, it should be noted that in almost half of this period – six years – there were no political science publications indexed in Web of Knowledge from researchers based in Portugal. In terms of PhDs, the number is much the same, with a total of 15 PhDs in political science from 1974 until 1989. That the majority of these (8) were completed abroad is a further reflection of the underdevelopment of Portuguese political science at the time.

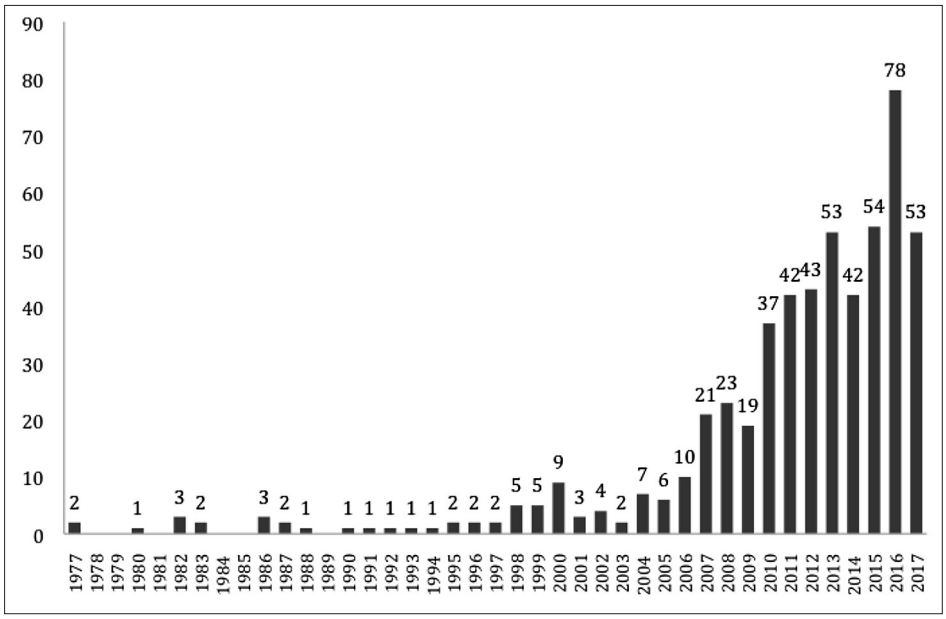

Figure 2: Number of publications in political science indexed in Web of Knowledge by researchers based in Portuguese institutions
Data compiled from the Web of Knowledge database.

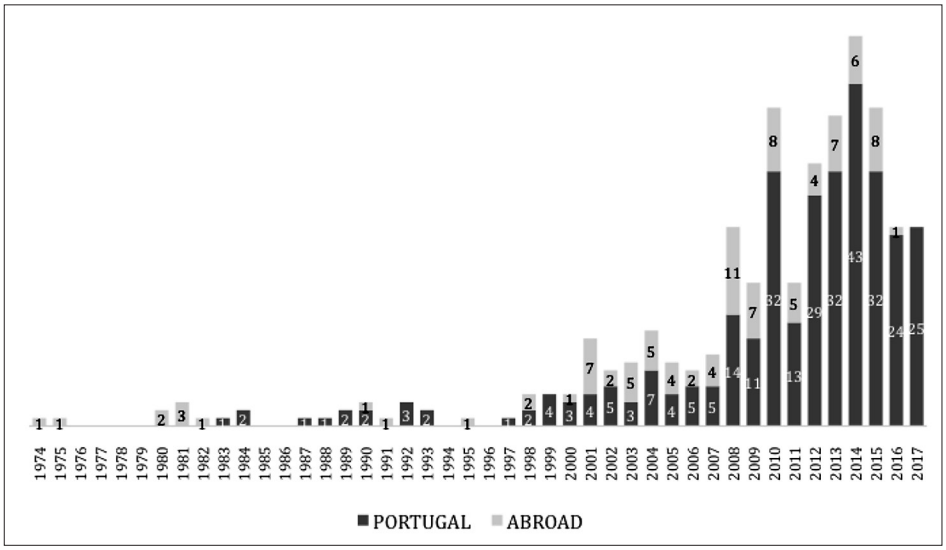

Figure 3: Number of PhDs in political science in Portugal (completed in Portugal, and completed abroad and registered in Portugal)
Data compiled from the *RENATES Platform (Registo Nacional de Teses e Dissertações), Direção-Geral de Estatísticas da Educação e Ciência,* available online at: https://renates.dgeec.mec.pt

This underdevelopment of Portuguese political science was well recognized at the time. In the editorial for the inaugural issue of the first political science journal in the country, published in 1985 – the *Revista de Ciência Política* – its editor assessed the discipline and found it to be weakly developed (Vaz-Pinto et al 2015), a conclusion that is borne out by the above data.

To this can be added the confluence between political science research and an active participation in politics, well noted by David Goldey (Pinto 2011:608). Indeed, the author of that first editorial of the *Revista de Ciência Política*, who was also one of the founders of the journal, aptly illustrates this pattern, as he was none other than José Manuel Barroso, prime minister of Portugal from 2002–2004 (and leader of Portugal's center-right Social Democrat Party, PSD, from 1999 to 2004), before becoming President of the European Commission from 2004 to 2014. Indeed, Barroso's career in government begins almost simultaneously with the publication of the *Revista de Ciência Política*, being appointed as an under-secretary of state in 1985 and remaining in government until 1995 – as a secretary of state from 1987 till 1992 and then as Minister for Foreign Affairs – before losing a bid for the leadership of the PSD in that year. Yet Barroso's connection with the discipline also endured over this period, so much so that he is not only one of the founding members of the Portuguese Political Science Association but also a member of its first executive committee of 1998.

The second period, stretching from the 1990s till the mid-2000s, is marked by the growing institutionalization of research in political science and a steady increase in the number of political science PhDs. As figure 2 reflects, from 1990 onwards there has been at least one publication indexed in Web of Knowledge by a researcher based in Portugal per year, marking a degree of continuity that was lacking in the 1970s and 1980s. Moreover, from 1990 to 2005 the number of publications more than tripled vis-à-vis the earlier period, rising to a total of 52 publications indexed in Web of Knowledge. The increase in the number of publications is also reflected in the growing number of political science PhDs, which more than quadrupled to 69. The increasing institutionalization of political science in Portugal is also reflected in the growing proportion of PhDs completed in Portugal, which became the majority (58 %) during this period.

Finally, from the mid-2000s onwards we find the establishment of political science as a solid research area in Portugal. From 2006 on, the number of political science publications indexed in Web of Knowledge has been in the double digits every single year. The number of publications is of 475 in the twelve years from 2006 to 2017. This number represents almost 90 % of all indexed publications in political science by researchers based in Portugal (total of 541 for the period until 2017), and confirms the considerable evolution of the discipline. This is further confirmed when we place the output of political science within the broader context of the Portuguese scientific community. Across all disciplines, the total number of indexed publications by researchers based in Portugal increased by 3.5 times in the period of 2006–2017 vis-à-vis the period of 1990 to 2005. In the case of political science, however, this increase was almost tenfold, with the indexed output from 2006–2017 standing at 9.7 times of that for the 1990–2005 period.

This establishment of Portuguese political science is also evidenced in the number and origin of its PhDs. A total of 340 doctorates were concluded during the 2006–2017 period, a number that accounts for 80 % of the total of 412 political science PhDs since 1974 and represents an increase of 375 % vis-à-vis the previous period. Moreover, the period is marked by the prevalence of PhDs completed in Portuguese universities, with these accounting for 4 out of every 5 doctorates between 2006–2017.

Overall, then, the picture is one of political science developing rapidly, especially in the 1990s and early 2000s, and becoming solidly established since the mid-2000s. This description is valid both in terms of teaching and research. With regard to the former, the

number of degree courses in 2018 is a far cry from the numbers in the late 1990s, let alone the 1980s. As for research, the growth is reflected in the number of indexed publications and of completed PhDs, with both seeing a considerable increase since the mid-2000s. Having provided this overview of the discipline in Portugal – as well as the structure of the Portuguese higher education system – we next examine the impact of the digital revolution on the teaching and research of political science.

4 The limited role of digital tools in teaching political science

In this section we consider the impact of the digital revolution on the teaching of political science in Portugal, focusing our analysis on the 19 HEIs that offer courses that are solely within one of the sub-fields of political science.

Overall, we find that the digital revolution has had a limited impact on teaching at Portuguese higher education institutions. With few exceptions, digital tools have served essentially to complement existing modes of teaching, rather than transforming these. As for the discipline of political science, the patterns of usage of digital tools in teaching tend to resemble this broader national pattern. Overall, then, political science in Portugal is more of a follower than a leader when it comes to the impact of the digital revolution on teaching.

All of the 19 higher education institutions (HEIs) considered have a learning management system (LMS) / e-learning platform. As table 1 illustrates, the majority of HEIs use open-source platforms. Out of the 19 institutions offering political science degree courses, 16 (84 %) use open-source platforms, with almost all of these adopting Moodle (15). The three exceptions to this pattern are all public universities, with two universities using the Blackboard platform (Minho and ISCTE-IUL), while the University of Coimbra has a proprietary platform called inforestud@nte (https://inforestudante.uc.pt).

It is not possible to carry out an empirical analysis of the contents of the e-learning platforms for the various curricular units in political science degree courses, as practically all curricular units have their access restricted to enrolled students.

Nevertheless, the existing evidence points to the conclusion that, while the availability of these platforms is universal, the extent to which they are actually used varies considerably, and is largely dependent on the individual faculty member. Indeed, one can find very differing uses within the same institution and even within the same degree course. Some – albeit very few – individual faculty members use these e-learning platforms extensively as an interaction and collaboration tool with students (Ferreira 2018). However, these coexist with a far larger group of faculty members that use them as a repository for information (e. g., sharing PowerPoint slides from classes; sharing readings for classes; provide general information) and as a means for students to submit work assignments; while other faculty still do not use these platforms at all. Overall, the prevailing mode of usage appears to be what Francis and Raftery (2005) term a Mode 1 of e-learning engagement, with the web used to "distribute course information and carry out course administration" (p. 2).

This conclusion is borne out by the author's personal experience as well as existing studies of e-learning platform usage in Portugal. The latter are typically case studies of different HEIs (and, in one case, of a particular curricular unit). Nevertheless, their results are strongly convergent across HEIs and consistent with our interpretation above, with very disparate levels of usage of these platforms within institutions (Batista 2016; Gonçalves 2011); and, to the extent that they are used (by faculty or students), it is primarily to make available class materials (texts, slides); class information; and to submit

Table 3: Learning Management Systems in HEIs offering degree courses in political science sub-fields

Name of Institution	Type of Institution	LMS platform base	Open-source platform?
Instituto de Ciências Sociais – U. Lisboa	Public	Moodle	Yes
Instituto Politécnico de Leiria	Public	Moodle	Yes
Instituto Superior de Ciências Sociais e Políticas – U. Lisboa	Public	Moodle	Yes
ISCTE – Instituto Universitário de Lisboa	Public	Blackboard	No
U. Açores	Public	Moodle	Yes
U. Aveiro	Public	Moodle	Yes
U. Beira Interior	Public	Moodle	Yes
U. Coimbra	Public	Inforestud@nte	No (Proprietary)
U. Évora	Public	Moodle	Yes
U. Minho	Public	Blackboard	No
U. Nova de Lisboa	Public	Moodle	Yes
U. Autónoma de Lisboa	Private	Moodle	Yes
U. Católica Portuguesa	Private	Moodle	Yes
U. Fernando Pessoa	Private	Sakai	Yes
U. Lusíada	Private	Moodle	Yes
U. Lusíada Norte	Private	Moodle	Yes
U. Lusófona	Private	Moodle	Yes
U. Lusófona Porto	Private	Moodle	Yes
U. Portucalense	Private	Moodle	Yes

Data compiled from the websites of the HEIs.

assignments, without substantively changing teaching practices (Costa, Alvelos and Teixeira 2012; Lima, Cabral and Pedro 2014; Carvalho, Areal and Silva 2011; Fidalgo, Paz and Santos 2011).

More germane to this study of the impact of digitalization on Portuguese political science is the work carried out Gonçalves (2011), which analyzed the actual content of the e-learning platform for several curricular units at the University of Lisbon, and which included as part of its study one of the HEIs that provides political science degree courses (ICS-UL). While this study does not specify which curricular units were examined – and as such we cannot assess the exact results for political science – it does find that, out of 28 curricular units of the ICS-UL with a Moodle platform, only 2 had a high level of usage of the platform, with one having a moderate degree of usage and 25 not using this platform at all (Gonçalves 2011:62–64).

This pattern with regard to e-learning platforms is extensible to other digital tools, such as *Kahoot!* or other forms of digital gamification in teaching. The number of curricular units using these tools within the political science field in Portugal is very restricted. At the author's own university, such tools were first used in political science curricular units in 2018, by one faculty member who learned about this tool in a workshop on pedagogic innovation, organized with the support of the International Relations Section of the Portuguese Political Science Association.

This pattern of weak adoption, with political science being far from a leader in terms of incorporating digital tools, is further reinforced when we examine online courses. Ta-

ble 4 provides an overview of online courses in general, and of Massive Online Open Courses (MOOCs) in particular, offered by the 19 HEIs we have been focusing on.

Table 4: MOOCs and Distance-Learning in HEIs offering degree courses in political science sub-fields

	HEI listed in MOOC site or has own MOOC site?	No. of MOOCs on website in July 2018 (at any stage of the course)	HEI has distance learning webpage?	No. of Distance Learning Courses on website in July 2018 (at any stage of course)	Any political science MOOCs or Distance Learning Courses?
Instituto de Ciências Sociais – U. Lisboa	No	-	No	-	No
Instituto Politécnico de Leiria	Yes (has its own MOOC page: https://up2u.ipleiria.pt/en/)	0	Yes	8	No
Instituto Superior de Ciências Sociais e Políticas – U. Lisboa	No	-	No	-	No
ISCTE – Instituto Universitário de Lisboa	Yes (listed on the Miriadax MOOC platform, https://miriadax.net)	2	No	-	No
U. Açores	No	-	No	-	No
U. Aveiro	Yes (University has MOOCs, but each is publicized by MOOC promoters)	3	Yes	20+	No
U. Beira Interior	No	-	No	-	No
U. Coimbra	Yes (on its own distance learning portal: http://www.ed.uc.pt/educ/)	1	Yes	20+	No
U. Évora	No	-	Yes	20+	No
U. Minho	Yes (listed on the Open edX platform: http://edx.dge.mec.pt)	3	Yes	20+	No
U. Nova de Lisboa	Yes (listed on the Miriadax MOOC platform, https://miriadax.net)	4	Yes	20+	No
U. Autónoma de Lisboa	No	-	Yes	0	No
U. Católica Portuguesa	No	-	Yes	10+	Yes
U. Fernando Pessoa	No	-	Yes	0	No
U. Lusíada	No	-	No	-	No
U. Lusíada Norte	No	-	No	-	No
U. Lusófona	Yes (listed on the Iversity MOOC platform: https://iversity.org)	1	No	-	No
U. Lusófona Porto	No	-	No	-	No
U. Portucalense	No	-	No	-	No

Data compiled from MOOC sites and aggregators; websites of HEIs; news sites; and general search.

As can be seen, there are comparatively few MOOCs offered by HEIs in Portugal: more than 60 % of the HEIs analyzed here do not appear to have any MOOC presence. Distance learning is more frequent, with almost 50 % of the universities having some information on distance learning and courses listed on their website. It may well be that this latter number may be somewhat underestimated, with the HEIs' websites not reflecting the full offering of distance learning courses (which, if correct, is in itself revealing). Nevertheless, the picture that emerges is one where online teaching and MOOCs are far from ubiquitous in general, and where political science is particularly absent: out of all the HEIs analyzed, only one had political science courses with online teaching.

The results of table 4 are reinforced by broader observation. For instance, the joint PhD in political science between the Universities of Aveiro and Beira Interior held its classes online in its inaugural year of 2014/15, using the Adobe Connect platform (though students could also attend the class in person if they wished to do so). However, this model was quickly abandoned and, from the following year on, classes have been held in person. The reasons for this change were largely twofold. On the one hand, the online model was hampered by technical issues: not infrequently one of the students could not hear, or speak, making the classes flow less than smoothly. On the other hand, faculty members felt that student participation using the online model was below what was expected, and less than what could be achieved using a more conventional classroom model.

While the digital revolution has positive effects on teaching, it can also have negative ones. One such harmful outcome is plagiarism. While more recent research suggests that the Internet may not necessarily increase levels of plagiarism (Curtis and Vardanega 2016; Ison 2015), it seems fair to say that digital plagiarism has replaced earlier forms of academic fraud such as transcribing from printed books.

Academic fraud is an issue in Portuguese higher education. A large scale survey carried out in the 2011/2012 academic year, with over 7,000 valid responses from 180 degree courses across the higher education system, shows that four out five students consider academic fraud to be frequent or very frequent in their degree course (Almeida et al 2015:38). Plagiarism is considered the fifth most common form of academic fraud, after various forms of cheating in exams and free-riding in group assignments (Almeida et al 2015:40).

In this context, anti-plagiarism software can be particularly important, and the existing evidence suggests it can potentially curtail Internet plagiarism (Curtis & Vardanega 2016:10–11). However, as table 5 shows, the majority of the institutions offering degree courses in political science sub-fields do not have any anti-plagiarism service, with only eight out of the 19 HEIs offering such tools to their faculty and students. Noticeably, there is a considerable public/private imbalance in this regard, with the majority of public HEIs (8 out of 11) subscribing to these tools; but none of the private HEIs having such services[2].

Table 5: Anti-plagiarism services of HEIs offering degree courses in political science sub-fields

	Has anti-plagiarism service?
Instituto de Ciências Sociais – U. Lisboa	Yes (Urkund)
Instituto Politécnico de Leiria	No
Instituto Superior de Ciências Sociais e Políticas – U. Lisboa	Yes (Urkund)
ISCTE – Instituto Universitário de Lisboa	Yes (Safe Assign)
U. Açores	Yes (Urkund)

[2] The Lusófona group of private universities adopted the Ephorus platform in 2008 (Grupo Lusófona, 2008: 23). However, we could find no evidence of these universities still having this service in 2018.

U. Aveiro	Yes (Urkund)
U. Beira Interior	No
U. Coimbra	Yes (Urkund)
U. Évora	No
U. Minho	Yes (Safe Assign)
U. Nova de Lisboa	Yes (Turnitin)
U. Autónoma de Lisboa	No
U. Católica Portuguesa	No
U. Fernando Pessoa	No
U. Lusíada	No
U. Lusíada Norte	No
U. Lusófona	No
U. Lusófona Porto	No
U. Portucalense	No

Data compiled from websites of anti-plagiarism services and HEI websites.

Finally, let us turn to the inclusion of digitalization with regard to faculty positions and curricula of political science degree courses in Portugal. With regard to the former, we could find no named professorships in this area, though that is not surprising, as named professorships are in general virtually non-existent in Portugal.

As for the curricula of political science degree courses, we find that overall there is very little incorporation of digitalization and related topics. Tables 6 and 7 present an overview of curricular units that are specifically about digital and digital-related topics at undergraduate and Master's, respectively. This information was also compiled for PhD programs. The data at this level is simple enough to dispense a table: out of the 14 PhD programs examined, there is only one that has an optional curricular unit related to digitalization.[3]

[3] The exception is the Political Science and International Relations PhD program of the U. Católica, which features as an optional curricular unit a course on "Defense Technology and International Security".

Table 6: Curricular Units (CUs) related to digitalization in Undergraduate Degree Courses in political science

Undergraduate Degree Course In:	**Compulsory: Number of undergraduate degree courses with compulsory CUs related to digitalization**	**Optional: Number of undergraduate degree courses with optional CUs related to digitalization**	**Methodology options: Number of undergraduate degree courses with optional methodology CUs related to digitalization**	**Options from other disciplines: Number of undergraduate degree courses with optional CUs related to digitalization from other scientific disciplines**
Political Science	1 (ISCSP-UL: Information and Communication Technologies and Political Action)	0	0	2 (ISCTE-IUL: Introduction to Excel. U. Minho: a) Computing with R; b) Optics Applied to Digital Photography)
Political Science and International Relations	0	0	0	0
International Relations	1 (U. Portucalense: Information and Knowledge Society)	0	0	1 (U. Minho: a) Computing with R; b) Optics Applied to Digital Photography)
Public Administration	3 (U. Aveiro: Information Systems in Public Administration. ISCSP-UL: Administration, Technologies and Globalization. IP Leiria: Information Systems of Public Administration)	1 (U. Aveiro: Cartography and Computing Techniques)	0	1 (U. Minho: a) Computing with R; b) Optics Applied to Digital Photography)
European Studies and IR	0	0	0	0

Data compiled from the most recent curricular plans of degree courses.

Table 7: Curricular Units (CUs) related to digitalization in Master's Courses in political science

Master's course in:	**Compulsory: Number of Master's courses with compulsory CUs related to digitalization**	**Optional: Number of Master's courses with optional CUs related to digitalization**	**Methodology options: Number of Master's courses with optional methodology CUs related to digitalization**	**Options from other disciplines: Number of Master's courses with optional CUs related to digitalization from other scientific disciplines**
Political Science	0	2 (U. Aveiro: Digital Government; U. Lusófona: Governance and Information and Communication Technologies)	1 (ISCTE-IUL: a) Inquiry Methods Online; b) Using Content Analysis Software; c) Multimedia Analysis Methods)	0
Political Science and International Relations	0	1 (U. Católica: Defense Technology and International Security)	0	0
International Relations	0	0	0	0
Public Policy	0	0	1 (ISCTE-IUL: a) Computer-Assisted Content Analysis; b) Inquiry Methods Online; c) Multimedia Analysis Methods)	0
Public Administration	2 (ISCSP-UL: Information and Communication Technologies and Electronic Governance; IP Leiria: Information Systems and Technologies)	0	0	0
Political Philosophy	0	0	0	0
European Studies and IR	0	0	0	0

Data compiled from the most recent curricular plans of degree courses.

As can be seen, curricular units that pertain to digitalization are largely noticeable by their absence. Overall, 61 degree courses were considered, of which 24 at undergraduate level; 23 at Master's level; and 14 at PhD level. Out of this total, less than 30 % (17) have a curricular unit related in some way to digitalization. While six degree courses offer more than one curricular unit on digitalization topics, the total number of different curricular units on digitalization across all courses is only 19. This is because some curricular units on digitalization are offered to more than one degree course: for instance, the single optional course at PhD level is also an option at Master's level.

This number is further reduced if we take into account the fact that some of these options have no direct bearing on political science. For instance, all three of the undergraduate courses of the University of Minho feature the same two optional curricular units that are provided as part of a list of free choices to students, from subject areas other than political science: computing with R, from the discipline of mathematics; and optics applied to digital photography, from the discipline of physics. Likewise, the undergraduate degree in political science of the ISCTE-IUL includes an optional curricular unit of introduction to excel, from computer sciences. If we exclude these cases, the number of degree courses with some digitalization content falls to only 13.

Moreover, most of these courses have these curricular units as options, not as part of their compulsory curriculum. Only 7 out of the 61 degree courses have a compulsory curricular unit on digitalization, each with only one such curricular unit.

As tables 6 and 7 show, these curricular units are inversely related to the academic level. This is not entirely surprising: PhD and Master's programs generally only have one taught year, as opposed to three years for undergraduate courses. Moreover, in the case of PhDs, they usually have a smaller number of curricular units in their taught component than Master's degrees.

There is also a clear difference in the extent to which these topics are integrated in curricula across sub-fields of political science. Public administration courses stand out as having this topic more frequently in their curricula. All four of the undergraduate public administration courses include curricular units on digitalization topics, three of which as part of their compulsory curricula; and half of the four Master's in public administration include this topic in their curricula, in both cases as compulsory curricular units. Overall, then, two-thirds (6) of the 9 degree courses on public administration include some curricular unit pertaining to digitalization.

On the other end of the spectrum lies international relations. Out of 20 degree courses in international relations, only two have curricular units that relate to digitalization; and only one of these is compulsory. Political science lies somewhere between these two extremes, with 6 out of 15 degree courses featuring curricular units related to digitalization, albeit only one that is part of the compulsory component of the course.

Of course, this analysis only examines the overall topic of the curricular units in the various curricula. It may well be that some curricular units include sub-topics pertaining to digitalization, even if the overall topic and title are not related to digital aspects. Nevertheless, the fact that so few courses include curricular units specifically related to digitalization – and, more particularly, to digitalization and politics – is quite revealing.

Overall, then, digitalization has had, at best, a mitigated effect on the teaching of political science in Portugal. In the next section, we explore the impact of digitalization on political science research in the country.

5 Research on digitalization in political science

Let us now examine to what extent digitalization has become a subject for political science research in Portugal. We begin by exploring the extent to which digital topics are explored at PhD level in Portugal. Out of the 412 PhDs carried out or registered in Portugal by the end of 2017, 9 are on topics related to digitalization. If we extend our analysis to PhDs completed thus far in 2018, then this number rises to 12 PhDs (out of a total of 424).

Of course, digital issues are relatively recent in political science. The first PhD that includes digital issues as a salient topic dates to 2009. If we examine PhDs completed between that year and 2018, dissertations on digital topics represent 4 % of the 299 doctorates completed or registered in Portugal. As table 8 shows, the numbers are relatively stable over time. However, the year of 2018 – which is not yet completed, since our data was collected in July 2018 and covers the first six months of the year – is proving quite productive, with 3 PhDs already on these topics, already equaling the previous best year; and, more significantly, with 25 % of dissertations defended in the first half of the year being on digital topics.

Table 8: PhDs on digital topics in political science in Portugal

	No. PhDs on digital topics completed in year	Total no. PhDs completed in year	Proportion of PhDs on digital topics in year	Titles of PhDs related to digital topics
2009	1	18	6 %	Poder Militar e Agressão Armada em Ambiente Pós-bipolar: Análise Jurídico-estratégica das "guerras High Tech" e das "novas Guerras" Nos Discursos e Práticas Sobre Agressão e Legítima Defesa.
2010	0	40	0 %	-
2011	1	18	6 %	A Progressiva Adopção do E-saúde em Portugal: Causas e Efeitos.
2012	0	33	0 %	-
2013	3	39	8 %	a) A Inteligência dos Estados – A perspectiva do Analista de Informações. b) Novos Media e Marketing Político em Portugal – Desafios e Oportunidades. c) Da Guerra Remota: a Desumanização do Poder Aéreo, a Interferência e a Interacção Humana no Futuro da Guerra.
2014	1	49	2 %	Comunicação Politica mediada por Redes Sociais Interativas: Educação Politica do Sujeito na Sociedade Pós-Moderna.
2015	2	40	5 %	a) Democracia Representativa e Democracia Electrónica. Uma Perspectiva da Forma de Governo do Sistema de Governo Português. b) As novas possibilidades de transformação dos homens por via tecnológica – reflexões éticas, sociais e políticas Habermas, Jonas e Hottois.
2016	0	25	0 %	-
2017	1	25	4 %	As políticas nacionais de ciência, tecnologia e inovação e a perspetiva dos sistemas-mundo. Análise crítica do discurso das políticas nacionais de ciência, tecnologia e inovação dos Estados Unidos da América, Portugal e Colômbia.
2018 (until June)	3	12	25 %	a) O uso da Internet pelos políticos em campanhas eleitorais: Portugal Legislativas 2015. b) Política do governo eletrónico: a maturidade do e-gov nos municípios brasileiros. c) A União Europeia em busca de uma nova legitimidade democrática: o caso da campanha dos cabeças-de-lista dos europartidos nas eleições de 2014. Redes sociais, debates televisivos e exposição aos media.
Total	13	299	4 %	-

Data compiled from the RENATES Platform, taking into account the dissertation topic; its keywords; and, where keywords were not available, the content of the dissertation.

It is worth noting that these PhDs examine digitalization across the various subfields of political science. While the largest proportion are in political science (6 out of the 12), we also find PhDs on digitalization in international relations (3); public policy (1); public administration (1); and political philosophy (1).

In terms of publications on digitalization-related topics cited in Web of Knowledge by Portuguese-based researchers, the pattern is not very different from that of the PhDs. The first publications are from 2008 (so a year earlier than the first completed PhD). Figure 4 shows the breakdown in publications over the years. As can be seen, the numbers are fairly stable over the years, with the exception of 2016. This exception is due to the inclusion of the proceedings of two conferences on digital-related topics which account for 12 out of the 15 publications. If we exclude these conference proceedings, the numbers for 2016 are quite similar to the other years.

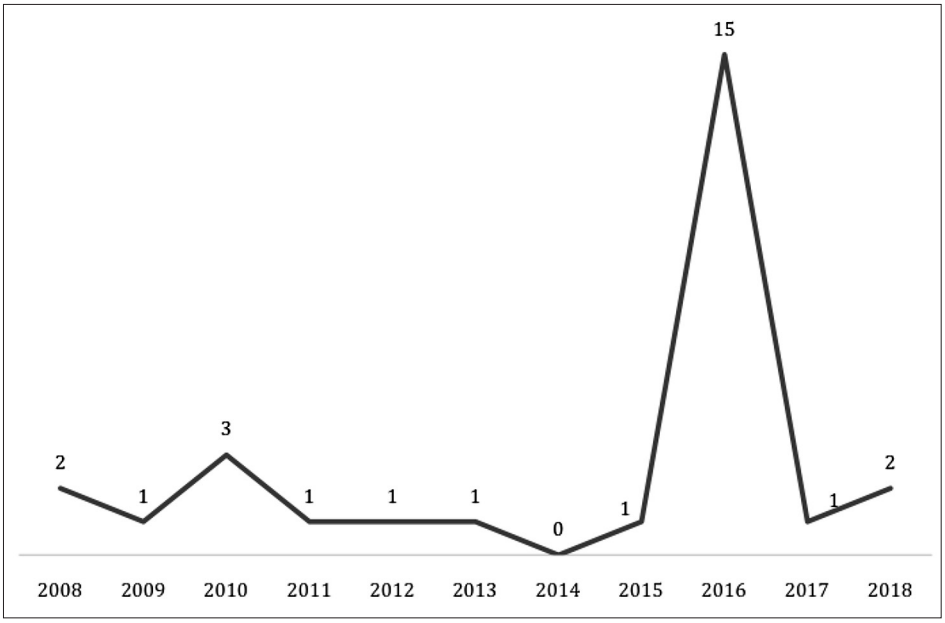

Figure 4: Number of political science publications by researchers based in Portugal on digital topics indexed in Web of Knowledge

Data compiled from the Web of Knowledge database, restricting the search to publications in political science by researchers based in Portugal on digitalization-related topics. The search used the following syntax: CU=Portugal AND WC=political science AND TS=(digit* OR Internet OR "social media" OR electronic OR websit* OR e-government OR e-democracy OR e-voting OR "new media" OR e-participation OR twitter OR facebook OR ICT OR "information and communication* technolog*" OR "information technolog*" OR computer).

In total, we find 26 publications until 2017, which represents 6 % of the total publications in political science indexed in Web of Knowledge by researchers based in Portugal from 2008 to 2017. If we include the months of January to July 2018, this number rises to 28 publications on digitalization topics, out of a total of 477 publications from 2008 till July 2018 (again 6 %).

While this percentage may appear small, it is actually well above the worldwide average. Over the same time-period of 2008-July 2018, there were 3,305 political science publications indexed in Web of Knowledge on digitalization topics, a proportion that is 2 % of all indexed political science publications over that period (134,463). Overall, the pro-

portion of indexed political science articles on digitalization topics by researchers based in Portugal from 2008 to July 2018 is some 2.4 times the proportion of such articles in political science worldwide.

It is also worth noting that, out of the 574 political science publications by researchers based in Portugal indexed in Web of Knowledge until July 2018, 208 publications list other countries besides Portugal for the authors' institution. In total, some 49 other countries are listed alongside Portugal as countries where the authors are based, with the top countries being England (listed alongside Portugal in 58 publications); USA (47); Germany (23); Italy (23); Spain (22); Netherlands (16); France (12); Brazil (11); and Greece (10). When we look at the dates of these 208 publications, the overwhelming majority of these are from the new millennium, with 95 % (196 publications) from the year 2000 onwards; and 78 % (161 publications) just from the period 2010 – July 2018. It seems fair to say that a large number of these publications are the result of collaborations that are made possible through digital tools such as email, file-sharing platforms and video-conferencing services.

Digital tools also facilitate access to research. In this regard, a particularly important innovation was the creation of the B-On platform (https://www.b-on.pt/), a joint consortium of HEIs and other research institutions with the Foundation for National Scientific Computation of the National Science and Technology Foundation[4]. This platform began in 2004, providing wide access to online articles to most of the scientific community in Portugal. While this platform has been important for all areas, it should be said that for political science, which is a comparatively recent discipline in Portugal, B-On was a particular boon. Most universities now also provide online repositories and the FCCN has also begun to operate, since 2008, the Scientific Open Access Repository of Portugal (https://www.rcaap.pt/).

Moreover, it is not only through B-On that researchers in Portugal gain access to scientific research; it is also through other means, such as Sci-Hub – a controversial online platform that makes millions of academic articles freely available to all users, and which has also faced numerous lawsuits for copyright infringement. Data made available by Sci-Hub for the period of September 2015 to February 2016 shows that Portugal has the largest number of downloads per 100,000 inhabitants, in a ranking where European countries constitute 10 of the top 15 Sci-Hub users weighted by population (Maia, Zanlorenssi and Almeida 2018). While it is not possible to assess the specific weight of political science in this Sci-Hub usage, it seems fair to expect that Portugal is likely to be above the average in this regard too. Although no actual inference can be drawn, one can note that the three cities in Portugal that most used Sci-Hub are Lisbon, Braga and Aveiro (Barros 2016), all of which have universities; and, moreover, universities with political science degrees.

An important proviso should also be made: while usage of Sci-Hub is very large in Portugal as a whole, this occurs largely from outside the Internet networks of Portuguese universities, with Sci-Hub downloads from university IPs representing around 0.1 % of Sci-Hub downloads in Portugal, well below the overall average of 8–10 %, or the 20 % or more in countries such as Finland, Japan or Belgium, inter alia (Greshake 2016a; Greshake 2016b). What explains this pattern of high overall usage of Sci-Hub but with virtually none coming from universities? One possibility is that Sci-Hub downloads are being driven by postgraduate research students, many of whom work on their research from home, and

[4] The Foundation for National Scientific Computation (Fundação Nacional para a Computação Científica, FCCN) of the Portuguese Science and Technology Foundation (Fundação para a Ciência e Tecnologia, FCT) oversees and provides digital services to the scientific community, including HEIs, in Portugal. This includes not only internet infrastructure, but also services such as B-On or others (e. g., filesender, to send large files; or video-conferencing).

prefer the ease and wide access of Sci-Hub to the more laborious process of connecting via a Virtual Private Network (VPN) to their university to gain access to B-On and other university resources. Indeed, the author's anecdotal evidence is consistent with this explanation, often learning about services like Sci-Hub from graduate students.

6 Conclusion

As the analysis of this chapter has shown, the impact of digital tools on Portuguese political science is somewhat Janus-faced. On the one hand, we find that digitalization has had a considerable impact on research. Thus, the proportion of political science articles indexed in Web of Knowledge on topics related to digitalization by researchers based in Portugal is more than two times larger than the proportion of such articles in political science worldwide. Likewise, Portuguese researchers use digital tools extensively in their research, be it as a way of communicating with their co-authors abroad, be it as a means of accessing political science publications.

Yet this very considerable impact with regard to research does not appear to translate into the field of teaching, with the effects being considerably more subdued. Thus, while all universities have e-learning platforms, their actual usage varies widely within institutions, being mostly dependent on the proclivities of individual faculty members, with the most common usage being to use these as a means to circulate information: in a sense, the photocopies of class materials of yore, made available through university copy-shops, become the PDFs of today, made available in e-learning platforms.

This limited effect is further accentuated when we consider other digital arenas of teaching: online courses, be they small or massive, open or closed, appear to be very rare in the political science sub-fields. Likewise, only a minority of higher education institutions offering political science courses have anti-plagiarism software. And, finally, political science degree courses by-and-large do not include specific curricular units related to digitalization and politics.

Such a sharp distinction begs the question of why digital tools have had such differing impacts on research and teaching. It is beyond the scope of this chapter to fully answer this question. However, we can posit three lines of explanation for future research. The first has to do with the incentives provided by HEIs. Publications have a far greater impact on career paths than innovation in teaching. This, combined with the numerous bureaucratic demands that are placed on faculty members, leaves faculty with comparatively little time and incentives to explore and fully utilize digital tools in teaching. The second has to do with the lack of training and support: by-and-large, HEIs do not provide training that might lead to greater exploration of digital tools by faculty members, nor is there proactive action to increase usage of digital tools in teaching. Finally, the effect of the austerity period in Portugal – which has been an almost constant feature for most of the new millennium and became particularly pronounced during the Eurozone bailout of Portugal from 2011–2014 – cannot be ignored. Digitalization – be it in terms of providing greater training, incentives or creating online courses – requires investment. The context of austerity constrained HEIs ability to make such an initial outlay.

If these lines of explanation are correct, they also suggest that a greater usage of digital tools in teaching is not simply a question of time: of younger, more technologically-savvy faculty replacing their older, more traditionally-minded colleagues; or of the post-bailout period leading to greater investment in the digitalization of teaching. If the institutional context does not change to generate incentives for a greater usage of technol-

ogy in teaching in Portugal, we are likely to continue to find digital tools being primarily used for research, with the digitalization of teaching remaining a secondary consideration. If so, Portugal may well continue to contradict Drucker's forecast of the demise of traditional university teaching.

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Digitalization and Political Science in Spain

Óscar G. Luengo and Javier García-Marín

1 Introduction

At the beginning of 2013, the Spanish government developed a clear strategy in order to establish a set of objectives regarding the digitalization of public administration, parallel to a broader European approach. This plan was published in the document The Digital Agenda for Spain[1]. The main purpose of this intervention dealt with the formulation of employment opportunities and economic growth through the smart adoption of digital technologies, a sector undoubtedly connected to the recovery of the country and the region, after the collapse of the economy in 2008. This document calls for public intervention in six different lines of action: the consolidation of digital connectivity, the growth, competitiveness and internationalization of Spanish companies through the development of a digital economy, the improvement of e-administration in order to make public services more efficient, the reinforcement of confidence in the digital ecosystem, the fostering of research, development and innovation for information and communications technologies, and the promotion of digital inclusion and digital literacy of professionals in this new environment. Based on this agenda, we can underline that the consolidation of social media and the increased use of e-administration has a particular significance, as well as the efforts to develop a full range of public services that could be accessed by electronic means and the increase of knowledge in the Spanish society on existing electronic tools.

Indeed, Spain has developed this sector rapidly and has reached European standards in record time. For example, regarding the gradual incorporation of the Internet, the European Union Internet penetration in 2017 was 85.7 percent on average, while Spain showed a record of 87.1 percent[2], slightly higher. According to the same source, Spain is today ranked fifth among EU nations in terms of its number of Internet users. However, Spain is also ranked among other countries in Southern Europe where the development of Internet has been sharper: in the last ten years, the increase in frequency of Internet access has been at a rate more than 30 percent[3] annually.

The quick transition into a virtual world and the normalization of this changing environment have altered overall social relations in Spain, and consequently, political relations, as well. Today we cannot comprehend the basic interaction between Spaniards and

1 http://www.agendadigital.gob.es/digital-agenda/Paginas/digital-agenda-spain.aspx [Retrieved in February, 2018].

2 Internet World Stats, in https://www.internetworldstats.com/ [Retrieved in March, 2018].

3 Eurostat (2018): "Internet use and activities", in http://ec.europa.eu/eurostat/web/products-datasets/-/isoc_bde15cua [Retrieved in February, 2018].

politics if we do not acknowledge this new digital reality. The way citizens obtain information about politics, the new media consumption patterns, the form in which regular people get engaged with political life, follow political processes, control the governments, express their demands, get involved in electoral campaigns, or complete administrative formalities, can no longer be understood in a traditional and analog nomenclature.

Academia, of course, was not absent from all those changes. Firstly, because as part of the administration, it benefited greatly from the government efforts in pushing the electronic administration in the country. Second, because the educational sector was one of the first to spearhead the digital revolution worldwide, and that was not different in Spain. However, the results were somewhat mixed. Digitalization has been seen not only as an opportunity to improve the institution's objectives, but, from our perspective, as a tool to reduce budgets and, at the same time, as a form to show some progress in the adoption of modern technology. The adoption of free open source software (FLOSS) by the Spanish universities may be a very good example, especially in the case of the Moodle integration (explained below). In this latter case, it is interesting to note that both the administration efforts and the digital revolution in the education were greatly powered during the economic crisis in 2008 in order to help universities to cope with the austerity policies that reduced budgets across the country. Another example may be the massive acquisition of computers for the educational sector in the last 20 years, but without any -or very few- training programs.

Political science has not been one of the fields where digitalization affected in such depth, in our understanding (those fields related with computation and informatics deserve the merit). But it is also true that political and social debate has suffered a dramatic change in the last 25 years, from a media centralized discussion to a more plural social media on the Internet. We are unsure of the real impact of this change in political science, but the impact on how scholars do research is very real: nowadays it is difficult to see PhD candidates not considering social media debates in their theses. However, this impact has not been translated into an adoption of digitalization within political science in a broader sense.

This chapter approaches the incorporation of digitalization, and its different manifestations, in political science. We have divided this proposal into two main sections. In the first, we verify how the digitalization has been incorporated in teaching routines and learning procedures in our discipline in the last years. We will comment primarily on the consolidation of digital tools in the regular instruction of political science in higher education centers. We will also investigate whether or not topics related to the digitalization and new Information and Communication Technologies (ICT) have been increasingly included in the political science curricula of Bachelor and Master programs, and in doctoral dissertations. In the second part, we will focus on the level in which research articles and delivered conference papers have assumed digitalization as a regular topic for research. This will provide a dynamic and updated panorama of the current situation in the multifaceted and complex process of the digitization of political science.

2 Teaching and learning

Nearly a decade ago, within a context determined by the establishment of the European Higher Education Area, a thorough analysis of the Spanish university system developed by a local research group reported a clear need for more methodological alternatives and opportunities for acquiring new digital competencies (Guerra, González and García-Ruíz 2010). Following this report, we can assume that the transition to new spheres in teaching at the university level in Spain, including degrees in political science, has been quite dil-

atory and gradual. Although computers are nowadays taken for granted in higher education classrooms, we have overestimated both the real impact of ICT on teachers and students' digital competencies (Gutierrez, Palacios and Torrego 2010). It should be noted that the great challenge today is faculty's capacity to acquire the necessary capacities to adapt teaching methodologies to the actual reality, especially in an age when students are actively involved in social media and in the network society (Duart 2011).

Spanish universities follow the principle of autonomy to decide on methodology. In practice, professors are free to make use of the teaching methods and the pedagogical resources they consider more appropriate in their areas of knowledge, and, more precisely, in the subjects to which they ascribed. The use of ICT in the classroom is quite frequent. Most universities have technology support services for professors to help them devise multimedia materials and to encourage their use of ICTs. Presentations by means of computers or overhead projectors are also common practice, as well as the use of videos, computer-assisted learning, etc. Furthermore, professor/student communication through the Internet or through virtual classrooms, online platforms, virtual spaces for specific subjects, websites, among others, is also frequent[4].

Table 1. Top 10 from registered sites of Moodle in 228 countries

Country	Registrations
United States	9712
Spain	8251
Mexico	6158
Brazil	4988
United Kingdom	3333
Italy	2993
Germany	2989
Colombia	285
India	2238
Russian Federation	2196

Source: https://moodle.net/stats/?lang=en_us

One of the areas where digitization has been received with great enthusiasm has been the field of virtual teaching. Table 1 shows the highest number of implementations of Moodle in countries around the world. It is surprising that Spain, a country significantly less populated than the United States, Mexico or Brazil, reached second place on the list, with a number very close to that of the first. Moodle is a free and open-source learning management system created in 1999 by Martin Dougiamas. Since its creation, the success of the platform has been overwhelming, and it has become one of the most widely used learning management systems worldwide. It has been translated into over 100 different languages and is accessible in several countries worldwide. Institutions can add as many Moodle servers as needed without having to pay licensing fees. Spanish universities and campuses (especially public universities, which greatly outnumber private institutions) have undergone intense budgetary restrictions since 2008. In response, Moodle offered two simultaneous advantages: on the one hand, it is a service without licensing costs and it can be implemented by each university's own staff; on the other hand, converting some live courses into virtual ones could reduce costs or attract students from other latitudes, such as Latin American coun-

[4] http://www.euroeducation.net/prof/spainco.htm

tries, with an almost unlimited potential for growth. However, these numbers need to be interpreted and are definitely not determining the whole picture, it is a moderate indicator.

The adjustment to the new technological context has been laborious for all actors involved in higher education. In certain cases, for example, it is not easy to work fluidly in settings distinguished by the tools offered by Web 2.0 (e. g. wikis, on-line collaborative tools, blogs, forums, social networks and markers), especially for those that have been socialized in an analog educational system. However, some previous analyses also challenge negative stereotypes of older university students, and encourage us to modify our view of active seniors as disconnected from and incapable of using the internet and other digital platforms. Instead, they suggest their rates of progress and motivation to learn as highly positive (Martínez, Cabecinhas and Loscertales 2011).

2.1 Bachelor programs

One of the criteria we can use in order to verify the effective incorporation of digitalization dimensions in Spanish political science has to do with the articulation of the undergraduate degrees in that field. In the Spanish case, those studies have been consolidated under the name of "Political Science and Public Administration". Bachelor's degrees have a minimum duration of 240 credits based on the European Credit Transfer System (ECTS) and are thus ascribed to the following branches of knowledge: social sciences and law. Additionally, in some universities we can find double degrees combining more credits of other related disciplines (journalism, law, international relations etc.) in their curricula (generally more than 370 ECTS in total distributed in five academic courses). It is interesting to note that there are few courses focussing on the digital sphere among political science degrees offered in Spain, and in some cases are simply nonexistent. We can count 22 universities that offer degrees in political science in Spain in 2018 (37 if we include those degrees whose very nature is the study of politics but also mixed with other disciplines: e. g. public management, philosophy and politics). Among these 37 universities, the total number of associated degrees is 69. Two of the universities offer long-distance degrees. Eight of them are private universities, the increased presence of which is revisiting to some extent the characteristic proportion of higher education institutions in Spain, where degrees from public universities are far more valuable, with very few exceptions.

Taking a deeper look into the courses offered in the curricula of those mentioned degrees (64 in total), we can distinguish between two groups. First, there are courses related directly or indirectly to the topic of digitalization itself as the object of study, i. e. an end in itself. Second, there are courses that consider digitalization in a functional and instrumental way, regularly connected to methodology and research techniques, i. e. a means to analyze. Regarding the first group of courses, we can count 11 of them in 11 different universities (9 public universities, 2 private universities). Five of these courses are related to electronic administration and digital government and six are connected to several courses whose main concern is digital communication (e. g. network citizen participation and communication, information society and new technologies, political communication 2.0, politics and internet, new technologies of information and communication). In this first group, most of the courses are elective offerings.

Courses associated with methodology or research techniques are much more common among curricula in general terms. We can count 31 courses that address computer research methods for social sciences in 18 universities[5] (e. g. technologies for political and social

[5] Some of them are the same course offered in different related degrees.

research, Computerized Socio-Political Analysis, applications for public management, advanced computer data analysis, etc.). All degrees offered in public universities have at least one course from this second group. Private universities are more focused on the first group of courses, with no courses on (digital) methodology. Finally, in this second group, most courses are mandatory.

A special mention is given to The Open University of Catalonia[6] (UOC), a private university which is owned by a public foundation, with almost 55000 students enrolled in the academic year of 2017/18, according to its annual reports[7]. Among its academic offerings is a degree in political science. This university was founded in 1994 based on the concept of e-learning and online teaching, which makes it the first online university in the world[8]. According to the data provided by Hamilton Global Intelligence[9], in 2017 it was ranked as the second most important online educational institution in the world, and it was ranked first in the European sector[10]. The UOC has an Internet Interdisciplinary Institute (IN3), a research center specializing in the study of the Internet and the effects of the interaction between digital technologies and human life, with prominent activity. The IN3 hosts 10 renowned research groups that develop a wide range of investigations of an interdisciplinary nature, not exclusively proposed from political science.

2.2 Master programs

Concerning postgraduate degrees offered by Spanish universities, we have examined Master programs in the field of political science proposed in the academic year 2017/2018. We found 37 Master programs, five of which are offered at private universities. None of them are designed around topics related to the digitalization. The closest programs found to the search proposed, is a Master's program in "Digitalization of Human Resources" under the proposal of "Labour Science" (University of Granada), and a Master's program in Digital Citizenship and Cultural Communication, managed in the field of Communication Science (University King Juan Carlos I).

In this regard, although the goal of university Master's degree programs is to provide students with advanced specialized or multidisciplinary training geared towards academic or professional specialization, or towards the acquisition of basic research skills, we find that the natural trend of Master's degrees in the field of political science are broad and general programs as opposed to specialized offerings. This dynamic is probably related to the fact that before the incorporation of the Spanish Bachelor degrees to the general standards of the European system of higher education, the regular duration of study was five years. With the reduction to four years of study, many institutions have decided to translate the old five year program to a 4 plus 1 model, converting the last year into a postgraduate program. The workload required in a Master's degree program ranges from 60 to 120 ECTS, although the most common case is 60 ECTS, given that the regular amount of credits in a Bachelor is 240 ECTS. Lastly, we find that digitalization is not a common area of specialization as it is among other disciplines (e. g. marketing, advertising, communication).

6 Universitat Oberta de Catalunya is the original name in Catalan.
7 http://www.uoc.edu/opencms_portal2/opencms/EN/universitat/memories/list.html
8 http://www.uoc.edu/portal/es/universitat/fets-xifres/index.html
9 http://hamilton.global/
10 http://rankingfso.org/fso/ranking-2017

2.3 Doctoral programs

PhD programs belong to third-cycle of higher education and lead to the acquisition of skills and Competencies required for quality scientific research. In Spain in the past few years, the total number of PhD dissertations defended has grown substantially. In 2006, 8235 theses were passed in the country among all disciplines. This total remained more or less consistent until 2014 when the total increased to 11316 dissertations defended. Since 2014, we have witnessed a sharp growth in these figures, from around 14700 defended in 2015 to a bit more than 20000 in 2016. Regarding PhD´s defended in social sciences in the last decade, including those in political science, these figures have been more variable: in 2009 we can find 888 defended PhD´s, a figure which increased more or less in a linear trend until 2012 when 1358 dissertations were passed, which was the highest total of the decade. In 2013 and 2014, the volume passed plummeted to its lowest level at only 400. Since 2014, the sum has started to recover, reaching 607 in 2015 and 903 in 2016.

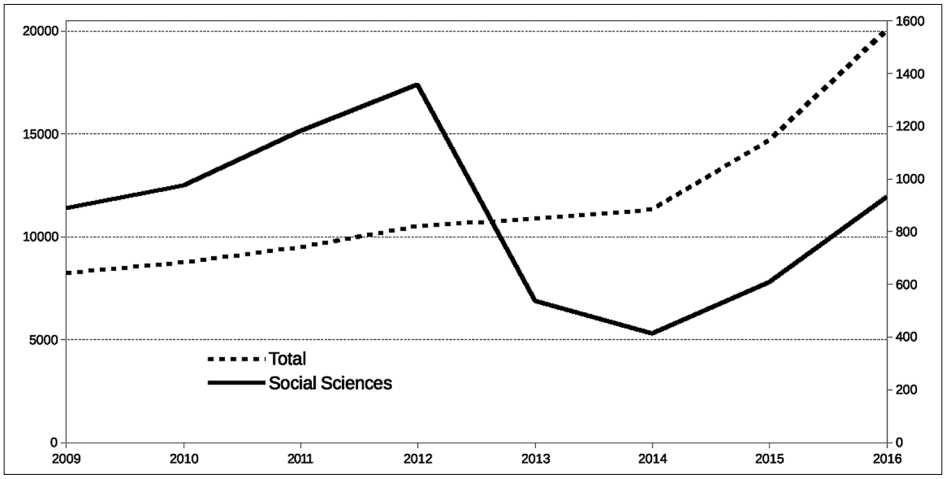

Figure 1. PhD Theses Defended in Spain, 2009–2016[11]
Source: Teseo (2018)

In order to determine the level of incorporation of topics related with our object of study in political science doctoral dissertations, we have run a very detailed search, using Teseo[12] and Dialnet Foundation[13] data sets, of the main sources of effectively defended and obtained PhD's in Spanish universities since 1976 offered by the Spanish Ministry of Education. We have found 19 universities (only two of which are private) with 39 political science departments (some of them with other names integrating this discipline with other "sister" ones, including public law, international public law, social sciences), with PhD programs where in the last years dissertations were defended. Only ten PhD theses were

[11] Self-elaboration: Data from *Observatorio Español de I+D+I (ICONO), Fundación Española de Ciencia y Tecnología (FECyT), Ministerio de Economía, Industria y Competitividad,* (R+D+I Spanish Observatory, Technology and Science Spanish Foundation, Ministry of Economy, Industry and Competitiveness).

[12] Teseo is offering information of PhDs dissertations (including dates, departments, universities, supervisors, composition of committees, etc.) provided by University Coordination Council and Doctoral Programmes Commissions of different Spanish universities. [https://www.educacion.gob.es/teseo/irGestionarConsulta.do]

[13] Data provided by Dialnet Foundation (Dialnet Plus).The accounted period is 1976 to april 2018.

found in Teseo using the search terms "Red" (Net), "digital" and "Internet" in their abstracts. This seems to be a very low figure given the annual average of political science PhD dissertations passed per each mentioned department. However, if we use the Dialnet Foundation source, more detailed and disaggregate, the picture obtained is slightly different. Concerning the PhD´s specifically passed in political science (UNESCO code 5900) in the last four decades, we can count 4045 from the numbers provided by this last dataset cited, and only 141 in private universities. The disaggregate details by particular subfields of this record are the following: public policy, 1204; political sociology, 826; public opinion, 737; international relations, 464; public administration, 428; political life, 350; political institutions, 176; political theory, 96; political ideologies, 89; political systems, 42. Universities with the oldest political science Phd programs are Universidad Complutense de Madrid, where the first PhD in political science was defended in 1976; followed by Universidad de Granada and Universidad de Sevilla, both in 1978; Universidad de Navarra, in 1979; Universidad de Santiago de Compostela and Universidad de Zaragoza, both in 1981; Universidad Politécnica de Valencia, Universidad de Barcelona and Universidad Autónoma de Barcelona, in 1982; Universidad de Valencia, in 1983. Madrid, Cataluña and Andalusia are the regions with more doctorates accumulated, with 930, 823 and 732, respectively. Those three Autonomous Communities (*Comunidades Autónomas*) combined include more than half of all the doctorates defended in political science (61 percent).

University Complutense of Madrid, with almost 500 doctorates, is the institution with the most of those degrees obtained, followed by University Autónoma of Barcelona, with 365, and University of Granada, with 313. But to what extent have the PhD dissertations in this field of study considered any of the dimensions of the digitalization as the main topic of research? We found 161 doctoral theses dealing with digitalization[14] from 1992[15] to April 2018. In a little more than one third of the dissertations (57), the main subject dealt with regular topics covered by the "orthodox" studies in political science, i. e., public policy, political theory, political culture, international relations, public administration or political communication. Needless to say, that the most important subfield regarding the attention to digitalization is political communication (with 15 PhD dissertations), in light of the fact that most of the developments regarding digitalization are related to the application of new technologies to mainly communication realities and media outlets.

In Figure 2, we can note the different approaches used in order to carry out doctoral dissertations in political science concerning the topic of digitalization. As we already stated, communication and political science are the most important points of view in that sense, with the proportion of 37.9 and 35.4 percent of all of them, respectively. To a lower extent, we also observe dissertations proposed with a different orientation, as for example, education and economy (15 percent), law (4 percent), linguistics (2.5 percent) and sociology (2 percent).

The weight of different approaches when developing doctoral dissertations about digitalization is not proportional depending on the university where the thesis was defended. University Autónoma of Barcelona is the institution where the presence of political science is more visible, with ten theses, followed by University Pompeu Fabra and University Carlos III of Madrid, with six and five respectively. In the next group, we can observe

[14] We have used the following research terms: "Digital", "Red" (Net), "Internet", "2.0", "Facebook" and "Twitter". We obtained 189, but some of the dissertations were duplicated since their title contained more than one research term. After cleaning the sample, we got 161.

[15] In the year two doctoral works titled "Scientific policy and technology: evaluation of research in the university" and "The influence of technological innovations in the evolution of the daily general information press in Barcelona" was defended in the Universidad Autónoma de Barcelona.

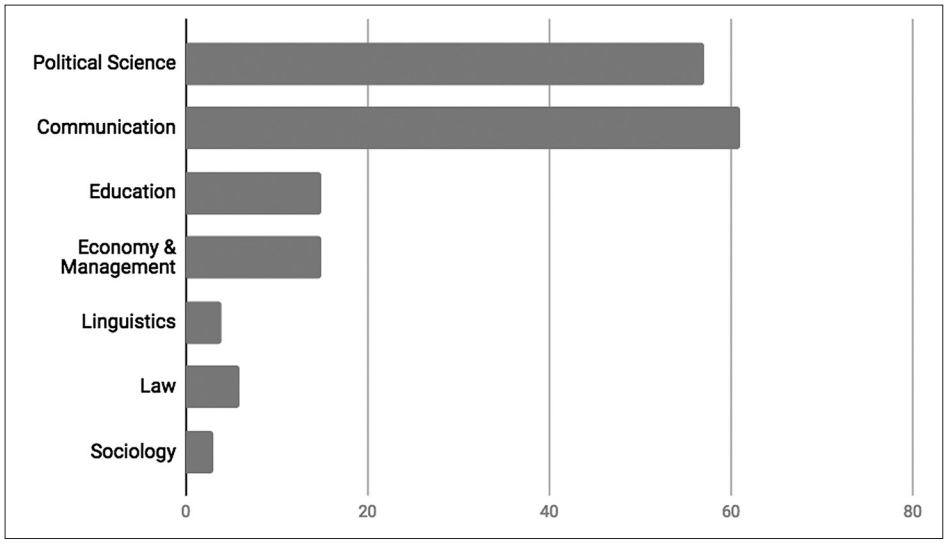

Figure 2. PolSci. Doctoral Dissertations in Digitalization by Approach
Source: Dialnet Plus Dataset (2018)

the cases of University of Seville, with four, and University Complutense of Madrid, University of País Vasco and University of Valencia, these last with three. As we already pointed out, communication is also a prominent approach in the Spanish case, and this is particularly evident in the cases of University of Santiago de Compostela, University Complutense of Madrid and University Autónoma of Barcelona, with eleven, seven and six dissertations respectively.

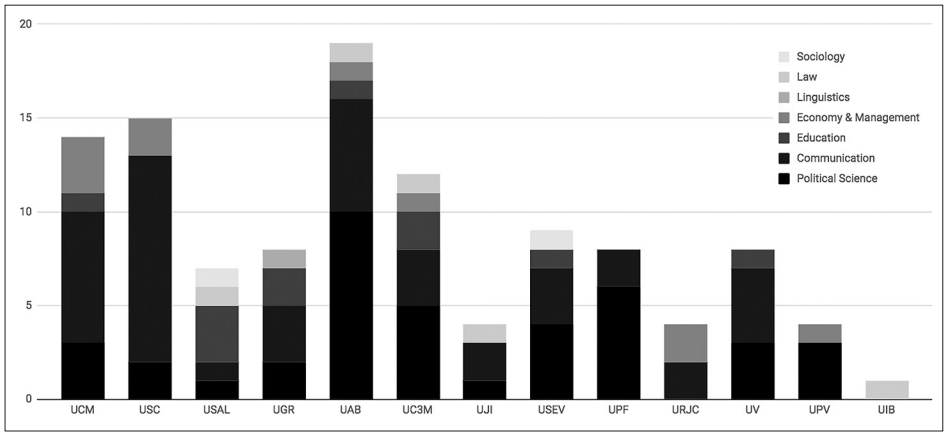

Figure 3. PhD in Digitalization by Approach/University (1992–2018)
Source: Dialnet Plus Dataset (2018)

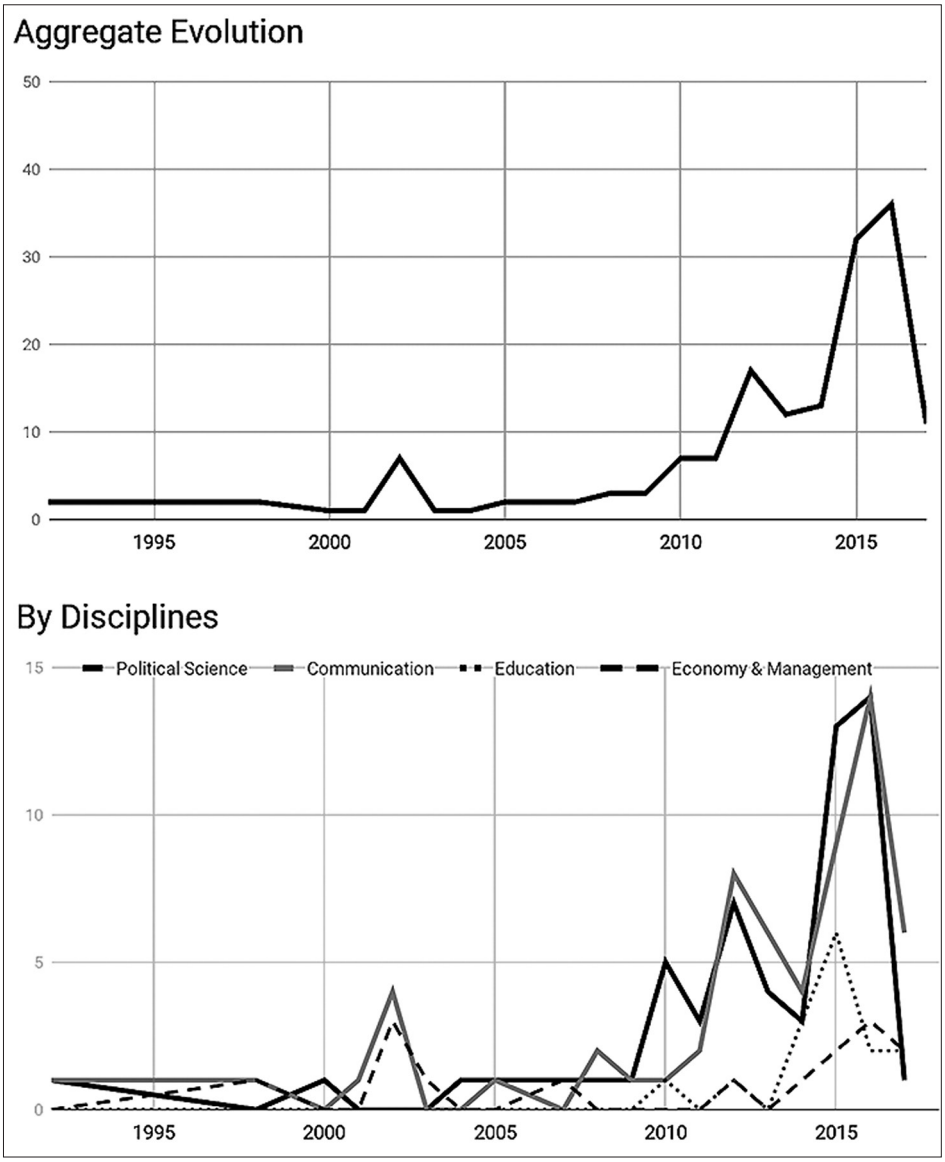

Figure 4. Evolution of PhD PolSci. Dissertations in Digitalization (1992–2017)
Source: Dialnet Plus Dataset (2018)

Regarding the chronological evolution of digitalization as the main object of research within PhD dissertations considered, Figure 4 presents a manifest trend. Regardless of whether we analyze this development by approach or as an aggregation, the total is around 2010 when we can perceive a definitive impulse in that sense. The final consolidation in the same period of social media, Twitter and Facebook among others, could help to explain this clear progression. It is also interesting to note that in 2017 the amount of PhDs in this field decreased sharply compared to those in 2016, breaking the trend started in

2010. We have to wait for the count of 2018 in order to verify if the numbers of 2017 are just a contextual exception, or a change in the cited course.

Lastly, Figure 5 shows the final graph representing the most repeated words in the 161 titles of doctoral dissertations about digitalization found. As predicted, "digital" is the leading term in the word cloud, and in a second stage we can observe "information", "communication", "internet", "networks", "social media" and "Spain"[16].

Figure 5. Word Cloud: PhD political science Dissertations' Titles (1992–2018)

2.4 Accreditation

The last dimension we are going to consider is the inclusion of merits in the sphere of digitalization required (or just positively assessed) by Spanish academic authorities[17] in order to obtain the accreditation for assistant professor, associate professor, professor or full professor. Since the 2007 educational reforms, the system requires the candidate to pass a demanding evaluation process at a national level for each category before applying for a position. In the definition of this evaluation process, there is no primary item related to the digitalization. The only part in which a candidate can get some recognition is a secondary item in the teaching experience: Design and teaching of online courses using renowned platforms (OCW, EdX, Coursera, etc.). Finally, special mention has to be made to widespread teaching innovation projects. These have increased substantially since most of the Spanish universities perceived a demand for the renovation of traditional teaching

[16] The graph has been created using the R library Wordcloud (Fellows, 2012). The plot represents words whose size represents its frequency in the sample. Words have been translated to English.

[17] The institution in charge of the accreditation of university teaching staff in Spain is the *Agencia Nacional de Evaluación de la Calidad y Acreditación* (ANECA), National Agency for the Evaluation of Quality and Accreditation, member of ENQA and registered agencies in the EQAR (European Quality Assurance Register for Higher Education).

routines and consequently invested a lot of resources in that area. A significant number of the renovations have included elements of digital modernization.

3 Research

Digitalization can also be a means to improve the alternatives of research in political science. Researchers appreciate that they have increasing resources to use and share in class, that they can offer more contextualized activities, and that they can manage diversity better and provide more opportunities for research, collaborative efforts and corrections. They also underline the impact of the acquisition of certain skills, such as digital literacy, processing information, and learning to learn (Domingo and Marqués 2011).

In order to verify the visibility of digitalization as an object of study, we have analyzed the scientific production in the most relevant Spanish journals in this field of knowledge[18] since 2000. The criteria used to build the sample of journals is one proposed by Scimago Journal & Country Rank (SJR)[19]. Following the most updated rank indicators provided by this portal for 2016 we have selected seven journals: Revista Española de Investigaciones Sociológicas (SJR: 0.261, Q2), América Latina Hoy (SJR: 0.239, Q3), Revista Española de Sociología (SJR: 0.230, Q3), Arbor (SJR: 0.138, Q3), Revista de Estudios Políticos (SJR: 0.133, Q3), Revista Española de Ciencia Política (SJR: 0.132, Q4) and Política y Sociedad (SJR: 0.129, Q4).

As shown in Figure 6, the total sample is composed of 4412 articles published between 2000 to 2017. During the past 17 years analyzed we could only find 35 articles with digitalization as the main object of research. Therefore, its visibility in the research production in Spanish academic journals is less than 1 percent (0,79 percent) since 2000. We could identify few exceptions to the trend drawn by the data: Arbor registered 13 articles as to this topic in 2012 and in 2016 Revista de Estudios Políticos counted 10 of those pieces of work. These records were due to special issues about "Sociology of Innovation" (Arbor, Vol. 188, No. 753, 2012), not even directly related to political science, and "Democracy and Law in the Internet Era" (REP, No. 173, 2016).

We can finally note that in the last years we have witnessed the foundation of different journals that are specifically focused on topics related to digitalization and politics. With respect to those cases, we cannot consider them among prominent journals since they are only included in the Emerging Sources Citation Index (ESCI), but they could be interpreted as an update of contents in the direction of the digitalization. This is the case of the Revista de Internet, Derecho y Política[20] (Journal of Internet, Law and Politics), whose first number is dated in 2005, with 26 issues, and Teknokultura. Revista de cultura digital y movimientos sociales[21] ("Technoculture": Journal of digital culture and social movements) founded in 2001.

[18] According to the SJR, we have included in our analysis those Spanish journals in two different subject categories: "Sociology and political science" (22 journals) and "political science and International Relations" (10 journals). Some of the quoted journals are in both groups. We have finally chosen journals in both groups directly or indirectly related to political science.

[19] The SJR is a platform that proposes a functional ranking for scientific journals based in the information contained in Scopus.

[20] According to Google Scholar Metrics, in the position 6 in the field of political science and public administration, with a H Index of 6 between 2012 and 2016 (Delgado et. al., 2017).

[21] According to Google Scholar Metrics, in the position 16 in the field of Sociology, with a H Index of 6 between 2012 and 2016 (Delgado et. al., 2017).

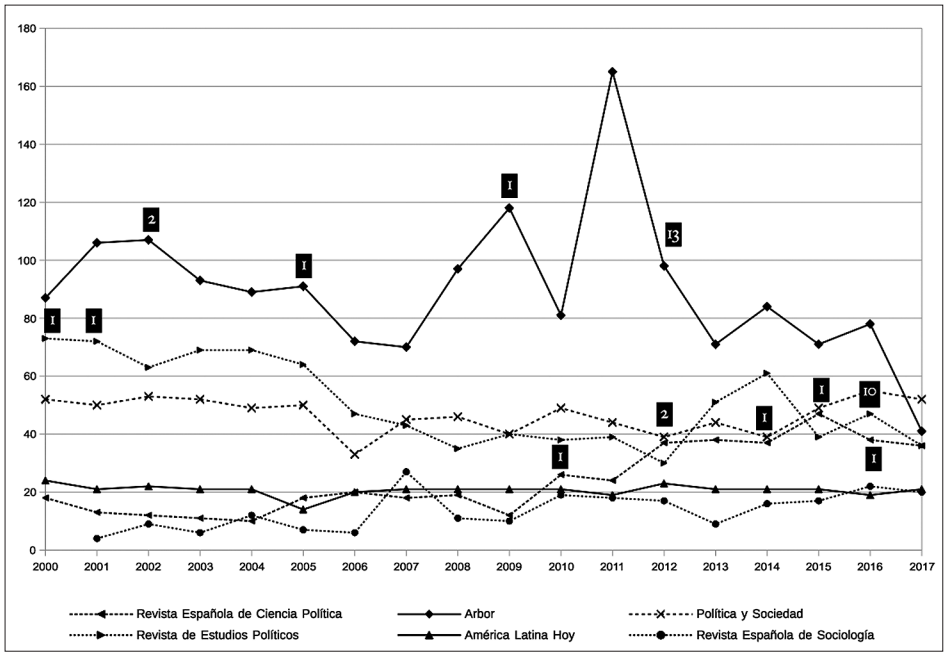

Figure 6. Articles in Spanish political science Journals on Digitalization (2000–2017)

This trend described of (absence of) research on digitalization in political science is also visible in the publication of book series. If we explore the catalogue of the 15 best ranked publishers in Spanish[22], it is not easy to find a volume relating to the topic under study. Most of the books found in the searches that had to do with the digital world, were referred to the treatment of information, addiction to Internet, new rights, etc., i. e., more biased to law, economy or media studies. We only found 14 books directly involved in the digitalization from our discipline published in Spain[23] in the last decade. We also found few of them published in Latin American Spanish but, were not included in the records.

[22] Data provided by Scholary Publishers Indicators (SPI): Prestige of publishers according to Spanish experts in Humanities and Social Sciences (http://ilia.cchs.csic.es/SPI/prestigio_expertos_2014.php; Retrieved August 2018)

[23] Javier del Rey Morato. 2007. Comunicación política, Internet y campañas electorales; De la teledemocracia a la ciberdemocr@cia. Madrid: Tecnos; Daniel Innerarity and Serge Champeau (Eds.). 2012. Internet y el futuro de la democracia. Barcelona: Paidós; Ramón Cotarelo (Ed.). 2013. Ciberpolítica. Las nuevas formas de acción y comunicación políticas. Valencia: Tirant lo Blanch; Ramón Cotarelo (Ed.). 2010. La política en la era de Internet. Valencia: Tirant lo Blanch; Ramón Cotarelo and Juan Antonio Olmeda (Eds.). 2014. La Democracia del siglo XXI. Política, medios de comunicación, internet y redes sociales. Madrid: CEPC; José Luís Dader and Eva Campos. 2017. La búsqueda digital del voto: Cibercampañas electorales en España 2015–16. Valencia: Tirant lo Blanch. Valencia; Igor Sádaba and Ángel Gordo (Eds.). 2018. Cultura digital y movimientos sociales. Madrid: Catarata. Madrid; Ramón A. Feenstra et. al. 2017. La reconfiguración de la democracia. El laboratorio político español. Granada: Comares; Andrés Villena Oliver. 2017. ¿Cómo se gobierna España? La estructura de las élites gubernamentales en 2004 y 2012. Granada: Comares. Various Authors. 2018. La Era de la Perplejidad, repensar el mundo que conocíamos. Madrid: Taurus; Luis Moreno and Raúl Jiménez. 2018. Democracias robotizadas: Escenarios futuros en Estados Unidos y la Unión Europea. Madrid: Catarata; Mario Tascón and Yolanda Quintana. 2012. Ciberactivismo: Las nuevas revoluciones de las multitudes conectadas. Madrid: Catarata; Ramón Cotarelo and Ismael Crespo (Eds.). 2012. La comunicación política y las nuevas tecnologías. Madrid: Catarata; Ramón Cotarelo. 2012. El sueño de la verdad. Los conflictos en la sociedad abierta. Madrid: Catarata.

3.1 Spanish political science conferences

The institutionalization of political science in Spain is quite recent. In the past, our field of interest was quite dependent on other related disciplines, for example, sociology or constitutional law. In 1993, the Spanish Association of Political Science and Public Administration (AECPA)[24] was established, parallel to the final impulse of the consolidation of studies in political science beyond the traditional and oldest Spanish universities. Among its founding goals are the promotion of discipline development, the improvement of methodological approaches for political analysis, the stimulation of research and scientific cooperation, and the commitment to democracy and its principal values. One of the main activities through which the objectives of this association are sought are the biannual conferences. The first conference took place in 1994, and 13 of them have been celebrated, up till 2018. This is equivalent to more than 5000 papers delivered in more than 500 panels organized. Regularly, these panels are coordinated according to various subfields (political theory, political actors, international studies, public policy and management, political institutions and structures, political behavior and political communication). In 2011, the 10th conference title was "Política en Red" (Net Politics). That does not mean that most of the papers proposed had to do with the digitalization of political science: we recorded 29 papers out of 352 (47 panels), i. e. 8,2 percent. This proportion was the maximum record in this specific association history in terms of digitalization visibility. We also found monographic panels in this conference: e. g. "New means, new methodologies: transformation of mobilizing processes", "Open government and digital citizens". In the last events of AECPA papers relating to our topic of interest were given although, in opposition to what we could expect, we have not witnessed an increasing inclusion of the digitalization in Spanish conferences. In fact, since 2011 the percentage of papers about digitalization delivered in the Spanish political science conferences till 2017 has been reduced: 2 percent in 2013 (9 out of 518), 3 percent in 2015 (16 out of 567), and not even a 5 percent in 2017 (22 out of 482).

In Spain there are also other younger and specialized associations related to some extent to political science. That is the case of the Spanish Association of Political Communication (ACOP)[25] and the Latin American Association of Researchers in Electoral Campaigns (ALICE)[26]. The first one was founded in 2008, aiming to gather not only researchers, but also political consultants in the same group. Since that year, this association has held several international meetings and one founding congress, and the visibility of the digitalization has been a constant theme, but not the central interest, of those events. The case of ALICE is slightly different. It was born in 2012 and is more oriented to the Spanish-speaking world. In seven conferences, we could see a prominent presence of digitalization as the main topics of the papers, much higher than in AECPA. Its first international conference took place in 2012 and was titled "Political Communication 2.0". 31 percent of the 150 papers presented were connected to the digitalization. In the next events this value was situated between the ten percent (with only 19 papers) of the III Conference in 2014, and the 20 percent (26 papers) of the IV Conference in 2014. The particular features of this association, more focused on topics related to campaigns, explains in part this "overrepresentation".

[24] *Asociación Española de Ciencia Política y de la Administración.*
[25] *Asociación de Comunicación Política.*
[26] *Asociación Latinoamericana de Investigación en Campañas Electorales.*

4 Conclusions

The situation in which Spanish political science has derived in terms of the incorporation of digitalization is somewhat variable and fluctuating. Depending on the dimension taken into account, we come up with a different picture.

The learning environment at the university level, which is defined by the Bologna Declaration, has long indicated the need for major changes, including in the teaching methodology and teaching resources used by faculty members. Thus, regarding the teaching sphere, we can state that in the last years we have witnessed the progressive increase of new digital technologies, not only within classrooms, but also through different programs implemented by universities targeting the training of faculty members, and also of administration and services staff, in virtual environments and new teaching (and researching) digital tools. However, this criteria "still" does not have a special recognition in the process of the academic career, a factor which provides a close look into the way accreditation procedures are configured. In opposition, the revisions of curricula of the Spanish Bachelor programs which offer political science degrees to the cited new technological circumstances is nearly absent and, at best, only visible in optional courses. This trend improves slightly at the postgraduate level in Master programs. Therefore, we can argue that digitalization is certainly not a natural area of specialization as we can find in other related disciplines (e. g. marketing, advertising, communication). The lack of a professorship on digital politics or equivalent, can be understood in terms of the structure of the Spanish cursus honorum in the academia, characterized by a clear rigidity in its configuration, strongly approached by disciplines and historic-based.

The apparent difficulties of the Spanish university system in that sense could be explained by the fact that the bureaucratic procedures by which a study plan is transformed is tremendously rigid and makes extremely laborious and tedious its modification once it has been already approved by the National Agency for the Evaluation of Quality and Accreditation (ANECA). This certainly introduces a dissuasive effect in the academic coordination of political science degrees and, consequently, the changes are not easy to implement.

The situation in regards to doctoral programs is quite different given the lack of this mentioned inflexibility. We have observed in the last years, but with a particular intensity since 2010, the growth of doctoral dissertations in topics directly related to digitalization. Most likely, the consolidation of social media and other forms of digital communication help to explain this evolution. In addition, we have to mention that some of the approaches found within these theses were rooted in side disciplines like communication and "orthodox" political science.

Concerning research in political science, we can point out that digitalization has become more prominent in the last years. Nevertheless, we have to disclose that those topics are neither a fundamental research line in scientific Spanish publications in the discipline, nor are the main questions in these academic papers presented and discussed in political science conferences. We have observed in the numbers that this growing trend of digital topics within research pieces of work are noticeable from 2010 till 2016, however there is an initiation of a decreasing values from 2017 onwards. It is probably still too soon to know whether this reduction is part of the trend or not. However, it seems very likely that the Spanish scholars interested in digitalization have crossed academic frontiers and are not only taking part in international research projects, but also placing their works in English language publications, at the moment unquestionably the lingua franca in this field.

It has been traditionally thought that Southern Europe, and particular Spain, has advanced 10 or 20 years behind Western Europe trends regarding political and media devel-

opment. We have observed that with the passing of years those differences have been reduced substantially, although regarding our object under study we could forecast that technological evolution and its permeability to other fields are still overtaking the rates of neighboring countries.

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Appendix

Undergraduate	
Courses related to digitalization in political science degrees	**University**
Técnicas de búsqueda y uso de la información Comunicación y participación ciudadana en la red Técnicas de búsqueda y uso de la información Informática Técnicas de búsqueda y uso de la información Técnicas avanzadas de investigación en ciencia política	Universidad Carlos III
Metodología Cuantitativa I: Herramientas Matemáticas y Informáticas Gobierno Digital Herramientas de Análisis per a Ciencias Sociales	Universitat Pompeu Fabra
Herramientas de trabajo universitario	Universidad Autónoma de Madrid
Informática aplicada a las ciencias sociales Nuevas Tecnologías y Sociedad de la Información	Universidad Rey Juan Carlos
Informática aplicada a la investigación sociológica	Universitat de Valencia
Técnicas informáticas de investigación social	Universitat de Barcelona
Análisis Avanzados de Datos Sociológicos Asistidos por Ordenador	Universidad Pablo de Olavide
Aplicaciones informáticas para la gestión	Universidad de Sevilla
Aplicaciones informáticas para la gestión	Universidad de Salamanca
Uso de las Tecnologías en la Investigación Socio-Política	Universidad de Granada
Informática aplicada Gestión de la información	Universidad Politécnica de Valencia
Informática aplicada a la Administración I Informática aplicada a la Administración II Gestión de medios informáticos en la Administración	Universidad de Castilla La Mancha
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Gestión de la información	Universidad de Santiago de Compostela
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Digitalization and Political Science in the United Kingdom

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1 Introduction

The UK has some of the oldest universities in the world, steeped in tradition and custom, many are tourist attractions in their own right. Politics, as the study of leadership and statecraft, has largely been embedded within the fabled triad of politics, philosophy and economics; a degree that has been the pathway to power for many graduates of Oxford, Cambridge, Durham or the more insurgent London School of Economics (LSE) founded as late as 1895. The discipline of politics was thus designed to prepare young men, as it was at the time these institutions were founded, to lead an empire and this ontological perspective still weighs heavy within modern UK political science. Oxford University offers a vision of "a world with a wider understanding of political power and process" (https://www.politics.ox.ac.uk/about.html); Cambridge prioritizes "the importance of ideas, institutions and processes in shaping political developments and choices" (https://www.polis.cam.ac.uk/about-us); The LSE defines the study of politics as the "analysis of the ways in which individuals and groups define and interpret political issues and seek to shape government decisions" (http://www.lse.ac.uk/Study-at-LSE/Undergraduate/Degree-programs-2017/BSc-Politics-and-International-Relations). The latter, the more radical and younger institution, offers a hint at the discipline being more than institutions and processes. Media, of any form, is absent from discussions despite the UK having in 2018 a record of 50 years of political communication research (Blumler & McQuail 1969) though the authors recall struggling to find a UK publisher for their work.

Political science's focus on structures, institutions and processes, with minimal significance awarded to the power of media, is at odds with technological developments in the UK and their impact. The UK pioneered the notion of public service broadcasting, the BBC being both a model as well as an instrument of state soft power. Digital technology was quickly embraced as UK Newspaper *The Telegraph* and Birmingham City Council (partnered by Birmingham University) launched websites in 1994, BBC Online was launched in 1997. Hence the UK was within a small few that embraced the digital revolution, and now most parts of the country have stable broadband access and most citizens use digital technology. An Ofcom report (Ofcom 2017a) shows 89 % of the UK population are regular Internet users, 99 % among the 18–44 age group. 83 % have home broadband. 66 % of UK adults use smartphones for accessing web-based platforms via apps. In terms of social media, a report (http://www.rosemcgrory.co.uk/2018/01/01/uk-social-media-statistics-for-2018/) shows 74 % of UK citizens have a profile on Facebook, with an even spread across age groups; 12 % are Twitter users, less in the older age groups. 17.2 million, 56 % female, claim the UK as their location on Instagram. These data suggest a

networked society of confident users, the conditions for digital technology to have disruptive capacity. There are of course digital divides, older and less financially independent groups are least likely to be regular users, have broadband access or be confident using the Internet. There are suggestions of a reshaping of power relations through digital technologies. The Ofcom Internet Citizens report (Ofcom 2017b) shows 60 % seek information about government and 43 % have signed online petitions or have taken an active part in campaigns via online only NGOs although the charity sector dominates here. Hence there is the propensity for the Internet to have significant impacts in all areas of public and private life, from lobbying members of parliament to finding a life partner. The commercial, social and political impacts are well researched and documented. Yet in the field of political science, as hinted at when focusing on how universities define politics, the digital revolution does not seem to have been a disruptive force on either education or disciplinary boundaries.

2 Teaching and learning

2.1 General information: technology-enhanced learning and the teaching excellence framework (tef)

Politics is taught in a range of departments in UK universities. The structure of the institution, its history and traditions, can influence the content and disciplinary focus of its politics course(s). The extent to which the digital revolution features in the content of degree courses with 'politics' in the title differs depending on whether it is situated in a department, school or faculty of social sciences and humanities or in that of media and communications. Institutional strategies and structures tend to result in disciplinary distinctions of political science vs political communication for both teaching and learning, as well as research as we go on to discuss in more detail below. No matter the institution and whether the politics degree is more political science or political communication and whether aspects of the digital revolution are embedded as part of the curriculum, it has certainly impacted the pedagogy of teaching, learning and assessment strategies to a greater or lesser extent. And it is likely that students will encounter a growing range of e-learning or technology enhanced learning resources if nothing else due to the policy and quality assurance processes built into UK higher education today.

On that note, we begin by discussing the context of teaching and learning in higher education before discussing the digital (or really not so digital) content and the role of digital tools for teaching, learning, and assessment in UK university politics education. A key element of context for contemporary UK higher education is funding for teaching and learning, and increasingly important is the evaluation, monitoring, and quality assurance in the sector. Especially important in that regard is the Teaching Excellence Framework (TEF) which was introduced in 2016 and (rightly or wrongly) draws on student satisfaction, graduate employment rates and salaries, and other such metrics in assessing the quality of teaching and learning environments, and student outcomes/learning gain. Although TEF currently operates at the whole institution level (and is for now focused on undergraduate teaching), it will soon include subject-level TEF and so politics degrees (as with all subjects in universities) will need to demonstrate the quality of teaching, learning and assessment and be benchmarked against degrees at other institutions in the coming years.

In total, UK universities received £33.2 billion for the 2014–15 academic year of which 44 % (or approximately £14.6 billion) came from (mostly undergraduate) university fees

backed by government loans (Universities UK 2016). The total income that year for teaching, which includes some additional government grants and other income sources, was £18.1 billion. Therefore, the bulk of funding comes from student fees, but this is a relatively recent development in UK higher education and has brought about a raft of other changes, which are argued (both positively and negatively) in more detail elsewhere in the academic literature and substantially in government policy and public discourse. Student fees have been growing since their introduction and now the maximum fee universities can charge in £9250, but only for universities that receive a bronze, silver, or gold rating in the TEF, although this included all 134 institutions that took part in 2017. As we go on to discuss below, digital resources in higher education and the use of technology enhanced learning in the delivery of courses is part of the core TEF metrics.

Since the introduction of much higher fees and against a backdrop of debates about the marketisation of higher education in the UK (see for example Molesworth et al 2011, Hewitt-Dundas and Roper 2018, Munro 2018), there has been increasing focus by the UK government on 'value for money' in universities. Contributions to this debate include a June 2018 House of Lords report by the Economic Affairs Committee that says students and the economy are not getting enough value from the university fees and other public investment paid into universities for teaching and learning. This is often seen in the context of graduate employment rates and salaries based on employment shortly after graduation, and institutions and degrees/disciplines are evaluated based on those criteria included in the TEF. The focus on what could be seen as profitable degrees is perhaps a risk for politics degrees, as we will go on to discuss later, as graduates may not immediately find high-paying graduate job roles and therefore the value of a political education is potentially seen to be lower in that context.

Digital resources and technology enhanced learning strategies are often seen as enabling, enhancing or ensuring alignment with TEF metrics (Davies et al 2017) and as a way to challenge a marketized higher education model (see for example Hall 2016). Although there are a range of critical interpretations of the use of technology in this context, there is significant drive toward the digitalization of teaching, learning, and assessment in UK universities. As noted above, technology enhanced learning is seen as a vehicle for meeting many of the TEF criteria (Davies et al 2017), including student engagement, developing independence, personalized learning, improving student outcomes for all students particularly those from disadvantaged backgrounds, etc. providing quality teaching and learning and engaging students. Universities in the UK are increasingly using learning analytics and those not already using the technology are encouraged by the UK Higher Education Policy Institute in light of TEF (Davies et al. 2017) as part of their technology enhanced learning tools to evaluate and encourage student engagement with the curriculum and online resources.

The use of digital technologies in university teaching and learning is a norm, as technology enhanced learning is embedded across higher education institutions in the UK. It is taken for granted by students and staff that there will be significant access to digital resources in order to study and, for the most part, UK university learners are happy with the provision of digital (e. g. online course materials, e-books and e-journals, file storage and back-up capacity) and physical (e. g. computing and printing facilities) resources to support their e-learning (Newman and Beetham 2017). That said, however, UK University students do not believe the use of digital resources in their learning adequately prepares them for what they expect to be crucial for gaining employment which they believe will demand more advanced digital skills. This may be in part linked to the relatively narrow range of tools used in courses. Additionally, as future generations of students enter university, the student desire for increased digital resources and opportunities to develop digital skills is likely to increase, especially in light of revisions to the national curriculum

for compulsory education in the UK to include more technology and computing education to enhance digital skills amongst young people (White 2017).

Specific to course activities, more than 95 % of UK students report using digital resources to produce work in a digital format at some point in their program (Newman and Beetham 2017). The use of digital tools is particularly prominent in assessment with universities across the sector utilising online submission and plagiarism detection tools. However, the use of digital resources in and to support teaching and learning is quite variable. Students report that they consistently use digital resources for information gathering, but less so for collaborating with others, documenting their learning in formal development records, using educational games or simulations, or using polling devices or online quizzes in class (Newman and Beetham 2017). As we might expect, the virtual learning environment (VLE) is the most consistent digital tool that students reported using in their learning and coursework and access it on a range of platforms. There is significant opportunity using technology enhanced learning for personalised learning, fostering student engagement, interactive learning strategies, and independent learning, but in many ways politics remains a 'chalk and talk' degree in many places that utilises a very narrow range of TEL tools. Some politics programs in the UK (for example at Loughborough University) identify in course marketing materials how they use technology enhanced learning in the program. Loughborough highlights the use of technology enhanced learning for interactive lectures by using clickers (e. g. Turningpoint -which can be app based or using proprietary remotes- or app and web-based versions of it like Mentimeter or Socrative) and social media platforms like Twitter. At our own institution, there has been significant investment in a virtual learning environment (including staff development to support the integration of these new digital tools) that provides additional opportunities for use of technology enhance learning, teaching, and assessment, including digital discussion boards, virtual classroom functionality, and optimisation for mobile platforms.

Students use digital tools to support their independent learning in a variety of ways and feel more independent in their learning when using digital tools, including managing references, making notes, finding resources beyond the recommended reading list, accessing learning resources 'on the move', and watching or listening to learning materials. Overwhelmingly students use digital resources to access the lecture notes or recorded lectures (Newman and Beetham 2017). Due to availability and commercial usage there is significant drive to innovate in both teaching and learning within UK universities. While there is opportunity to expand the use of technology enhanced learning in university curricula, we would advocate for strategic approaches to integrating innovative teaching and learning tools in courses. Our own experiences and that of colleagues teaching politics (and other subjects) across the UK tell us that student engagement with their learning, be it in a virtual or real environment, requires the experience to be meaningful for the student. Students welcome innovation in teaching and learning, but not necessarily innovation for innovation's sake. Davies et al (2017) recommend that universities adopt a knowledge and evidence-based approach to implementing new technology enhanced learning strategies so that universities, faculties and teaching teams can make informed judgements about what tools to include (and not) in curriculum design. To support the integration of digital curriculum enhancements, JISC has developed a series of resources to support academic staff in designing learning and assessment with technology enhancements (Ferrell et al. 2018). The guidance sets out how digital tools can help with learning design and key considerations in developing strategies for integrating digital strategies in designing learning and assessment, including the evidence base drawing on primary and secondary research.

2.2 Practice: politics at UK universities in a digital age

Politics at UK universities exists within the environment set out above, but is also set within a local context that informs the content and delivery of a degree program. As noted above, the extent to which the digital revolution features in university curricula is perhaps down to how politics is defined and understood within that local context, both in terms of the structure of the department or faculty in which the degree sits but also within the research tradition and expertise of the staff. Research-led teaching is a significant focus of UK universities, perhaps in part due to the research equivalent of the TEF (called the Research Excellence Framework, or REF, which predates the TEF and is discussed in more detail below).

That approach to research-led teaching in politics is signalled in the UK Quality Assurance Agency (QAA) Subject Benchmark Statement for Politics and International Relations (QAA 2015). QAA is an independent organisation that reviews UK higher education standards, including publishing subject benchmark statements for degree programs in the UK. These statements describe disciplines, including politics and international relations, and provides guidance on the subject knowledge and skills that students achieving a degree in the UK would reasonably have. These statements, updated every several years, are intentionally broad (specifically referencing the interdisciplinary and research-led approach of many UK degree programs on these subjects) and are particular in pointing out that they do not serve as a national higher education curriculum (QAA 2015).

What is interesting (if perhaps not surprising) is that that there is little explicit reference to digital or the digital revolution in the content of politics and international relations degrees as set out in the subject benchmark statements, it can potentially be read implicitly in many ways including the role of digital technology in elections, political campaigns (including and beyond elections), marketing, public opinion research and dissemination, representation, mobilisation, etc. All of these content areas for politics and international relations courses are arguably substantially influenced now and into the future by digitalization.

But the extent to which this is picked up in the curriculum at individual universities is, by and large, down to the disciplinary approach of that institution. For example, at our own university digital media and technology plays a significant role in the curriculum of the degree, included explicitly in module titles and descriptors for *digital politics* and *political marketing and campaigning* and perhaps more implicitly in module titles but more explicitly in descriptors for *civil society and social movements, critical debates in contemporary politics,* and other aspects of the curriculum reflecting its home in a faculty of media and communications. When searching programs for the keywords digital and politics, apart from Bournemouth, the only hits for UK institutions are a part-time MSc in Global Politics and Digital Technologies at Cardiff and the Manchester Metropolitan University's digital politics research degree program. The norm is for politics degrees, like that of Loughborough University, to be situated in a politics, history and international relations department within the School of Social, Political and Geographical Sciences. The university describes its program as focused on 21st Century politics, which might indicate a significant role for digital and the digital revolution within the curriculum. However, there is no explicit reference to digital in the course and many module descriptors. That said, however, even within the course references for the communications and media degree at Loughborough, digital appears to be more implicitly than explicitly addressed in the curriculum until the final year when students take a digital media module.

Returning to the QAA subject benchmark statements for politics, digital and information technology tend to be discussed in the context of student skill development. This is true in previous iterations of the statements (e. g. 2007) and the 2015 statements, which

embed digital and information technology in discussions of students' intellectual and transferrable skills (e. g. ability to gather and evaluate data and information from primary and secondary sources, critical and reflective use of technology in learning, use of ICT in presenting information). The earlier subject benchmark statements (2007) made no real mention of using digital technology in teaching and learning beyond discussing the use of such technology in student-tutor contact. However, the 2015 statement specifically referenced the significant advancements in the use of technology in teaching politics (citing the use of virtual learning environments and using bespoke data analysis packages). It also cites the use of particular digital resources that would be beneficial to teaching politics, including broadcast and electronic sources, data sets and analytic software; learning methods including websites; and assessment methods including blogs. The specific learning and assessment methods cited in the QAA document represent a narrow range of technology enhanced learning tools, but as the pedagogy of higher education and digital tools used in teaching, learning and assessment in universities continue to develop, we would expect to see increasing emphasis in the QAA subject benchmark statements on the use of technology enhanced learning as the statements are regularly updated.

Overall, we would argue that there is an opportunity for university politics curricula to further embed digital in both the content and delivery of degrees, although we might be expected to say that given our own disciplinary and research traditions. There is not currently significant emphasis on digitalization in politics education, although it may loom larger in discussion than we can necessarily read from policy, HE guidance and degree marketing documentation at other institutions. However, the distinction between political science and political communication is also signalled by the titles for members of the professoriate. To our knowledge there is not yet a UK professor of digital politics or politics and the internet. There are professors of political communications, media and politics (or politics and media), internet and society, internet studies, and so on, but these are largely centred in political communications or internet studies departments rather than in departments of political science. It would therefore appear that digital is purely a skillset and that the digital revolution has not yet encroached into political science territory.

2.3 Desiderata, positive perspectives, possible risks

In the meantime, there is a significant drive from the government to enhance citizens' digital skills as there is an increasing need for citizens to use digital technology in their working and home lives. As a result, the government is investing and encouraging schools and universities to embed digital technology in learning more and more (White 2017). This echoes what students think they need from their university education in order to meet the demands of the digital workplace (Newman and Beetham 2017), as noted above. The government has identified digital technology as a significant contributor and enabler in the UK economy now and into the future (White 2017), accounting for 1.5 million jobs (4.5 % of UK jobs in 2016), £14.5 billion in exports of services and £12.5 billion in service imports in 2015, and £118.4 billion in gross value added (7.1 % of the UK's total gross value added in 2015). Employers will increasingly need digital savvy workers, but the UK is facing what the government considers to be a 'digital skills crisis' (House of Commons Science and Technology Committee 2016). More than half of UK jobs require significant levels to digital skills to the level of 'digital worker' and 'digital maker' (White 2017), which is well beyond the level of basic digital skills. More specialist knowledge around artificial intelligence is also suggested as required, the current focus is on teaching data management and neural-networks to ensure economic competitiveness (APPG AI 2017).

This drive from policymakers and students will likely influence the future of politics education in the UK as universities, faculties, departments, and degree teaching teams consider what digital skills future political scientists need in the immediate and longer term future. The TEF, which includes metrics that evaluate universities and in the near future subjects/disciplines, based on the employability of graduates, will further emphasise the need to consider what and how we teach politics students in the years to come.

In its report on the digital skills gap, the House of Commons Science and Technology Committee (2016) set out a call to action for industry, schools, and universities to address the gap to maintain competitiveness in the global economy, which was followed by the 2017 Digital Strategy to improve digital skills in the country and reduce digital exclusion. Although for the most part the country enjoys high levels of connectivity, the social inequalities that exist offline are reproduced in the digital environment (White 2017), as noted in the outset of the chapter. The combination of the digital strategy and new requirements in the national curriculum for schools (in 2014) to improve digital technology skills amongst children are designed to reduce digital exclusion and increase the digital skills in the UK.

Although much of the digital education discussed in government policy documents is primarily focused at school-aged children, universities will soon welcome young people with ever more digital skills into their degrees. These students will be more accustomed to and likely be expecting significant access to and use of digital resources at university and digital content in the curriculum, including for politics degrees. This will lead to degrees and institutions considering whether politics education today, which is arguably more theoretically driven, needs to include more practical and applied elements to political science, including enhancing the content to include advanced levels of digital knowledge and skills to address the political science roles that future graduates may be expected to fill.

A potential risk, however, is that in attempting to expand the use of technology in teaching and learning, that it becomes the focus of education rather than the vehicle to engage students and enhance learning outcomes. While we see significant opportunity in TEL for politics education and advocate academics trying new tools to drive education and interaction with and amongst students in and outside the classroom to enhance their learning, we equally agree with Davies and colleagues (2017) that there needs to be sufficient knowledge base and evidence to help colleagues and their departments, faculties and universities make informed decisions about how TEL can enhance student learning and improve staff teaching experiences. It is also useful for staff to have sufficient support and development opportunities to learn about how these TEL tools can be effective in their teaching. And we also advocate a team-based approach within politics departments, as each of us cannot be an expert in every part of our subject area and all the tools for effective teaching. So, working with colleagues to learn the breadth of TEL tools that are available and deciding together how best to embed those tools within a degree program to support and enhance student learning is a good strategy for departments and degree courses.

Finally, the QAA subject benchmark statements discussed above in near and further future versions will likely reflect this push-pull from government (through policy and quality assurance measures) and students that calls for expanded technology enhance learning provisions. There may too be additional digitalization of content and education practice within politics through a research-led approach to teaching and learning, which is a tradition embedded in many universities in the UK and an important element of the existing subject benchmark statements (QAA 2015). If the research agendas within universities consider the role of digital media and technology in contemporary politics, it will more or less naturally impact on the content of degree programs.

3 Research

3.1 General information: the non-digital boundaries of political science

Performance in research outputs is measured in the UK through the Research Excellence Framework (REF) the aim of which is to benchmark quality, make institutions accountable to government and society and inform the selective allocation of funding to institutions by government. The REF is divided into Units of Assessment with Politics and International Relations having its own unit, expert panel of assessors and rankings. Each institution submits up to four pieces of work by each permanent member of staff, a number of impact case studies – normally one plus one for every 10 staff members entered. While REF does not shape the discipline it provides disciplinary boundaries, and these boundaries echo throughout UK academia reflecting long-established disciplinary traditions. The study of power relations, within and between nations, belongs to the field of political science; how power is expressed, how influence is realized and the instruments by which power is challenged tends to belong to the field of political communication. These silos are a feature of many Universities, where political communication might be a sub-department within journalism (the University of Sheffield for example), and so there is a separation between how politics is done and how it is communicated despite this separation being arguably illogical. Mirroring the siloing of political communication and political science within the composition of academic departments and the design and delivery of programs is the research environment around what Dutton (2013) refers to as 'Internet studies'. The digital revolution in the UK saw websites first utilized by political parties for the 1997 general election, and at the same time the first voter advise application was introduced. However it is only in recent years that digital technology has been taken seriously as having a potential impact on politics but remains underrepresented in political science publications.

Searching the database of impact case studies submitted to the politics REF we find little reference to digital. Eight out of 166 have a digital reference, two clearly relate to areas beyond data management and regulation: one on new media ecology submitted by Royal Holloway, one on public engagement with parliament submitted by the University of Hull. Out of 156 impact case studies submitted to the Communication, Cultural and Media Studies, Library and Information Systems Unit of Assessment 82 reference digital, 14 have themes relevant to political science. Similar the database of the flagship British political science journal, the *British Journal of Political Science* (BJPS), reveals one article published in 2010 referencing digital technology, focusing on regulation and three in 2015 exploring quantitatively the link between Internet usage and voting behaviour. There are only two other articles, published in 2017 and 2018, located by the search terms 'digital' or 'Internet'. While *The British Journal of Politics and International Relations* (BJPIR), published 79 articles 1999–2018, the journal *Politics* 43 articles 2006–2018 and *British Politics* 47 articles 2006–18 there are never more than 7 articles on the topic per year out of a potential average of 32 per journal. The articles themselves encompass a range of studies, encompassing research on regulation, policy debates and accessibility, the digital divide, usage of digital tools by political actors and work on effects on citizens from a social capital perspective and voters drawing on the media effects tradition. Yet compared to the *International Political Science Review* (IPSR) which published 84 articles 1999–2018 and the *International Journal of Communication* which published 360 articles 2007–2018 it is clear that digital technology is seen as the domain of the communication field and it is only when the Internet touches on traditional political science domains does it gain any attention from the discipline.

The broad focus of published articles is indicative of broader attitudes within political science scholarship in the UK, and perhaps more widely based on publications in the IPSR. Those attitudes determine that there are clear boundaries in terms of theoretical approaches as well as the foci of political science. The dominant paradigm of thinking is, therefore, that politics can impact digital technologies, through regulation, or that technologies can be utilized for the purposes of innovation in carrying out tasks that are embedded within 'doing' politics (Chadwick & May 2003). However power is retained within the agents and structures of politics and power relations are not challenged by innovations in communication technology, an attitude that has been seen to predominate with the political elite as well as the community that studies them. The work that challenges that paradigm tends to be published in journals which focus on communications or that explicitly foreground the Internet or digital technology as their intellectual discipline. Hence Dutton's reference to Internet studies as an emergent area, given that it has no clear home within the more traditional parent disciplines.

Further evidence of the low priority given to digital technologies is the case of the British Election Study. The first questions referencing the Internet on the British Election Survey, which goes out to a panel during each general election contest, were entered in 2005 (Clarke et al 2006). But in order to maintain comparability year-on-year the key question of whether a party contacted the voter remains open-ended as to the medium. Newer forms of engagement with elections, such as following parties on Facebook or Twitter, engaging in online communication, remain side-lined and though a few questions appear there are still quantitatively more questions about television, newspapers and radio than the plethora of digital platforms being utilized in recent contests. Hence, reflecting the broader attitudes, although justifiable to maintain the integrity of rolling panel data, digital technologies are not deemed as having the significant impact that makes them a subject requiring extensive focus. Rather the affordances of digital technologies are leveraged as means for capturing data at a lower cost. Panel surveys have migrated online and, mirroring the emergence of online pollster YouGov and move to online data capture within the polling industry more generally, data is collected through samples of citizens contactable via email or for some projects via social media.

Election contests in 2016 and 2017 may however have proved to be watershed moments. The circulation via social media of exaggerated or inaccurate materials during the UK referendum on EU membership has led to debates on the impact on the integrity of democracy of platforms where any user can produce and share content. Equally both the level of online support gained by Jeremy Corbyn as Labour party leader, and the ability of the pro-Corbyn campaign group Momentum to mobilize supporters on the ground, may have led to increased voter turnout and vote share for Labour (Ross & McTague 2017). Such indications raise questions about whether traditional media, which largely dismissed Corbyn as a joke, still have influence on voter attitudes (Freedman 2017). Thus questions regarding how and in what way digital technologies have a disruptive influence on democratic processes are being asked within political science as well as political communication. The results of these two recent contests, and the inference that digital platform usage played a role, coupled with revelations that data trails left by users online could be harvested and utilized to manipulate voters by consultancies such as Cambridge Analytica, reinforce the importance of studying and understanding usages of and interactions in digital environments (Persily 2017). To date these studies have tended to reside within conferences and publications classified under the political communication disciplinary umbrella, but there are indications that now political science and political communication are starting to interact. The 2018 Political Studies Association saw a plenary focus on 'Bursting filter bubbles and opening up echo chambers' which specifically focused on questions of how digital technologies interacted with democracy. Panels on the 'Brexit' referendum and 2015 and 2017

elections also included extensive presentation and discussion of digital platform use and the probable impact on outcomes. Whether this is a fleeting moment, a bandwagon soon to run out of momentum or a longer term trajectory is impossible to say, but there is a more recent, serious tone when digital technologies are discussed as having political agency.

3.2 Content aspects: researching the UK political cybersphere

Despite websites being a feature of the 1997 UK General Election they were not given any attention in the subsequent political science study (Butler & Kavanagh 1997). Eighteen years later the situation was little better. Despite quoting a member of the Scottish National Party's strategy team saying 'Facebook was the real deal' (p. 150) Cowley & Kavanagh's study of the 2015 contest offers little analysis of the online campaign. In contrast Wring et al's (2017) *Political Communication in Britain: Polling, Campaigning and Media in the 2015 General Election* devotes an entire chapter to social media (Lilleker & Jackson 2017). The fact that similar space was devoted to online campaigning in 1997 in the then emerging political communication series (Ward & Gibson 1998) indicates further the fact that while the election study would devote chapters to television and the press, the Internet 'belonged' to communication. Within the political science literature in 2002 there was discussion of online voting based on research about the disengaged youth (Henn et al. 2002) and the following year saw the first article reviewing the use of websites by candidates during the UK's 2001 general election campaign (Ward & Gibson 2001). The authors of the latter paper, in collaboration with Wainer Lusoli, pioneered the first UK study of political participation online publishing research on party members' virtual participation (Ward et al. 2002). The work, although surveying only members of the Liberal Democrats, a minor player at elections, argued that the affordances of digital technologies, if utilized appropriately could widen and deepen engagement among party members (Ward et al. 2002) and the wider citizenship (Ward et al. 2003).

Subsequent research became increasingly devoted to the study of how parties, candidates and elected representatives utilized the various tools and platforms that became available as technologies developed. The outputs of these studies were scattered across myriad journals, such as a study of email use (Jackson 2004) in the *Journal of Systemics Cybernetics and Informatics*, weblog use (Auty 2005) in *Aslib Proceedings* and exploring the interactive potential of various web-based platforms (Challen 2001) in the *Journal of Public Affairs*. Some studies were submitted to and accepted in newly developed political science journals, studies of UK MP's use of the social networking platform MySpace (Jackson & Lilleker 2009a). was published by *British Politics* for example but the majority of similar works found a more conducive home in international journals which explicitly aimed at filling the gap in the market for work on Internet studies, for example *New Media and Society* (established 1999) and the *Journal of Internet Technology and Politics* (established 2004) which pioneered work on interactivity and representation (Coleman 2005, Jackson & Lilleker 2009b). Work on digital technology and political participation in the UK burgeoned (Gibson et al. 2005) with studies exploring how motivations for participation differ online and offline (Lilleker & Koc-Michalska 2017), but largely such research is included as a case study within larger comparative projects (see for example Gibson & Cantijoch 2013). Thus there is an ever-growing literature assessing how digital technologies are utilized in the UK for electioneering and permanent campaigning and with what effect, although spread across a range of multidisciplinary outlets.

A separate strand of the literature has studied how digital technology can enhance engagement between the structures of government and citizens. Although one of the early ground-breaking studies into networked governance had no references to the Internet (Bang

2003), the hints in the volume of the power of networks chimed well with hypotheses that digital technologies had the capacity to reshape politics (Castells 2004). Although published outside of traditional political science fora, Chadwick (2003) mapped how consultations and open source collaborations in the public sector could democratize societies. Writing for the management discipline Kolsaker & Lee-Kelley (2008) argued citizens recognised the value in e-government for knowledge acquisition and communication. Optimistic perspectives are tempered by Wright's (2006) study of the UK Downing Street petitions site and this strand of work has reduced with the reduction of government initiatives in this area.

While such work tends not to be published by, and perhaps not seen as in the purview of political science journals, it is work on grassroots social movements that appears to be where the most innovative understandings of digital politics can be found. The work of Henn et al (2002) hinted young people were seeking alternative outlets to pursue agendas not covered by mainstream parties. Work exploring citizen-initiated campaigning (Gibson 2015), grassroots organising (Kavada 2009) and new protest movements (Dowling et al. 2012) demonstrate digital technologies facilitate new forms of organisation and political participation repertoires. However, while valuable for understanding the reshaping of politics, these studies tend not to interact with political science literature unless they converge on the territory political science traditionally sees as its domain. Citizen influence over the workings of political parties finds a home within *Party Politics*, but communication journals tend to be the locations for research on organisations which may impact formal political processes but fall outside of the mainstream.

3.3 Institutional aspects of research: digital research between the silos

There is no governance of politics as a discipline, where governance does take place it would likely be at the level of the academic institution, each of which approach the study based on their own philosophy and traditions while tapping into the broader UK understanding of the role of the discipline. The one UK specific learned society, the Political Studies Association (PSA), does unite the academic community however and since its formation in 1950 has sought to develop and promote the study of politics. The Media Politics Specialist Group, formed by Dominic Wring and Mark Wheeler in 1997, is one of the largest communities of the PSA. The annual specialist conference, as well as the group's panels at the main PSA annual conference, tends to host most research with a digital focus. Aside from the group the 'Internet studies' research community align with the Media, Communication and Cultural Studies Association (MeCCSA) or sub-sections of trans/international learned societies. To date there are no dedicated groups which unite researchers of digital technology and politics that are bespoke to the UK. Likewise there are no dedicated UK journals which marry together politics and technology and no journals recognized as facing the UK political science community have had special editions on the topic. Hence research on the interaction between politics and digital technologies in the UK are spread across a range of international journals, mostly within the fields of communication, public affairs or social movement studies. This means there is minimal conversation across the disciplines.

Gaining research funding for studies of the digital-political interplay is also challenging. The Economic and Social Research Council (ESRC) has funded extensive work on smart cities and digital divides and one project on social media use within the UK armed forces; other studies on child safety and innovations in surgical training demonstrate that digital technology is viewed as having economic benefit and social impact but does not have a significant effect on political processes. Where there is research that touches on the impact of digital technology it is a sub-theme of projects which focus on gender voting pat-

terns, party competition or campaigns, in particular the British Election Study or Scottish Referendum Study. Research funding in the more political dimension of the digital revolution is instead funded by the Arts and Humanities Research Council (AHRC) or Leverhulme Trust. The challenge for researchers is to carefully navigate the perceived boundaries between these different bodies within Research Councils UK. The AHRC will not fund projects perceived to be the purview of the ESRC or vice versa. It is also a challenge to find good fit for projects within the overall strategic goals of funding councils. The ESRC seeks to utilize social science evidence to address defined social and economic challenges, those priority areas being: mental health, housing, productivity, understanding the macroeconomy, climate change, innovation in health and social care, and trust and global governance in a turbulent age. The AHRC, with a broader remit, focuses on research into identity, behaviour and expression, to seek out new ways of knowing what it means to be human in different societies and across the centuries. Internet studies researchers must navigate these priorities and situate their research carefully within the language of the funders' stated priorities. The priorities do not appear to encompass or accommodate political science research into digital transformations of the institutions, processes and relations of power.

Despite the challenging environment pioneering centres have driven the discipline forward in the UK embedding scholarship within an international network examining the impacts of digital technology on politics. The Oxford Internet Institute, founded in 2001 by William Dutton, is a multidisciplinary research and teaching department of the University of Oxford, dedicated to the social science of the Internet. The institute researches how the digital connections embedded in almost every aspect of society impact individual and collective behaviour and so affect social, economic and political domains. The focus of the digital politics and government theme covers all forms of political behaviour, from voting and campaigning for policy change, to protest and revolution, with the explicit aim to re-examine the models, methodologies and conceptual frameworks to better understand political behaviour. Similarly, the New Political Communication Unit, founded at Royal Holloway in 2007 by Professor Andrew Chadwick, has developed research covering online democracy and the changing interface between representative institutions, public bureaucracies and citizens; so re-examining how organizational practices are being reshaped by new patterns of communication. While these represent two leading centres of research, many further research groups and clusters have attracted a critical mass of Internet studies researchers with an interest in political science questions, these include the Political Communication Research Group at Leeds University, and the Centre for Politics and Media Research at Bournemouth University. These and many similar groups provide fora for discussion, investigate and collaboration around questions of how the opportunities and challenges that emerge from the proliferation of digital communication technologies impact on political culture and practices. Yet still there remains a disciplinary divide between political communication and political science.

3.4 Desiderata, positive perspectives, possible risks

The years 2016–18 might represent a watershed, as political events beget greater conversations between disciplines. A palpable sense that social media has had an impact on the spread of ideas which impact election outcomes, that citizens are being manipulated due to analysis of digital trail data, and that social media provides environments within which the conditions for greater political engagement as well as exposure to strategic disinformation and echo chambers, within which inaccurate and extremist arguments circulate, prioritise better understanding of the affordances and usage of digital platforms. Political science appears to have recognised the value of understanding the sociological and psy-

chological factors which cause correlations between online behaviour and the formation of attitudes which determine voter choices. More broadly, how emerging attitudes impact trust in governments, democratic processes and institutions all interact with those areas seen as the cornerstone of political science research. The interdisciplinary conversation has started in the UK, at the 2018 Political Studies Association conference, and via recent published works in BJIPR and BJPS. Also the plethora of institutional weblogs and videoblogs, hosted at Oxford, the LSE and Sussex Universities, are beginning to discuss the role of the Internet, and all digital platforms, on politics. Beyond considering how digital technologies affect the relationship between citizens and institutions, more critical analyses are required in the fields of cybersecurity, artificial intelligence and electoral integrity in particular in response to concerns of foreign interventions in political processes. This research agenda is growing in the USA (Persily 2017), but has not yet been of paramount focus in the UK however this is likely to change.

It is therefore reasonable to suggest that the relationship between researchers of political science and political communication, politics and digital communications, are beginning to increasingly look beyond their boundaries. Opportunities for single nation and comparative studies of the factors around trust in governments, offered by the ESRC, offer the potential for collaborative projects to emerge. More opportunities in this area exist at the European level. However with the UK due to leave the EU in 2019 it is unclear if there will be continued access to the European Research Area (ERA). Given existing individual collaborations around COST initiatives relating to political campaigning and the use of social media, as well as institutional and national collaboration on projects concerning cybersecurity and data protection, leaving the ERA would close a number of opportunities off. The UK enjoys a global reputation in education and research but it is now through partnerships that the tradition can continue and strengthen. Interdisciplinary research across institutions within the UK, but also across Europe and the world, in order to reach common understandings regarding the impact of the digital revolution is required. Perhaps due to the siloing of disciplines, and lack of nation-specific outlets for Internet studies research, UK researchers are well-placed to work toward learning and sharing at the global level but this requires further opening up of the silos and a breaking down of boundaries. In particular it requires studies of media and communication to be taken seriously as a matter for political science.

4 Conclusions

The digital revolution has impacted to a far greater extent on education than on the teaching of political science. The politics discipline retains an almost exclusive focus on how institutions and processes came into being, the philosophies that underpin them, and the interactions between states than the communicational dimension of politics. The siloing of communication from political science is also reflected in the disciplinary boundaries which govern research. The main University departments, journals, funding bodies and REF units of assessment see all aspects of communication separated from the field of politics. The separation is likely an artefact of the philosophy which shaped the development of politics as a discipline, as the science of attaining and maintaining power as well as the view of communication or media studies as being a soft subject. When the media comment on A-level results, the entry qualification to University, there are often derogatory correlations made such as the succinct argument made in the satirical but intellectual magazine *Private Eye* "50 % drop in students taking French or German A's; 500 % increase in stu-

dents taking Media Studies; A level pass rate increases from 84.2 % to 97 %.". The stigma of media studies may drive the demarcation from subjects that adopt the science moniker.

Therefore digital is foregrounded as a set of skills and, through the emphasis within the TEF on technology enhanced learning, impact far more on the design and delivery of content than upon the content of politics programs. The adoption of e-learning resources from the now standard VLE to interactive in-class devices, social media usage, plagiarism-detection software, blogs and vlogs is revolutionising some aspects of teaching. Equally students have access to a huge array of electronic resources, from news databases to journal packages and e-books each linked to from bespoke curated reading lists. Publishers are tapping into these developments providing book chapters that can be directly linked to by educators and collected by students for reading on mobile devices. These developments allow for greater flexibility in teaching and learning, for students to have almost unlimited access to subject specific resources and to have access to tools that support them reading, annotating and referencing work while getting feedback in various ways throughout their educational life.

But there are signs that digital is not simply to be a skillset or teaching and learning aid. The potential power of digital to impact democracy and democratic institutions, positive and negative, has become a feature of discussions between disciplinary experts. Political scientists have begun to speak more to experts in the fields of communication psychology, e-participation as well as sociology and cyber-security to develop richer understandings of contemporary issues. The research collaborations that can emerge will have the capacity to drive a more interdisciplinary understanding of the impact on politics of the digital revolution as the ideas filter through research-led teaching. Students will also demand greater understanding of how interactions facilitated through digital technologies change our understanding of political institutions and processes. As they watch a spat on Twitter between US President Trump and North Korean leader Kim Jong-Un evolve into a shared understanding they must be asking is the rule book on diplomacy changing. Similarly they must ask, in the wake of Brexit and the result of the 2017 UK election, are patterns of influence evolving. The questions students ask are likely guided not only by academic curiosity, but also because they have to work professionally within environments which may no longer be explained by the theories and philosophies that have shaped understandings of politics for many years. These questions are also being asked by political scientists, in asking them the pioneers have the capacity to take steps towards greater interdisciplinary collaboration. Ones which occur, but rarely, but may be increasingly necessary. Therefore, while the UK currently sees digital largely siloed from political science, there may be indications the siloes are breaking down under the weight of events.

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Digitalization and Political Science in Japan

Makoto Hayakawa

1 Introduction

Both in classrooms and in terms of research, digitalization has influenced entire academic fields in Japan. However, that influence is limited owing to lack of human support and funding. In the field of political science, there are insufficient statistical data concerning the present situation; however, the general trend about the widespread influence of digitalization appears to apply there. Nevertheless, it is necessary to take into account the particular conditions of political science in Japan. A number of changes in Japan, such as the introduction of information and communication technology (ICT) into classrooms and internationalization of academic journals, have prompted researchers to look more closely at the growing digitalization of political science. However, that trend toward growing digitalization has faced two main restrictions. First, there is the historical context that delayed the introduction of behavioral political science. Even after the end of World War II, the relationship between politics and science was fragile. Second, when behavioral political science finally became influential in the 1980s with the publication of the journal *Leviathan*, the institutional framework within which Japanese political science was to develop had already been completed. The classification and institutionalization of academic disciplines in Japan were not necessarily favorable for promoting digitalization within political science; likewise, the conditions were not especially favorable in terms of cooperation with researchers in other disciplines.

Today, however, it is becoming clear that Japanese political scientists need to deal with digitalization. That is particularly necessary considering the enactment of the 2013 and 2015 revisions of the Public Officials Election Act and the flourishing public use of digital media, such as Twitter and Facebook. Thus, considerable institutional changes and more active cooperation with other disciplines are necessary for Japanese political science to fully cope with digitalization in that field.

2 Political science in Japan: general outlook

According to the 2017 School Fundamental Survey of the Ministry of Education, Culture, Sports, Science and Technology (Ministry of Education, Culture, Sports, Science and Technology 2017), there were in that year 780 universities and 337 colleges in Japan. Among those universities, 86 were national, 90 public (e. g., prefectural), and 604 private. Among

the colleges, 17 were public and 320 private. In 2017, 2,890,880 students (including graduate students) were studying at university and 123,949 were studying in college. The number of students studying at national universities was 609,473, at public universities 152,931, and at private universities 2,128,476. The university advancement rates from high schools have been in the mid-50 % range in the 2010s.

In 2017, the number of students majoring in the social sciences (including political science majors) accounted for 34 % of the total. Among freshmen, 206,331 of 629,733 students chose to major in social sciences; among those 206,331 students, 37,914 were law or political science majors (i. e., 6 % of the total). However, the ministry survey did not distinguish political science students from students majoring in law. In addition, many courses related to political science are offered in other disciplines, such as philosophy, history, economics, sociology, and even mathematics. More than a few researchers with a degree in political science teach in departments related to these disciplines. Furthermore, as will be evident later, the number of students acquiring degrees in political science does not coincide with the number of students studying political science; that circumstance is mainly due to historical factors.

Because of the number and variety of institutions, lack of statistical data, and the institutional developments in political science peculiar to Japan, it is extremely difficult to present an accurate picture of the current state of political science in Japan. For example, I was unable to find comprehensive data about the effect of digitalization on university curricula and professorships; I was likewise unable to obtain individual information about this topic from many universities[1]. This problem becomes even more serious in view of the fact that digitalization is a new, interdisciplinary development. The digitalization of political science could be taking place outside formally institutionalized political science[2].

This chapter aims to outline the development of political science in Japan in the digital age – as far as that is possible. In the absence of comprehensive data, I will present representative, well-known attempts toward digitalization in Japan's political science. Specific examples do not explain the whole story; however, they can serve as guideposts that illustrate where the country's political science is heading.

3 General digitalization in university education

Owing to the lack of statistical data, it is difficult to identify the current overall status of digitalization of political science in Japan; however, research has been conducted regarding the digitalization of university education in general. The Academic eXchange for Information Environment and Strategy (AXIES) promotes ICT for education, research, and management in Japanese higher education. Over 100 member universities (both national and public) participate in AXIES and have conducted research on using ICT in higher education. According to the 2015 report by AXIES (Academic eXchange for Information

[1] In addition, I was unable to obtain sufficiently detailed data for all universities to determine the number of courses whose titles included content related to digitalization. I was similarly unable to access sufficiently specific data relating to academic degrees to allow an accurate analysis of the current status of the digitalization of political science.

[2] Another obstacle is that the topic of digitalization has likely been taught in traditional political science courses without the titles of those courses having been altered. The same may apply to the names of professorships. Traditional titles, such as "professorship of political science" and "professorship of political theory," may have been applied to professorships that dealt with the digitalization of politics and political science.

Environment and Strategy 2015), which is its latest, about using ICT in higher education institutions, more than 90 % of universities responding to the survey acknowledged the importance of ICT in education. Over 60 % of the responding universities had established an ICT-related unit to offer help across faculties and departments.

With respect to using ICT in higher education, there has been an increase in the number of universities seeking competitive funds from the government and other institutions. Furthermore, according to AXIES as of 2015, learning management systems (LMSs), such as Moodle, Web Class, and Universal Passport, had been introduced in 65.3 % of responding universities: at 89.9 % of national universities (the highest); at public and private universities, the proportions were 50.0 % and 63.2 %, respectively. From these figures, it is evident that the infrastructure for ICT education was well established by 2015, having been endorsed by many university officials and teachers. However, in stark contrast to the affirmative attitude toward the ICT infrastructure, the AXIES report also highlighted the poor utilization of those tools. Only 14.6 % of all classes at national universities, 14.8 % at public universities, and 26.0 % at private universities used LMSs. That report stated that the utilization rate in Japan was conspicuously lower than in the United States (where 62 % of all classes utilized LMSs) and the rate at Seoul National University in Korea (where 63 % of classes in the 2012 winter semester used LMSs).

With regard to tools other than LMSs at the time of the AXIES report, about 90 % of Japan's universities had Wi-Fi and e-mail services. Syllabi were accessible online for students at over 90 % of universities. In contrast, e-portfolio systems were available at only 37.98 % of universities and online textbooks at just above 10 %. Regarding the usage rate of those tools, the same reluctance is apparent as with LMSs. The most widely used classroom tools were power point slides: the utilization rate was 86.3 %. However, the second-most widely used tools were online materials and videos: the usage rate was just 38.7 %. The utilization rate of e-portfolio was only 10.3 %. As to classroom ICT, 57.4 % of universities did not use online content in any classes. Even among universities using online content, only 0.4 % offered fully digitalized courses; 45.3 % offered web-facilitated courses, which mixed traditional approaches with digital education.

It should be noted that in Japan, sharing online class materials – either with domestic or overseas universities – had not prevailed at the time of the AXIES report. Fewer than 10 % of undergraduate and graduate departments shared class materials with other universities. Among them, 77.6 % were using materials created by other Japanese universities; 66.4 % were offering materials to other such universities. It is striking that the international sharing of online materials was becoming less popular in Japan at the time of the report. Compared with the rate in the previous report, in 2013, the rate of sharing with domestic universities showed an increase; however, the rate of sharing with overseas universities presented a decline. Japanese universities using overseas materials amounted to 15.1 % in 2015, down from 23.8 % in 2013; those offering materials overseas was 10.5 % in 2015, down from 17.5 % in 2013. Particularly notable is that only 6 % of Japanese private universities were using overseas online materials; 3.8 % of them were offering materials to foreign universities.

From the AXIES report, it is apparent that university education in Japan has acquired the infrastructure to develop new educational techniques and materials. However, probably owing to the lack of teacher support and limited funding[3], tools are not necessarily utilized to the full extent. Further, there seems to be a trend whereby digitalization actually makes university education more domestically oriented. The popularity of web-facilitat-

[3] The reasons cited by the survey respondents are so diverse that it is difficult to determine the main cause. Lack of personnel to create and maintain the systems and content appears to be the strongest reason. However, insufficient funding, lack of time to create materials, lack of understanding and motivation on the part of teachers and officials, shortage of accumulated skills, and a lack of systemic support also appear influential.

ed courses compared with fully digitalized courses may indicate that face-to-face communication in Japanese is a vital part of the development of digital education. Without the help of teachers advising in person and in Japanese, completely digitalized courses may not suffice for many Japanese students. This could be a problem of the language barrier between English and Japanese; however, it also may be a problem of how to educate students studying at different levels. In Japan, the number of students at private universities is far greater than at national and public universities (as noted in the previous section); thus, many private universities have to educate students with varying degrees of English ability. If digital tools are used to cope with this task, the tools have to be more accessible to Japanese students. The reluctance of private universities to share materials with foreign universities may be caused by this factor.

The digitalization of political science in Japan has to contend with this backdrop of improving infrastructure yet generally stagnant utilization of digital tools. In particular, the international aspect of digitalization in higher education demands attention: digitalization in tandem with internationalization may not necessarily benefit all students. If it aims to produce international scientists with special skills and knowledge as well as prepare ordinary citizens to cope with increasingly complex political phenomena, political science education has to closely regard the real effect of digitalization on every stratum of society.

4 Teaching and learning

As evident in the previous section, ICT tools form an essential foundation for university education in terms of infrastructure. The teaching and learning of political science can benefit from such tools. Platforms that integrate e-mail services, uploading of course materials and recorded lectures, online discussion rooms, course-evaluation systems, and systems helping teachers in grading students are common at Japan's universities. But the tools are generic and not limited to the field of political science. When assessing the distinctive features of digitalization in political science, it is almost impossible to identify developments specific to the field. Furthermore, as noted above, the relevant statistical data are insufficient. Here, rather than focusing on the differences between digitalization in political science and that in other fields, it is more expedient to describe notable examples of digital education attempted by political scientists in Japan.

The Japan Universities Association for Computer Education (JUCE) is a major non-profit organization; as of 2018, it has over 200 university affiliates and more than 60 college affiliates. Supported by the Ministry of Education, Culture, Sports, Science and Technology, JUCE aims to promote the application of information technology in private educational institutions. JUCE publishes a journal, *Daigaku Kyoiku to Joho* (*JUCE Journal* or "*University Education and Information*")[4]; the journal occasionally features articles about attempts to promote education through digital technology by member universities.

In the summer 1997 issue of *JUCE Journal* (Vol. 6, No.1), four early efforts about digital technology in education were published under the heading "Education Using Information Technology in Political Science." The papers were as follows: "Keiryo-Seiji-Bunseki wo tosita Seiji-gaku no Joho-Kyoiku" ("Promoting information technology in political science through quantitative political analysis") by Kazuhisa Kawakami of Mei-

[4] The name of the journal was *Shijyokyo Journal* (*JUCE Journal* in English) until 2001; it was then renamed as *Daigaku Kyoiku to Joho* ("*University Education and Information*"). However, the association has used *JUCE Journal* as the English name for the publication.

ji-Gakuin University, faculty of law; "Joho-Kiban wo Riyo shita Keikennteki na Seiji-gaku no Jugyo no Ichirei" ("An example of empirical political science course using information infrastructure") by Hiroshi Murayama of Ritsumeikan University, faculty of policy science; "Sogo-Joho-Gakubu de no Seiji-gaku Kyoiku" ("Political science education in the faculty of informatics") by Ichiro Miyake of Kansai University, faculty of informatics; and "Computer no Kodo-Riyo ni Muketa Taisei-Dukuri" ("Institutionalizing intensive applications of computer") by Etsushi Tanifuji of Waseda University, school of political science and economics. Generally, the four articles emphasized applying information technology to election studies and statistical analysis of opinion surveys while improving the information infrastructure. Computer technology was considered, but Internet technology was not widely used at that time.

Ten years later, in a 2007 issue (Vol. 16, No. 4), *JUCE Journal* again examined new endeavors in political science. Three articles in that issue directed more attention to the Internet. Takane Kawashima of Meiji University, school of information and communication, provided an explanation of his course: it used the Internet and smartphones to check the minutes of the Diet (national legislature) of Japan (Kawashima 2007). Koichiro Agata of Waseda University, school of political science and economics, described how he had been offering a full on-demand course (which included uploaded power point files and recorded lectures) on public administration for five years. Agata argued that communication between teachers and students – and also just among students – was important in this type of course (Agata 2007). Lastly, Yoshifumi Nakai, a professor of Chinese politics at Gakushuin University, Faculty of Law, maintained that searching information through both governmental and private websites by students led to a balanced understanding of Chinese politics (Nakai 2007).

Subsequently, no corresponding articles have appeared in *JUCE Journal*. Still, it may reasonably be assumed that the use of the Internet and computers is becoming more salient in political science education, quantitatively at least. However, that development is confined by the limits of digitalization in general in Japan.

It can be argued that through the use of digital tools, political science has absorbed a wider variety of themes and addressed broader projects than would otherwise have been the case. Many Japanese universities have been trying to cooperate with local governments and non-profit organizations toward solving regional problems; examples include helping elderly people in rapidly aging communities and reviving local commercial areas. Communities expect universities to be involved in projects aimed at local revitalization through using ICT as a tool for communication. Japan's universities have themselves been suffering from the population's aging and shrinking. Cooperation with local communities is an indispensable measure for universities to survive in a country with ever-fewer children. The universities' ICT infrastructure can thus work as a common foundation between those institutions and local communities in Japan. This situation could be considered an application of digitalized political science in day-to-day politics.

Though not necessarily widespread, it is noteworthy that an effort to introduce massive open online courses (MOOCs) has been made in Japan since 2013. The necessity to share recorded and uploaded lectures among universities has been well recognized by political scientists promoting digitalization in Japan (Japan Universities Association for Computer Education 2017). However, the promotion of open education, led by the Japan Open Course Ware Consortium (JOCW)[5], did not turn out to be as fruitful as expected; that was

[5] JOCW was originally called the Japan Open Course Ware Liaison Meeting. It was established in 2005 by Osaka University, Kyoto University, Keio University, Tokyo Institute of Technology, the University of Tokyo, and Waseda University, under the influence of Massachusetts Institute of Technology (http://jocw.jp/jp/, as of October 7, 2017).

probably due to the varied contexts in which each member institution was placed as well as the financial difficulties caused by low membership fees (Fukuhara, 2014). Against this backdrop, two universities decided to participate in overseas MOOC platforms. The University of Tokyo announced in 2013 that it would give lectures in English on Coursera (https://www.coursera.org/). One of the two first courses was "Conditions of War and Peace," given by Kiichi Fujiwara, a professor of international politics. The number of courses offered online since then has been very limited; however, Kyoto University decided to offer courses on edX (https://www.edx.org/), in which the University of Tokyo later participated.

Following the attempts to join English-language-based platforms, Japanese-language-based platforms were subsequently created. The Japan Massive Open Online Education Promotion Council (JMOOC) was founded in November 2013 to provide Japan's universities with Japanese-based platforms. Four (originally three) platforms (gacco, OpenLearning, Japan, OUJ MOOC, and Fisdom) are run by JMOOC. As of September 2016, about 150 JMOOC courses are offered, and approximately 250,000 students are registered (https://www.jmooc.jp/institutions/, as of October 7, 2017). According to the result of a joint online survey conducted by NTTCom Research and JMOOC in 2017, over 80 % of 1,306 respondents to the survey had positive impressions of MOOCs; that finding was despite the fact that close to 80 % of the respondents did not know much about MOOCs. As far as I can tell from the search engine on the JMOOC website, the courses offered include international politics, social welfare, and politics and cinema. The joint survey found that the three most popular areas were music and cinema, history, and psychology; with each of those areas, over one-fourth of respondents stated that they wish to learn online. By contrast, political science was indicated by only 12 % of respondents; that was the same figure as law (12.2 %) and medical science (12 %) (https://research.nttcoms.com/database/data/002077/, as of October 7, 2017).

It may not be sufficient simply to offer courses online to promulgate the MOOC service. According to the joint survey, 76 % of respondents stated that they wished to participate in the flipped or face-to-face classrooms offered in MOOC courses. MOOCs may be promising, but they may also need to be enhanced by the presence of some kind of traditional classroom structure. This is a similar finding to that observed above in section 3 about the utilization of ICT tools in university education. If lively discussions and conversations are essential for MOOCs, they are also necessary for ICT education in general. In that sense, it is necessary to develop the infrastructure and systems that help promote interaction among participants. Currently, that infrastructure and those systems are poorly developed. In addition, the diversity of universities in Japan may deter coordinated actions among them. Effective consensus building by leaders is vital to spread digital education using MOOCs.

5 Political science in Japan from a historical perspective

Before proceeding from the topic of education to that of research, it is necessary to make a detour to examine the current context of political science in Japan. This is necessary for two reasons. First, from the viewpoint of institutionalization and classification, political science in Japan has not necessarily constituted a clearly demarcated discipline. In particular, as indicated by the survey of the Ministry of Education, Culture, Sports, Science and Technology discussed in section 2, political science cannot be completely separated from legal studies. Therefore, even official statistics often do not provide detailed information

about this discipline. Accordingly, it should be noted that the picture of political science in Japan presented here is inevitably an approximation.

Second, political research as a science has a complicated history in Japan. It was unable to halt the militarization of Japan before World War II. Hence, after the war, influential scholars posed questions about the scientific nature of political science in Japan. As evident in Table 1, a considerable number of Japanese political researchers specialize in philosophical or historical subfields. This may indicate that some scholars adopt a cautious attitude when talking about "science". Digitalization may be said to make political studies more scientific, rather than philosophical or historical. Philosophical or historical political researchers are taking the digitalization trend seriously and incorporating scientific methods in their projects. Nevertheless, political researchers in Japan have experienced vicissitudes regarding the development of the scientific study of politics.

Modern Japanese political studies began when a professorship for political science was established at the University of Tokyo in 1877 (Taniguchi 2010). That institution was the first modern national university in Japan. According to Masamichi Royama, there were two schools of political studies in pre-World War II Japan (Royama 1949: esp. Chap. 2). One was the Staatslehre school and the other the positivist school. The former was introduced from Germany, where the imperial political regime was considered similar to that of Japan. Law and politics were thought to be intimately connected. Thus, political scientists tended to belong to faculties of law. Accordingly, many students of politics acquired law degrees instead of political science degrees. The positivist school, led by Waseda University, was strongly oriented to the empirical study of politics. That school was influenced by political science from the United States and the United Kingdom.

At first glance, the Staatslehre school, which was mainstream at the time, was more philosophical and norm oriented; the positivist school was more empirical and, in a stricter sense, scientific. However, neither school can be said to have been founded on empirical and scientific approaches because there was very limited academic freedom in Japan. "Tenno sei"(the emperor system of Japan) was the cornerstone of the Japanese political system and could not be criticized. The so-called controversy about the concept of politics in the early twentieth century shows how this limitation affected Japanese political science (Royama 1949: Chap. 3).

Political scientists in Japan were influenced by the emergence of the pluralist theory of the state in the United Kingdom and the surge of social movements during Japan's so-called Taisho Democracy[6]. Accordingly, those political scientists discussed whether the concept of politics should be applied only to the activities of the state or to the broader social realm, including unions and voluntary associations. In the United Kingdom, the debate aroused by the pluralist theory of the state was related to urgent issues, such as the participation of trade unions in parliamentary systems. However, the Japanese political regime under the Meiji imperial constitution could not be changed[7]; thus, the debate about the concept of politics in Japan was inevitably detached from the politics of ordinary life and prone to extreme abstraction. In a sense, the debate was so scientific and value free because it was isolated from the politics of everyday life. This detachment of political science from practical politics later came to be considered a cause of the ineffectiveness of political science with respect to militaristic decision making in Japan before World War II.

It was after its defeat in that war in 1945 that Japan became a genuinely democratic nation. In addition to the presence of its parliamentary system and elections since the 1890s, it also recognized the people's sovereignty under the new constitution implemented at the time. This eventually supplied postwar Japanese political scientists with something to sur-

[6] The Taisho era lasted from 1912 to 1926, which was the reign of Emperor Taisho.
[7] The Meiji era lasted from 1868 to 1912, which was the reign of Emperor Meiji.

vey in the real world. Establishment of the Japanese Political Science Association (JPSA) in 1948 illustrates the importance of the newly democratic nature of society for the development of political science. The first issue of the JPSA's journal explained that the association was established "in view of the removal of the political regime which had restricted the freedom of political studies, and seeing the advancement of the new regime which aims at the realization of eternal peace and the building of a cultural state" (Nihon Seiji Gakkai [Japanese Political Science Association] 1950: 247; http://www.jpsa-web.org/about, as of May 19, 2019). The association's first president, Shigeru Nambara, wrote that political science had been no more than a legalistic conceptual construction of the modern Japanese state or the formalistic sociological study of the state based on the methodology of the natural sciences. He declared that Japanese politics needed positivist political science and that science served to construct postwar Japanese politics (Nambara 1950).

The epoch-making work on this point is "Politics as a Science," published in 1947 by Masao Maruyama, a specialist in the history of Japanese and Asian political thought (Maruyama 1969). Maruyama maintained that political science had to be a "science oriented to actualities (Wirklichkeitswissenschaft)" and grounded on an analysis of the reality of politics (Maruyama 1969: 234). However, he also argued that political studies had to maintain distance from political groups and avoid involvement in political strife. Thus, postwar political science had to face simultaneously two problems. First, it had to stay in touch with day-to-day political events. Without such contact, political science would have been powerless; that had been the fate of prewar political science. Second, it had to avoid involvement in factious strife. Keeping abreast of political affairs does not mean becoming involved in the actual turmoil. For Maruyama, postwar Japanese political scientists were assigned dual tasks, which were dealt with concurrently.

Based on Maruyama's argument, the implication for political science in Japan was that it had to be value free – in the sense of being distant from actual strife; it also had to be committed to certain values – in the sense of being able to criticize the prewar political regime. Political science needed to be science because it was thought to be able to identify where the prewar political regime had gone wrong.

Political science was there to defend postwar democratic values and regime. Therefore, it had to be empirical and positivistic. However, these two needs are not necessarily addressed at the same time. That was especially true when controversial issues arose, such as Article 9 of the Japanese Constitution, stipulating the renunciation of war.[8] Thus, the aspect of political science that helped defend the postwar value of peace also invited criticism from realist politicians and researchers. Furthermore, there were not many political scientists specializing in empirical research before the 1980s, although some leading scholars had started to publish important studies. It was the appearance of *Leviathan* in 1987 (the first fully fledged empirical and theoretical academic journal of political science in Japanese) that marked a major shift toward scientific studies in the strict sense in Japanese political science. In its "aim of publication," the founders criticized the field of political studies at that time, stating that they "analyzed Japanese politics only in an essayistic and impressionistic fashion". The founders also acclaimed the efforts of political scientists who introduced "modern political science, which has been developed mainly in the Unit-

[8] Article 9 of the Constitution of Japan reads as follows: "Aspiring sincerely to an international peace based on justice and order, the Japanese people forever renounce war as a sovereign right of the nation and the threat or use of force as means of settling international disputes.
In order to accomplish the aim of the preceding paragraph, land, sea, and air forces, as well as other war potential, will never be maintained. The right of belligerency of the state will not be recognized." There has been constant debate and intermittent social movements about this article in postwar Japan. The Japanese are still divided as to whether and how to revise the article.

ed States" (Leviathan 1987, cited in Taguchi 2001: 423). For that reason, a behavioral revolution was substantively introduced in Japanese political science only after the 1980s.

6 Digitalization and current status of media studies in Japanese political science

Digitalization has exerted an impact in various ways on the teaching and learning of political science; however, research into digitalization is considered closely connected to the area of information and media, including social media. For example, as indicated in section 4, the name of the official journal of JUCE can be translated as "University Education and Information." However, as discussed in the previous section, it was not until the 1980s that scientific studies of media and information developed as a major theme in political science.

The foundation of the journal *Leviathan* paved the way for a scientific approach to political study in Japan. Even so, there remained a couple of obstacles to developing media studies in the field of political science. One concerned the career path of graduates from law departments. As stated in the previous section, under the influence of the Staatslehre school, Japanese political scientists often belonged to law faculties. Many graduates with law degrees and specializing in legal studies sought bureaucratic offices or entered the legal profession. However, one of the primary career paths for law graduates with knowledge of political science (who were trained in a different department or course within law faculties) was journalism. Consequently, research on the media tended to be published by journalists, and naturally it was more journalistic than academic.

The other, but related, obstacle was the division of labor between political science and sociology. Although there were some prominent media and communication researchers in the field of political science, studies on media in Japan were – and have continued to be – generally perceived to be included in the field of sociology. For example, to introduce behavioral political science, the University of Tokyo Press published a 20-volume political science handbook (the first series of its kind), starting in 1988. Topics concerning mass communication and mass media were analyzed in only two books. *Tohyo Kodo* ("*Voting behavior*") by Ichiro Miyake (Miyake, 1989), which was volume 5 of the handbook series, includes a chapter "Senkyo Undo to Masu Media" ("The election campaign and mass media"), which is just 28 pages long. *Seiji Sanka* ("*Political participation*") by Ikuo Kabashima (Kabashima 1988), which is volume 6 of the handbook series, has a chapter titled "Anaunsumento Koka to Baffa Puleiya" ("The announcement effect and the buffer players"), which, at 14 pages, is even shorter.[9] By contrast, there have been many journalistic articles and reviews in Japanese newspapers, which boast a larger circulation than other countries. As a result, behavioral political science and media studies did not easily develop in tandem with each other.

If we leave the classification problem aside for the moment, the current status of media studies in political science can be partly clarified by analyzing statistical data on academic associations. The JPSA comprises about 1,800 members, including academics, journalists, and various political professionals. Members can search the specialties and affiliations of fellow members via an online search system (available only to members). The member list requires that members select up to three specialties, chosen from a list of

[9] The series includes such titles as *Seiji Taisei* ("*Political regime*"), *Kokyo Sentaku* ("*Public choice*"), and *Rieki Shudan* ("*Interest groups*"), but there are no volumes on the history of political thought or political philosophy.

57 (Table 1). In all, 59 members listed "political information and mass communication" as a specialty area, as of October 2017. Other than the 57 listed items, members can include specialty areas not listed. In all, 27 members included "information", 22 listed "mass communication", 10 cited "media", and one listed "ICT." No one included "digital" or "digitalization". Regarding members' affiliations, just one belonged to an organization that had "media" in its name (a private research institute). By contrast, seven members belonged to organizations with "information" in the title; the majority of those seven members were researchers from Niigata University of International and Information Studies. Regarding faculties and departments, there are no available data online[10].

The JPSA has 17 study groups: they specialize in various subfields of political science. The study group system has officially operated since 2007. Each group is obliged to have more than eight members, with at least six being JPSA members. Seven groups are categorized as belonging to the field of political processes; however, none specialize in mass communication and information (Table 2).

At first glance, the figures in the previous paragraph appear to indicate that regarding the media and mass communication in Japan, there are very few researchers and little research is conducted. However, media studies is an active, productive area for researchers. The problem is that political science and studies on media and information have not been well connected in Japan. In addition to the JPSA (one of the most general and largest academic associations in Japanese political science), there are other influential associations in political science: examples include the Japanese Association of Electoral Studies (established in 1981), with a membership of approximately 500, and the Japanese Conference for the Study of Political Thought (established in 1994), with a membership of over 500. There are also the following: Japanese Society for Public Administration (established in 1950), with more than 600 members; the Japan Association for Comparative Politics (established in 1998), with a membership of around 700; and the Japan Association of International Relations (established in 1956), with approximately 2,000 members. Nevertheless, associations focusing on media and communication have been classified in the field of sociology. Those associations include the following: the Japan Society for Studies in Journalism and Mass Communication (previously the Japan Society for Studies in Newspapers, established in 1951; renamed in 1991), with a membership exceeding 1,200; the Japan Association for Communication, Information and Society (established in 2004), with more than 200 members.[11] There are no means of confirming how many political scientists participate in sociology associations or how many sociologists participate in political science associations; however, topics concerning media and information are generally dealt with in sociology.

[10] There seem to be many members who register the name of their institutions but do not register the name of their faculties and departments. The number of members working in faculties and departments linked to media and information studies must be far greater than how it would appear in the JPSA online search system.

[11] This information derives from the Web pages of the Directory of Academic Associations (https://gakkai.jst.go.jp/gakkai/), which is run jointly by the Science Council of Japan, the Japan Science Support Foundation and the Japan Science and Technology Agency (as of October 5, 2017).

7 Articles and presentations

Another source of material that should certainly be referred to when determining the state of digitalization in political science is articles published in academic journals. In terms of numbers, not many articles related to digitalization have appeared in academic journals of political science (Table 3). Again, the reason may be connected to the problem of classification. Articles concerning digitalization and politics may be submitted to journals in the fields of communication, technology, methodology, or sociology. Nevertheless, it is possible to examine the kind of topics that have caught the attention of Japanese political scientists and when those topics appeared.

Nenpo Seijigaku (*The Annuals of Japanese Political Science Association*) is an official journal of the JPSA. It appears twice a year and consists of special issue articles and refereed articles. Each issue has 14–15 articles on average. During the 10-year period of 2008–17, 246 articles (146 special issue articles, 100 refereed articles) appeared in the journal. Among them, only two had a title that was related to the media or digitalization: one, published in 2015, concerned the role of social media in the 2011 Egyptian revolution; the other, published in 2014, examined the media generally. From the contents and methods of all the articles, it is clear that more articles were related to digitalization. Still, it can be said that relatively few articles fell under the scope of those topics. Before 2008, four articles concerning media and information appeared; they were all published in 2005, and they addressed the following: the influence of mass media, the Internet and elections, social networks and the mass media, and policy making in the Internet era. Their focus seems to have been on the effect of the Internet replacing mass media and how it influenced elections and social movements.

It is natural then to assume that election studies in Japan pay more attention to digitalization. *Senkyo Kenkyu* ("*Election Studies*") is a refereed journal officially published by the Japanese Association of Electoral Studies (JAES). It was issued once a year from 1987 to 2008 and twice a year thereafter. Each issue has on average eight to nine articles. From 2008 to 2017, 172 articles have been published; from the titles, 15 appear to have been related, more or less, to digitalization. The topics ranged from Internet use in Japanese elections and electronic voting in local elections to survey methodology employing the Internet and analysis utilizing text data[12].

It is also useful to examine how many presentations concerning digitalization have been delivered at academic conferences (Table 3). The JPSA holds an annual meeting in late September or early October. The 2017 meeting was held on September 23 and 24 at Hosei University in Tokyo; it had a plenary session, two poster sessions, and 40 panels; 131 presentations, including posted ones, were delivered. From information on the JPSA website, there were nine presentations and two panels connected to the digitalization of politics and political science from 2010 to 2017. The titles of the panels were "Politics and media, public opinion" (in 2013) and "The present conditions and issues of supporting voters through information technology" (in 2010). Among the nine presentations, four were related to regional studies (on Internet use in politics in China, Europe, the Middle East, and the United States), and three were associated with elections in Japan (specifically concerning the 2009 Lower House election and the 2013 and 2016 Upper House elections).

As I noted in the first paragraph of this chapter, these figures may not accurately represent the current state of digitalization in political science in Japan. Topics discussed in

[12] I also checked the official journal of the Japan Association of International Relations, Kokusai Seiji (International Relations), from 2008 to 2017. I was able to find two articles with titles concerning media and information and one review on a book concerning the Internet.

academic journals and academic meetings in the field of political science lean heavily toward digital technologies related to elections. However, other disciplines should also be considered. It is reasonable to assume that other topics concerning digitalization (e. g., digital tools in political science education and research methods using digital technologies) have been published in other fields, such as education and information studies. Further, even if the contents of articles and presentations in political science are not related to digitalization, it is certain that research methods incorporated the techniques and tools made possible by digitalization in other fields. The number of JPSA members who listed "political methodology" as their specialty is limited; however, we should not ignore the strong possibility that the members who listed "political study" or "political theory" include not only normative political theorists but also empirical political scientists. Therefore, one should not conclude hastily that political science is behind current technological development. Rather, the current situation of political science in Japan suggests the necessity for closer cooperation with researchers from other disciplines.

8 Internationalization of academic journals

As evident with the example of JMOOC, a digital platform based on Japanese is vital for the spread of digitalization within Japan. However, journals in English are also necessary to relay research results from political scientists in Japan to those in the rest of the world.

The Japan Association of International Relations has been officially publishing a fully English journal, *International Relations of the Asia-Pacific*, with Oxford University Press since 2001. It is a refereed journal, and scholars both within and outside the Asia-Pacific region can submit papers online (http://jair.or.jp/publication/irap_en.html). It is not an online journal.

The JPSA launched a new official journal in English in 2012. The first issue of *Japanese Political Science Review* was a paper publication and had 13 articles. Since the second issue, it has been an online journal and is now available on the JPSA website (http://www.jpsa-web.org/eibun_zassi/political-science-journal-en.html). The fourth volume was scheduled to be published in 2018. Both members of the JPSA and members of overseas political science associations with official ties to the JPSA can submit articles.

The subject matter of the articles in the above journals is not limited to digitalization. However, these moves toward publishing in English and online are attempts by Japan's political scientists to use digitalization as a tool to communicate broadly to other academics around the world[13].

9 Current issues regarding digital politics in Japanese political science

From the evidence presented above, it can be said that there are insufficient institutional and theoretical resources upon which the study of digital politics can be based – at least in political science. However, several factors that could promote its development have recently made their presence felt.

[13] Official journals of the JPSA, Japan Association for Comparative Politics, and the Japanese Association of Electoral Studies allow submissions of articles in both Japanese and English.

One factor is the amendment of the Public Offices Election Law in 2013; that opened the way for the "Netto Senkyo" (where an election campaign can use online services). The amendment made it possible for candidates and voters to use such tools as websites, social network services, and blogs in election campaigns. It also enabled candidates to distribute e-mails with attached documents. Since then, four national elections have been held: the 2014 and 2017 Lower House elections and the 2013 and 2016 Upper House elections. In light of the 2013 Upper House election, the first Netto-Senkyo attracted attention from political scientists; a number of studies have been published on the effect of digital media on politics.[14] It seems that little effect has been confirmed; however, research on this topic is expected to continue growing.

Another institutional change is that the voting age was lowered from 20 to 18 years by an amendment to the Public Offices Election Law in 2015. One reason for political scientists at Japanese universities not having previously emphasized topics relevant to future voters may have been that many students had not then reached voting age. However, with that recent amendment – and the fact that young people now frequently use such digital devices as smartphones – the importance of teaching students about digital technology and the problems concerning politics will increase for university researchers. For example, "Shukensha Kyoiku" (which means education necessary for voters with sovereign power) has recently been a common topic for high school teachers, and researchers working in universities have been cooperating with them in that regard. Another example relates to a proposal made by the Political Science Committee of the Science Council of Japan in 2017: it concerned the establishment of a new high school subject, Civics, scheduled for 2022; the proposal stated that the digital native generation using Twitter and Facebook also needs knowledge and skills that differ from those acquired through the Internet (Political Science Committee of the Science Council of Japan 2017). It is not clear what kind of knowledge about digital media is necessary at present. However, cooperation between teachers and researchers to prepare younger generations for the future digital age will undoubtedly accelerate under the revised law.

The topics detailed above may apply to many countries around the world. However, one phenomenon is unique to Japan, and Japanese political science must address it. According to statistics from the Ministry of Internal Affairs and Communications of Japan, which is based on the number of users (Ministry of Internal Affairs and Communication of Japan 2016: http://www.soumu.go.jp/johotsusintokei/whitepaper/ja/h28/html/nc132220.html), the popularity of Twitter compared to other social networking sites is relatively greater in Japan than in many other countries (Table 4). The reason is not clear, but anonymity may be a factor. Twitter is sometimes used to promulgate fake information and hate speech about politicians and minorities; thus, research on the effects of the tool concerning divisive and malicious use is urgently necessary. That is particularly important following the introduction of the Act on the Promotion of Efforts to Eliminate Unfair Discriminatory Speech and Behavior against Persons Originating from Outside Japan in 2016.[15]

[14] A couple of representative works, both in Japanese, are Sugiyama (2014) and Okamoto, Ishibashi, and Wakisaka (2015).

[15] http://www.moj.go.jp/ENGLISH/m_jinken04_00001.html, as of October 7, 2017.

10 Conclusion

There is no doubt that political scientists in Japan have to take – and many are taking – digitalization seriously. However, against the backdrop of the powerlessness of political science before World War II, which was caused by its detached and abstract nature, postwar political science has had to become a normative cornerstone of the newly established liberal democracy. This remains an important issue for Japanese political scientists. It should also be noted that the institutional landscape based on the categorization of disciplines since the Meiji era is not necessarily suitable for the advancement of digitalization in political science. The challenge today is that the digitalization of political science must be promoted after the delayed introduction of behavioral political science; that digitalization should proceed together with research in the still influential subfields of history of political thought and political philosophy. However, those developments have to take place under unfavorable institutionalized conditions. Recent changes in Japan's legal system do not allow the country's political scientists to confine themselves to limited, specialized areas of research. Cooperation among political scientists studying different subfields and an exchange between political scientists and researchers in other fields (e. g., legal studies, education, and media studies) are most needed. Academic institutions may also need to change their traditional recruitment and faculty systems, which are reminiscent of the Staatslehre tradition. If they do so, they can invite more researchers studying the topic of digitalization in political science. These institutional conditions and their historical contexts set limits on the study of politics in this digital age. Nevertheless, these conditions can also create the possibility for a new kind of research in political science, one that promotes cooperation among researchers with a variety of concerns and interests.

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Table 1. Number of researchers in subfields based on JPSA categorization[16]

History of Political Thought	125	Public Administration	192
History of Asian Political Thought	13	History of Public Administration	29
History of European Political Thought	131	Organizations of Public Administration	35
History of Political Thought in the US	17	Local Self-government and Politics	223
History of Political Thought in Russia and Eastern Europe	5	Policy Analysis	106
History of Politics	14	Studies on Metropolises	36
History of Asian Politics	20	Political Study or Political Theory	264
History of European Politics	99	Political Methodology	25
History of US Politics	44	Political Philosophy	108
History of Politics in Russia (Soviet Union) and Eastern Europe	23	Political Regimes	27
Comparative Politics or Regional Studies	212	Political Development	23
Regional Studies in Asia	89	Studies on the Theory of State	32
Regional Studies in Europe	126	Political Institutions	70
Regional Studies in the USA	60	Policy Studies	48
Regional Studies in Russia (Soviet Union) and Eastern Europe	36	Political Processes	205
International Political Theory	109	Group Politics	14
International Society and Economics	22	Political Parties	67
International Organizations	23	Political Movements	20
International Relations and Diplomacy	178	Political Consciousness and Public Opinion	57
History of International Politics and Diplomacy	106	Political Information and Mass Communication	59
Studies on War and Peace	73	Election Analysis and Voting Behavior	95
Comparative Culture and Political Anthropology	11	Political Culture	27
Studies on Japan	38	Language concerning Politics	9
History of Japanese Political Thought	95	Political Sociology	55
History of Japanese Politics	196	Legal System and Constitution	39
History of Japanese Diplomacy	80	Political Economy and Fiscal Analysis	30
History of the Occupation	18	Mathematical and Quantitative Analysis	45
Contemporary Japanese Politics	133	Political Systems	5
		Studies on Modern Society	35

[16] The order of the items in the table follows JPSA classification.

Table 2. Study groups in the JPSA

Study group name	Subfield	Year of establishment
Contemporary Political Processes	Political processes	2007
Contemporary Political Processes	Political processes	2007
Modern Political Science	Political theory	2007
Comparative Political History of Prewar and Postwar Japan	History of politics	2007
Regional Governance	Public administration, local government	2007
History of East Asian International Relations	History of politics	2007
Political Processes in Japan	Political processes	2007
Clinical Political Science	Political processes	2007
Regional Integration	Comparative politics	2008
Political Methodology	Political processes	2009
Policies and Institutions	Political processes	2011
Modern Local Politics	Local politics	2012
Micro Political-Economic Behavior	Political processes	2013
Western Politics	Comparative politics	2014
Critical Political Theory	Critical political theory	2015
Gender and Politics	Gender and politics	2015
Education and Politics	Political Education	2016

Table 3. Number of articles and presentations concerning media, information, and digitalization

	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	Total
JPSA Annuals	0	0	1	1	0	0	0	0	0	0	2
JAES Journal	3	0	1	2	0	0	2	2	2	3	15
JPSA Meeting	1	3	0	2	1 1 panel	0	0	2 1 panel			9 2 panels
Total	4	3	2	5	1 1 panel	0	2	4 1 panel	2	3	26 2 panels

Table 4. Usage rates of social networking sites by country (percentages)[17]

	Facebook	Google+	Twitter	LinkedIn	YouTube	Instagram	Pinterest
South Korea	69.3	27.6	33.0	5.6	58.8	29.1	2.9
China	16.1	14.7	9.4	6.9	12.2	4.1	2.6
Japan	35.3	9.4	28.7	2.1	39.5	10.2	1.5
India	92.9	62.3	50.5	46.5	78.3	25.9	17.2
Germany	64.4	18.6	12.5	5.1	47.9	10.4	5.6
USA	77.7	29.1	39.1	26.3	53.7	34.3	24.4

	Line	KakaoTalk	WeChat
South Korea	20.2	75.6	1.5
China	4.0	1.1	88.2
Japan	44.9	1.4	0.5

[17] These tables are based on White Paper 2016 by the Ministry of Internal Affairs and Communications (Ministry of Internal Affairs and Communication of Japan 2016: http://www.soumu.go.jp/johotsusintokei/whitepaper/ja/h28/html/nc132220.html).

Digitalization and Political Science in South Korea

Shin-Goo Kang and Chan Wook Park

1 Introduction

It is not an exaggeration to say every segment of society experienced a fundamental transformation in the last few decades due to the remarkable advancement of information digitalization and communication technologies (ICT) as well as the spread of internet and mobile access devices. Politics, the subject of our study, is not an exception. New information, norms and values spread more easily and rapidly through decentralized digital networks. Today, we are less concerned with the dearth of information than we are with the task of discerning the valuable and factually correct information from those that are not. Furthermore, the relationship and interaction between political elites on one hand and the mass public on the other, as well as that within the public, has become much more diversified with the advent of various channels of personalized digital media, which has weakened the monopolistic position of traditional mass media.

Even with this short list of changes and challenges to the modern representative democracy, we can quickly accept the idea that the digital revolution has made immense impact on our society and, in particular, how 'authoritative allocation of values'- i. e., 'politics' (Easton 1953) occur both at the domestic and international level. Confronted with these challenges digitalization has posed to us, a plethora of individual scholars and teams has examined the impact of digital revolution on politics and its prospect (e. g. Arterton 1987; Barber 1998; Bimber 2001, 2003; Compaine 2001; Davis and Owen 1998; Davis 1999; Grossman 1998; Margolis and Resnik 2002; Rash 1997; Norris 2001a, 2001b; Rheingold 1995, Toffler and Toffler 1995; Weare and Stanley 2004; Van Dijk and Hacker 2003). Nonetheless, relatively little attention has been paid to how the discipline of political science, as a scientific community, has collectively absorbed, digested, and reflected on the issues of the digital revolution.

Given the glaring lack of understanding of how the digital revolution affects the discipline of political science and how the latter responds to the former, this essay aims to examine and provide an account of how South Korean political science and scientists have been dealing with the changes and challenges brought by the digital revolution, with a special attention to the aspects of teaching, learning and research. The essay is structured as follows. At the outset, we briefly look into the current state of digital revolution and that of political science as an academic discipline in South Korea for the purpose of providing the general background. In the next two sections, we show the results of our survey regarding the disciplinary efforts to adapt to the challenges of digital revolution in the fields of education – i. e. teaching and learning – and research. In each section, we focus specifically on two discrete aspects of the digital revolution, that is, ICT as a tool and as a sub-

ject. The final section of this essay discusses the implications of this paper's findings and comments on the prospect of political science as a discipline in South Korea.

2 Current state of digital revolution in South Korea

In February 2003, The Guardian published an article under the heading of "World's first internet president logs on" to report the assuming of the office by the winner of the presidential election in December 2002 (Watts 2003).[1] In that article, the reporter asserted that "South Korea will stake a claim to be the most advanced online democracy on the planet tomorrow with the inauguration of a president who styles himself as the first leader fully in tune with the internet."[2] The reporter also introduced a quotation of a high-ranking government official that says "the development of internet technology has changed the whole political dynamic in South Korea to an extent that the outside world has not yet grasped."[3] Surely, the report identified South Korea's superior internet environment as a critical factor that facilitated the rise of "webocracy":

> New Korea's hi-tech credentials have been a focus of national pride. Its biggest claim to international fame is the development of internet services, which are far ahead of most countries. Almost 70 % of homes have a broadband connection, compared with about 5 % in Britain. Because of the high connection speeds, much faster than most British broadband, people use the web more for shopping, trading and chatting. Koreans are said to spend 1,340 minutes online per month, and 10 % of economic activity is related to IT – one of the highest levels in the world (*The Guardian*, 24 February 2003).

Indeed, the Korean government's rigorous implementation of the "Information Superhighway" project since 1995[4] propelled the country to one of the leading information-oriented societies well ahead of 2002 presidential election. Today, with over 15 years passed since, South Korea still boasts of its leading role in the transformation process.

As of the first quarter of 2017, the U. S. News reports, South Korea enjoyed the fastest internet speed in the world.[5] South Korea's average internet connection speed was 28.6 megabits per second (Mbps) at that time when the world's average was merely 7.2 Mbps. South Korea was ahead of Norway, the country with the second fastest internet speed by over 5 Mbps. In fact, South Korea has remained in first place for the last thirteen consecutive quarters. One important factor behind this impressive achievement is the high broad-

1 Available at https://www.theguardian.com/technology/2003/feb/24/newmedia.koreanews (1 May 2018)

2 In the aftermath of the 2002 presidential election, many foreign and domestic media did not hesitate to conclude that Roh Moo-hyun won the election as a result of his dominance over his major rival Lee Hoi-chang in on-line campaigning, particularly successful in mobilizing young voters. For these accounts and more academic analysis of the relationship between the internet and the 2002 Presidential election in Korea, see Yun (2003), Kim (2006) and Shin (2006).

3 The official was Yoon Yong-kwan, the head of foreign policy formulation in the new president's transitional team. Yoon himself was a political scientist and used to be a professor of department of international relations at Seoul National University, before taking the position in government.

4 For the national "Information Super Highway" project, see Kim (2006), esp. p.53.

5 Available at https://www.usnews.com/news/best-countries/slideshows/10-countries-with-the-fastest-internet-speeds (1 May 2018). The report was based on the statistics provided by Akamai (2017), one of the largest content delivery network providers in the world. Akamai report is available at https://www.akamai.com/fr/fr/multimedia/documents/state-of-the-internet/q1-2017-state-of-the-internet-connectivity-report.pdf (1 May 2018).

band adoption rate. 85 percent of internet connections in South Korea had an average connection speed of 10 Mbps or more – the highest rate in the world, roughly 10 percentage point above the second highest, Switzerland – while the average global high broadband connectivity rate was around 45 percent as of the first quarter of 2017 (Akamai 2017).[6] These numbers attest to the country's much higher capacity of information transmission than in any other country in the world.

Benefiting from strong infrastructure, over 9 out of 10 South Koreans (92.6 %) are active internet users. The figures of China and the U. S. – the countries with the largest and the third largest number of internet users – are 52.6 and 87.9 percent, respectively.[7] Considering these figures, it is not without grounds to claim that South Korea is one of the countries that may have been affected most by the changes and challenges posed by the digital revolution.

3 Current state of political science as an academic discipline in South Korea

According to Park (2005)'s research on the origin, evolution, and development of the discipline of political science in South Korea, it was not until the 1945 liberation of Korea from the Japanese colonial rule and the United States' occupation that political science became properly recognized and began to be institutionalized as an independent academic discipline. Starting in 1946, major universities, including Seoul National University, started to establish the department of political science independent of faculty and department of law. A few months after the Armistice Agreement on the Korean War was signed in 1953, the biggest academic community that is still active today, the Korean Political Science Association (KPSA) was established by 15 founding members. The KPSA managed to publish its first issue of Korean Political Science Review (KPSR) in 1959. The period from the 1945 independence till the military coup d'état in May 1961, loaded with extraordinary political upheavals and twists and turns, provided the fertile ground for the growth of political science as an independent academic discipline. In this sense, we may say that political science in Korea has roughly 70 years of history, a figure tantamount to that of the Republic of Korea.

Park (2005) divides the period of the 70 years-long course of development of South Korean political science as an independent academic discipline into five distinct phases: 1) founding phase (from independence in 1945 until the coup d'état in 1961), 2) formative phase (until the beginning of *Yushin* – meaning revitalizing reform – regime in 1972), 3) awakening phase (until the fall of Park's regime with his assassination in 1979 and the restoration of authoritarian rule by General Chun with the brutal suppression of Kwangju Uprising in May 1980), 4) phase of alternative-exploring (until the massive civic democratic movements in June 1987 and opening of democratic Sixth Republic in February 1988) and 5) phase of maturity (until the present). Undergoing these 5 phases, the discipline of political science in South Korea has significantly grown both in its quantity as well as quality. Not only has its membership size multiplied, but also the member's academic backgrounds and the scope and modes of their inquiry have become much more diversified.

The founding stage was triggered by the arrival of a Western academic discipline into Korea via Japan in the form of imported goods. In its formative stage, Korean political sci-

[6] Also available at https://www.statista.com/statistics/417225/high-broadband-connectivity-countries(1 May 2018).

[7] Available at https://www.internetworldstats.com/stats.htm (1 May 2018)

ence grew as scholars devoted their time to earnest learning of American political science. The influence of American political science on its Korean counterpart still remains strong to this present day. Nonetheless, roughly between the awakening and the alternative-exploring stages, Korean political scientists began to recognize the importance and necessity of building the discipline that better reflects local contexts and characteristics. That is, they not just imported and applied theories of Western political science but also began to develop their own original, generalizable theories to analyze Korean political phenomena. In addition to domestic institutions, institutions in Europe, North America, Australia and other part of Asia endowed doctoral degrees to Korean scholars.[8] Having experienced serious intellectual challenge during the alternative-exploring stage in the 1980s, by the time it reached the maturity stage, Korean political science has grown significantly in size, topics and methodologies (Park 2005, p.83).

Table 1 below tracks the type and number of educational institutions in general and those that grant political science. The country's Ministry of Education classifies junior college, college, university, and graduate school as higher education institutions.[9] As of December 2017, South Korea has 146 junior colleges, 238 colleges and universities, and 1,199 graduate schools. Among them, 42 universities offer a Bachelor's degree and 35 graduate schools offer a Master's or Doctoral degree in the field of political science.

[8] It was indeed in the early 1970s that the government ministry that had a jurisdiction over education allowed domestic institutions confer the doctor of philosophy in political science (Park 2005, p.71). The table below shows the number of political science doctorate awardees from domestic and foreign institutions.

Number of doctorate in political science

	Foreign institutions	Domestic institutions	Total
1955 ~ 1959	1	0	1
1960 ~ 1969	32	0	32
1970 ~ 1979	67	95	162
1980 ~ 1989	150	191	341
1990 ~ 1999	492	563	1055
2000 ~ 2004	212	319	531
⋮			
2012	37	81	118
2013	20	68	88
2014	29	81	110
2015	39	93	132
2016	29	111	140

Source: Park (2005) for information until 2004. Data after 2012 were collected by the authors, based on the statistics provided by the Korean Researcher Information system (available at http://www.kri.go.kr).

With this table, we can see that in the early stages political science doctors were mostly foreign products, although relatively small in number. But this became reversed later. In the recent 5 years, domestic degree holders outnumber foreign degree holders by 3 to 1 ratio. On the one hand, the distribution suggest diversity in Korean political science discipline, on the other hand, it also suggest that the latter has built the capacity to raise and educate a new generation of young scholars on their own.

[9] Junior college is a school that usually offers a short 2 to 3 year-educational course in a specialized area. College and University are schools that offer regular 4 year-educational courses and confer bachelor's degree who completes the requirement. College is specialized in a specific field of study and University is an institution that includes multiple number of colleges. Graduate school offers a degree higher than bachelor's, including a master's and doctoral degrees. In Table 1, the number of graduate schools is, in a sense, exaggerated given that the government agency that provides this statistic, the Korean Educational Development Institute (KEDI) under the ROK Ministry of Education, counts separately when a university have several graduate schools that offer a master's degree or higher in different fields of study. Out of 1,199 graduate schools, 46 are graduate school colleges, established independently from existing university (KEDI 2017).

Table 1. State of higher education institutions and the discipline of political science

	Number of institutions	Number of institutions that offer diploma in the discipline of political science
Junior College (2~3 years)	146 (9/137)*	N/A
College & University (4 years)	238 (47/191)	42
Graduate School	1,199** (241/958)	35
Distance & Cyber University	21 (0/21)	None

Note: N/A = not applicable. * Numbers in the parenthesis is the number of (national+public/private) schools. ** When a university has multiple graduate schools, the latter are counted independently.
Source: For higher education in general, KEDI (2017). The information on the discipline of Korean political science is compiled by the authors.

By contrast, we can also see in the last row of the Table that no distance and cyber education institutions award degrees in the discipline.[10] Although it was not our original intention to discuss in this section how Korean political science adapt to the changing educational environment in the digital age, we point to this figure for the purpose of providing a piece of heads-up information that is related to the main argument of this essay. That is, the discipline of political science in South Korea has not fully utilized the potential of the changing education environment afforded by the digital revolution, nor has it adapted well.

Table 2 shows the number of researchers, classified by their age group and gender, who identified political science as their field of specialty when subscribing to the Korean Researcher Information System, a database of researcher information maintained by the South Korean government (http://www.kri.go.kr). In South Korea, any researcher who applies for government financial support for his/her research project or in search for a position in the higher education institutions is required to complete the registration.[11] As such, despite the fact that the number is based on self-reporting by the researchers, we can safely assume that this figure accurately represents the size of those engaged in the discipline.

Table 2. Number of political science researchers registered to the Korean Researcher Information (KRI) System

Age Group	Gender	n	%
Under 30	Male	51	1.49
	Female	78	2.27
30s	Male	203	5.92
	Female	206	6.00
40s	Male	521	15.19
	Female	230	6.70
	Not identified	2	0.06
50s	Male	804	23.43
	Female	135	3.93
	Not identified	5	0.15
Over 60	Male	1,075	31.33
	Female	70	2.04
	Not identified	30	0.87
Not Identified	Male	15	0.44
	Female	6	0.17
Total		3,431	100.00

Source: < https://www.kri.go.kr/kri2> (2 May 2018)

[10] Distance and cyber universities provide education mainly via online communication networks. Distance universities are mainly aimed at reeducating elderly students, so are regulated by Life-Long Education Act (KEDI 2017).

[11] Strictly speaking, the institutions require the applicants to do so.

In the table, we can see that there exists a sizeable community of political scientists now in South Korea. We can also find that female researcher are growing in number, particularly in the younger groups. Although gender is not the only criterion of showing diversity of academic activity, it surely offers a glimpse into an important aspect of it. Another aspect of diversity can be found in the subfield of specialization of the members of the Korean Political Science Association (KPSA), the biggest umbrella organization of Korean political science community.[12] Having started with 15 founding members in 1953, the KPSA has by now more than 2,200 full members.[13] A doctorate degree is a requisite for the full membership. Thus, roughly speaking, the membership of the KPSA is a subset of researchers registered in the KRI system. According to a survey conducted with 1,680 KPSA full members in 1997, 26.6 percent of full members chose comparative politics and area studies as their subfield of specialization. Political thought and theory was chosen by 23.0 percent, international relations by 21.8 percent, public administration by 18.0 percent, Korean politics by 7.3 percent, and miscellaneous category by 3.3 percent (Lee 2001; Park 2005). Although the survey was undertaken 20 years ago, these results did suggest that with respect to its subfields, the discipline of political science in South Korea, has become significantly more diversified at its maturity stage.[14]

However, the above table 2 also contains a trend of concern. That is, we see diminishing size of researcher group as we move to the top, i. e. younger generations. This trend suggests that the discipline is facing a crisis of shrinking community.[15] This shrinking is somehow related to a macro-level change in the country's demographic composition. The starkly low fertility rates in the last decades[16] turned South Korea into a fast 'aging society.' As a result, it is estimated that in the near future the number of students whom the higher education institutions – excluding graduate schools – can offer admission will exceed the size of students who are eligible to apply. This fundamental change in the demographic structure puts a great deal of pressure on all of the higher education institutions in South Korea, since most of these institutions are privately owned and rely on the student's tuition for operations. In order to address this problem, the South Korean government in recent years has implemented an array of policies that aim at restructuring colleges and universities, including reducing the size of students. Consequently, many independent departments were forced to merge with other related disciplines or even to close down for good. Political science departments have not been an exception. At least a couple of departments that we saw in table 1 experienced consolidation recently. This also implies the reduction of available job openings in the higher education institutions, which is already highly competitive. Thus, many talented young students begin to switch their career path to a more promising field of study. While the Korean political science discipline has grown substantially for the last 70 years, it does not mean that the prospect is as bright. Indeed, the Korean political science discipline is at a crossroads.

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[12] The KRI system does not provide information on the self-identified subfield of specialization by the registered researchers currently.

[13] The KPSA also has 39 institutional members. The information on membership is available at http://www.kpsa.or.kr/modules/doc/index.php?doc=history&___M_ID=23 (3 May 2018).

[14] Note that comparative politics and area studies, the most populated subfield in the survey, include many diverse sub-subfields within it.

[15] Part of the reason may be the relative long duration of study to get a doctoral degree. But this cannot explain all the differences between 30s and 40s and, especially, 40s and 50s.

[16] The total fertility rate, the average number of children that would be born to a woman over her lifetime, is mere 1.05 in 2017. The rate was dropped to below 2.0 in 1984 and it has kept declining since then. Information is available at http://www.index.go.kr/potal/info/idxKoreaView.do?idx_cd=1428 (2 May 2018).

4 Political science education in the digital age

Now, we turn to the discussion of ICT as a tool. A typical college class in South Korea runs in the following manner. Around the start of a class, students enter their lecture hall after tagging their ID card on the device installed near the gate. When they tag their card, the scanning device also takes a picture of them. Student's attendance is automatically recorded in the course management system and the lecturer, if he/she wills, can easily check such records. As the class begins, the lecturer starts the computer in the room, logs in to the course management system, finds the lecture note that he/she uploaded before coming to the class, and displays it on the front screen. Sometimes, the lecture note includes certain URLs of video clips on the YouTube. When the lecturer clicks on a URL, the video clip is played on the screen. In the middle or at the end of the class, the lecturer makes an announcement to the students that they can find assignment information on the online course management system. Before the deadline, students upload their assignments to the system. The lecturer then runs a plagiarism detection program, as she enters grades directly onto the system, the result is notified to the students.

Indeed, as in the above description of a typical operation of a class, the new ICT – as a tool – are widely utilized in our daily business, especially in the area of education, and help us make our class so much more effective and efficient. However, the use of the new information technologies has mostly been the result of a university-level decision rather than individual departments. We could hardly find any example in which a department of political science was the source of an original initiative to utilize the new tools to enhance our experience of teaching and learning. In fact, the discipline has done little to take advantage of technological advancements the digital age affords us. As we saw earlier in Table 1, none of the 21 distance or cyber universities in the country offer a degree in political science.

Another glaring evidence of poor utilization of technological development is found on the website of the Korea Open Course Ware (KOCW, <www.kocw.net>), which is run by the Korea Education and Research Information Service (KERIS), a public institution under the Ministry of Education. The KOCW offers similar services as MOOCs (Massive Open Online Courses) that aim to provide free, open, unlimited access to university lectures and courses to anyone who wants to learn. As of May 2018, KOCW provides access to a total of 16,018 lectures, 13,701 courses of 186 universities and 2,317 courses of 23 research institutes. While there are 5,959 courses in the field of social science, only 226 are listed as a course of political science (3.8 % out of the courses in social science, 1.4 % out of the total), a miniscule proportion that contrasts the discipline's central position in all social sciences. What is more discouraging is that roughly 60 % of 226 political science courses provide only notes without videos, and that none of the political science courses is included in the list of 36 most recommended and popular courses based on the number of page views.[17]

Perhaps what comes as even more concerning is the fact that out of 226 political science courses offered on the KOCW webpage, only two of them are related to the subject of this essay, i. e. political science in the digital age.[18] This finding makes us wonder 'how

[17] The exact numbers are changing frequently as more courses are uploaded. However, the number of political science courses are changing very slowly. Indeed, it has been the same at least for the last half year, since we started to prepare this essay. The information is available at http://www.kocw.net/home/search/majorCourses.do#subject/020314 (3 May 2018).

[18] The two courses are "Political Process in Information Society" (http://www.kocw.net/home/search/kemView.do?kemId=1048449, 3 May 2018) and "Information Revolution and International Relation" (http://www.kocw.net/home/search/kemView.do?kemId=959290, 3 May 2018).

the features and challenges of the digital revolution are dealt with in regular, offline, political science classroom in South Korea.' The following two tables presents the result of our survey of both undergraduate and graduate curricula at 10 major political science departments in South Korea. Both tables include the total number of courses in each university's curriculum, the number of courses related to digital revolution or information technology, and finally, whether these courses were actually offered in last 5 years.[19]

Table 3. Digital and it related courses in regular curricula of political science departments at major universities: undergraduate level

University	Number of Courses in the Curricula	Number of Courses that are related to Digital/IT in Curricula	Offered in last 5 years
Seoul National University	84	1	Yes
Korea University	61	3	No
Yonsei University	73	1	Yes
SungKyunKwan University	41	0	.
Kyung Hee University	52	1	Yes
Hanyang University	64	0	.
Ewha Women's University	38	1	Yes
Sogang University	N/A	N/A	N/A
Chung Ang University	34	1	No
Hankuk University of Foreign Studies	44	0	.

Note: N/A = not available
Source: Compiled by the authors through the search of the departments' webpages.

Table 4. Digital and IT related courses in regular curricula of political science departments at major universities: graduate level

University	Number of Courses in the Curricula	number of courses that are related to digital/it in curricula	Offered in last 5 years
Seoul National University	79	2	Yes
Korea University	103	1	No
Yonsei University	76	2	Yes
SungKyunKwan University	N/A	N/A	N/A
Kyung Hee University	68	0	.
Hanyang University	28	0	.
Ewha Women's University	21	1	Yes
Sogang University	N/A	N/A	N/A
Chung Ang University	78	0	.
Hankuk University of Foreign Studies	63	0	.

Note: N/A = not available
Source: Compiled by the authors through the search of the departments' webpages.

The tables above patently illustrates that digital revolution or information technology related courses are not a regular part of the official curriculum of major political science departments. Among the nine undergraduate departments of which curricula we could find

[19] Not all courses in the curricula are actually offered, because some of them are selective. The opening of course depends on the student's needs as well as the faculty member's decision. We were not able to locate and identify the curricula of all the 42 undergraduate and 35 graduate political science departments in Korea (<Table 1>). But these ten departments are considered to be major with respect to their size of students as well as their size of faculty members. So, these ten departments are likely to have more diverse courses in their curricula. This is why we focus on them.

on the web, only six have relevant courses as part of their curriculum. At the graduate level, only a half (4 out of 8) offer such courses. What is more concerning is that even when a department has relevant courses in the curriculum, whether the course is actually offered to the students was not guaranteed. Not much is different at the graduate level.

Of course, these findings do not mean that the challenges and implications of digital revolution on the politics and modern representative democracy are not discussed at all in other political science courses. However, the paucity of independent courses in the regular curriculum and the much severer paucity of actual offerings do suggest that in the classrooms of South Korean political science departments, the challenges and implications of digital revolution have not garnered the due level of attention that they deserve.

5 Political science research in the digital age

Part of the reason for the relatively little attention paid to digital revolution in teaching is related to the lack of research activity on the subject. That is, we cannot expect an opening of an independent course when there is not enough original research work or researchers who are interested in the topic. The following table (Table 5) shows the total number of articles published in the *Korean Political Science Review* (KPSR) in the last five years and the number of articles that deal with the impact and implications of the digital revolution and new information technologies. The KPSR, a journal published four times a year in Korean, is the country's equivalent of the APSR of the American political science discipline. It is one of the most prestigious journals in the Korean political science discipline that covers a wide range of topics of subfields, and thus, is the most preferred venue of publication for most of researchers with a good research work.

Table 5. Number of articles related to digital/it published in the Korean Political Science Review in the Last 5 Years

	2013	2014	2015	2016	2017
Number of Articles (overall)	64	67	54	45	44
Number of Articles related to Digital / IT	1	0	2	0	1

Source: Compiled by the authors.

In the table, we can see that only four out of 274 articles published in the KPSR for the last five years dealt with topics related to digital revolution and/or new ICT. As this may as well be due to the fact that publication in KPSR is very competitive, we expanded the scope of search to include other major political science journals in South Korea and table 6 below shows the result.[20]

[20] As in the case of the researcher, the National Research Foundation (NRF, http://www.nrf.re.kr) that maintains the Korean Researcher Information, also provides financial support for selective journals. Thus, the NRF have managed to have a list of academic journals that meet the requirements of the foundation. As of May 2018, 1,987 journals are registered in the list of the NRF and 58 of them are the journals that publish mostly political science research. The seven journals in table 6 are selected because they are ranked highly in terms of the citation index (Korean Party Studies Review, Journal of Korean Politics, Korea and World Politics, Journal of Legislative Studies, OUGHTOPIA), or because it published relatively more research article on the subject of this essay's interest (21st Century Political Science Review), or because the journal is dedicated to the subfield that has more direct relevance to the impacts of the digital revolution, i.e., communication (Journal of Political Science and Communication).

Table 6. Number of articles related to digital/IT published in other major political science journals

	2013	2014	2015	2016	2017	Total
Korean Party Studies Review	4/26*	1/22	1/22	1/17	0/11	7/98
Journal of Korean Politics	1/32	2/34	1/38	2/30	0/17	6/151
Korean and World Politics	0/27	0/28	0/25	0/25	0/18	0/123
Journal of Legislative Studies	0/25	0/18	0/23	0/31	0/29	0/126
OUGHTOPIA	0/13	0/16	1/23	0/21	0/10	1/83
21st Century Political Science Review	3/38	3/55	2/46	2/36	2/31	12/206
Journal of Political Science and Communication	1/25	1/18	1/23	1/31	0/29	4/126
Total	9/186	7/191	6/200	6/191	2/145	30/913

Note: The journals listed above are published in Korean, and their official English titles are shown. The entry in the cell indicates [the number of articles related to digital/IT]/[the total number of articles published in the journal of the year]
Source: Compiled by the authors

To our dismay, we can see that the situation is roughly the same. Out of the total of 913 published articles in seven other selective major political science journals during the last five years, only 30 (3.3 percent) articles dealt with the topics of our interest. Although we were not able to survey all of the political science research works done in the last five years and the sample admittedly is not sufficiently representative, the result indicates that at least in terms of its publication results, research on the challenges and implications of the digital revolution is not very active or productive in the discipline of political science in Korea.

Nevertheless, it does not mean that research interest in the subject is also absent. While we began to prepare this essay, we searched for group activities that is dedicated to the study of this subject and we located a group, called "Study Group on Information Technology." The group started to hold seminar in 1999 as a relatively small study group with a size of 20. At first, the seminar was mostly about reading and discussion of the works done by foreign scholars since there was no reading materials written by domestic scholars and, at that time, the spread of the internet connection, as a symbol of new ICT, was still at its incipient stage. However, with the expansion of internet users and the fever of the 2002 presidential election, the group started to expand and the research activity of the group took on greater professionalism – including presentation of original work and discussions/debates – and diversification. As of 2017, the group has a membership size of approximately 100 members, consisting of university professors (50%), professional researchers at research institutes (30%), public officials that have a jurisdiction over IT policy making (10%) as well as graduate students (10%). With respect to the member's specialization, 60 percent of the members major in political science, the other 40 percent are divided relatively equally into law, media and communication, economics, and sociology. The group currently holds regular monthly seminar in which 20 members, on average, partake.[21] When we inquired their take on the relatively low level of publication record on the subject, one of the founding and still active member of the group replied in e-mail interview:

> "It appears that the acceptance rate of the manuscripts that deal with this topic or subject is much lower than that of the others in the field. A reason for the low acceptance rate is that *while the advancement of information technology enhances our capacity to handle data, it also increases the vol-*

[21] The description on the history, development, composition, and research activities of the "Study Group on Information Technology" is based on a series of successive e-mail interviews with one of the founding and still active members.

ume of data that we are expected to cover at a much greater and much faster scale and speed. Even after working hard with an extensive dataset, the result is likely to be similar to the one that can be reached by more traditional approaches. Even when we believe what we are observing is a dynamic and complex movement in public opinion due to information technologies, reviewers reject the manuscript, asking 'why did you use such a complicated and sophisticated methodology to test such a trivial and obvious hypothesis?'"[Emphasis by the authors]

Reading an excerpt of her reply, we can sense 1) that the research on digital revolution and information technology in Korea has been mostly focusing on the individual behavior (including attitudes) – so, of little diversification – and 2) that it also has been 'dominated' by the perspective that emphasizes the importance of empirical verification.[22] Thus, research on the topic typically requires a lot of data work and very advanced knowledge of statistics and skills in computer programming, knowledge and skills generally not included in the regular curriculum in the discipline of political science. Individual attitudes and behaviors are important aspects that new ICT can affect and change. However, they only represent, in some sense, a somewhat narrow segment of the whole range of changes and challenges that the new ICT technologies can bring to politics. Empirical verification of phenomena is also important. Nevertheless, quantitative approach is possibly not the only way of understanding them and using quantitative methodology requires hypotheses with strong theoretical foundation before we test them. An ironical aspect of the new ICT is that while they significantly improve our capacity to analyze the data, they also increase the volume of the data that a researcher is expected to examine, as she mentioned in the interview. At the end of the e-mail interview, she wrote:

"(…) lack of researchers, lack of research assistants, absence of independent courses in the discipline's curriculum, too much emphasis on statistics and empirical methodology in the midst of the deficiency of theory; these are the reasons behind such a low level of publication record. In my view, they are all somehow connected. Since we do not have enough researchers, we cannot open the courses regularly for our students. In turn, many of our students graduate without enough understanding of the phenomenon that we are dealing with, which leads to the lack of potential research assistants for the subject. So, when we conduct a research that requires assistance, we have to train our students from the beginning. Thus, in many cases, we just do what we have been doing, the method that we are most familiar with. Also, students, the graduate students who want to continue their academic career in particular, realize that it would be very difficult to get a job if they specialize in this subject, given the lack of courses in the curriculum. Consequently, they depart for other topics to finish their theses, even if they had an initial interest in the subject which leads to the lack of researchers and research assistants. It's a vicious cycle."

[22] We read all 34 articles in <Table 5> and <Table 6>. 21 of them analyze the impacts of new information technology on individual behaviors and civic attitudes particularly in election times. 9 of them study the issue of cyber security, 2 of them analyze the effects of new information technology on industrial relationship from the perspective of political economy, and the rest of them deal with the impacts on governance (relationship between government and people) and democracy from a theoretical perspective.

6 Concluding Remarks

In the winter of 2016–17, South Korea, and the World, witnessed the unfolding of a series of unprecedented events. After the news that a close friend of President Park, while having no official position, had intervened in a number of political and policy decisions for personal gains in the government was known to the public in October 2016, enraged South Korean citizens started to pour into the streets every weekend and, each holding a candlelight, demanded the resignation of the president. Despite the fact there was no national headquarter that organized the demonstrations, the weekly demonstrations lasted all winter and millions of people participated in the rallies without any serious incident of violence, In time, the Korean National Assembly, overwhelmed by the demand of the millions of people, passed the motion of impeachment of the President, and the Constitutional Court upheld the decision with unanimity. Studies based on the survey on the participants show that most of them participated voluntarily, but greatly encouraged and aided in the process by advanced ICT such as SNS and the internet (Min and Yun 2017; Kim 2017; Lee et al. 2017).[23]

After the new administration took power in May 2017, investigations were launched on the wrongdoings of the previous administration. As a result, the former minister of defense and the director of the National Intelligence Service were arrested on charges of committing illicit activities including manipulation of public opinion by means of using online social networking services.

These events suggest that the changes brought by the new ICT and the digital revolution have already been fully recognized and even utilized by the mass public and the political elites in South Korea. Indeed, the South Korean society and politics have witnessed rapid and profound changes in the digital age. However, political scientists in Korea, who are supposed to analyze the challenges and implications to provide guidance, have not been able to keep up with the speed at which the society and technology have advanced. In fact, the discipline of political science in South Korea is far behind, in both education and research.

As suggested by the researcher who has devoted her research career to the study of this important phenomenon, it appears that a kind of vicious cycle is already in place in which the problems of insufficient researchers, research assistants, and independent courses are aggravated by lack of offering relevant classes as part of the discipline's regular curriculum. Excessive emphasis on statistics and empirical methodology and the deficiency of sound theoretical background result in unproductive research effort. Breaking the chain of this vicious cycle, given its ominous implications on the society and the discipline itself, calls for a solid policy initiative. However, the conditions faced by the discipline of political science in South Korea, namely, the aging population, diminishing size of young students, and the increasing pressure of restructuring on the discipline in the form of reducing the sizes of faculty and students or even elimination of the department, do pose hindrances for taking such an initiative.

[23] In October 2017, *Friedrich Ebert Stiftung*, one of the oldest political foundations in Germany, announced that the year's Human Rights Award would be given to a total of 17 million Korean people who participated in the candlelight demonstrations that lasted all the winter of 2016–2017. Available at http://www.fes.de/menschenrechtspreis/ (9 May, 2018).

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Digitalization and Political Science in Tunisia[1]

Maryam Ben Salem

1 Introduction

In preparing this paper, a sentence written to me by a friend, a communications specialist, kept coming back to my mind and seemed to somehow guide my approach here. I had participated in a conference organized by our Tunisian Association of Political Science on «Facebook and Politics»[2] and under the video of my speech, posted on Facebook this friend had written, «political science is becoming a sub branch of communications.» Beyond the correctness of the statement, this remark raises a question relevant to the subject of particular interest to us here, namely digital technologies and political science. The question is that of disciplinary boundaries about which Edgar Morin has stated: "The disciplinary boundary, its language and its own concepts will isolate the discipline in relation to the others and in relation to the problems that are overlapped within the disciplines. The hyper disciplinary mind will become a spirit of propriety which forbids any foreign incursion into its field of knowledge "(Morin 1990).

Digital technologies are introducing a new object for political scientists, and it is useful to recall here that the MENA region is lagging behind in comparison with Western countries. Indeed, academic interest for digital technologies came into focus spurred by the so-called Arab spring. In Western democracies, interest in digital technology and its impact began in the 1980s, with successive transformations in research problems, corresponding to technical developments in these tools (that is research questions moved from the digital divide, to the uses of these technologies, to digital democracy). In Arab countries, we have witnessed a plethora of works revolving around this issue in the wake of the so-called Arab Spring, with a large measure of media and scientific enthusiasm about the role that social media played in the advent of these revolutions and social movements. Certainly, there were some works before this "historical" turning point, but their number was too small compared to what can be observed today.

By analyzing scientific production in political science in and around the MENA region in relation to digital technologies, one quickly realizes how this object can disrupt the discipline understood as "an organizational category within scientific knowledge" (Morin 1990). This means that this specific object brings to light disciplinary compartmentalization and the difficulty the discipline has appropriating and using techniques and theories

[1] Warmful thanks to Prof. Deirdre Gilfedder for her valuable help.

[2] Association Tunisienne d'études politiques, *Facebook en Tunisie. Faiseur de politique ou espace public ?,* actes du colloque, 21 mai 2017, Hammamet, Association Tunisienne d'études politiques et Konrad Adenauer Stiftung.

exogenous to political science. This paper perspective is based on a non-exhaustive census of the academic work on the region; thus I cannot claim to generalize without having a precise knowledge of the state of the discipline in other countries of the region. Arab countries of course do not constitute a monolithic block, their realities and contexts being very different from one country to another. My point is more relevant to the case of Tunisia, and yet the blind spots of the literature on Arabic-speaking countries should be an opportunity to exchange and discuss the challenges of the discipline across the region. Following a discussion on approaches to digital technology and politics in the first part of this essay, in the second part I will focus on the specific case of the teaching of political science in Tunisia.

2 The state of research in and around the MENA region: what challenges for the discipline?

This papers first tries to make an inventory of published academic works (books, collective books, journal articles) that apprehend digital technologies in their political revolving around the following issues: the role played by digital technology in the Arab revolts, the political and citizen uses of digital technology, citizens' relationships with politics, the identities that these tools generate, as well as general works that deal more broadly with the transformations of the media landscape in Arab countries where a digital divide exists on a domestic level as well as in relation to countries with higher rates of internet access.

It has to be noted that in the countries of the region, there is little space for internationally recognized scientific publication in political science, such as reviews and specialized publishing houses. Furthermore, there is not a single Arabic political science journal among the 431 journals of political science and international relations classified according to the SJR / scimago indicator.

The list of works I have drawn up, which includes 120 titles, is of course not exhaustive, but it does inform us about an important fact: only 16 of the works recorded are written by political scientists, i. e. 13 % of the production in and about the Arab world. The other example comes from the specialized journal CyberOrient, published by the American Anthropological Association and the Faculty of Arts of Charles University since 2006. In this journal, six articles were published by political scientists out of a total of 58. Similarly, out of the 26 issues of the journal Siyasset arabiyya (Arab politics) published by the Arab Center for Research and Policy Studies, only one article deals with digital technologies, and it is entitled "cyber attacks". Arab Media & Society, an online journal published by the Adham Center for Television and Digital Journalism in the School of Global Affairs and Public Policy at the American University in Cairo, features little academic work in comparison with the number of podcasts and journalistic articles. The list does not stop here, there is also the Dubai school of Government publications, the e-journal Middle East Media and Book Reviews, etcetera. Still, this remains insufficient compared to the potential in these countries.

In Tunisia, most of the conferences and symposia organized since 2011 are interdisciplinary[3], in which very few political scientists participate. This conveys the difficulty en-

[3] Centre Africain de Perfectionnement des Journalistes et Communicateurs, « Les médias tunisiens face à la transition digitale », Colloque international, mars 2017, Tunis; Association Tunisienne d'études politiques, *Facebook en Tunisie. Faiseur de politique ou espace public ?*, actes du colloque, 21 mai 2017, Hammamet, Association Tunisienne d'études politiques et Konrad Adenauer Stiftung.

countered by the discipline to appropriate the issue of the digital. Two main questions thus emerge: for what reasons is the digital neglected by political scientists, while it is not by specialists in other disciplines? Secondly, why is the question of the digital so often centered on an exclusive problem: namely, the role played by digital technologies in recent revolutions?

The literature on Internet in the Arab region is largely devoted to cyberactivism as online activism, and focuses on determining just what Arab Spring revolutions owe to social media and online activism (Lecomte 2013, Khatib 2015, El-Nawawy Khamis 2012, Kuebler 2011, Rahimi 2011, Chomiak 2014). Against the enthusiastic vision that confers a decisive role to digital technologies in the rise of the uprisings in the countries of the region (Khamis, Vaughn 2011, Abdulla 2011), a more critical and nuanced approach discusses the mobilizing potential and the values of democratization, pluralism and transparency that have been attributed to it by many authors (Béchir Ayari 2011, Médias special issue 2011, De Angelis 2015, Gonzalez-Quijano 2015).

After the euphoria around the role played by these technologies in the revolution, and facing now a new context, with democracies being consolidated (Tunisia) on the one hand and aborted transitions (Egypt) on the other hand, there is a need to rethink the digital problematic. The point now is to examine just what the transformations of the relationships of the citizens with politics and democracy owe to digital technologies. Similarly, what has been the actual impact of digital technology on citizens' behavior and political opinions, their relations to the conventional political institutions of the representative democracy, the renewal of the modes of participation and of political expression? Yet, very little attention has been paid by political scientists to these fundamental issues that necessitate a change of focus towards the ordinary or profane uses of the Internet in these countries. Indeed, digital technologies have considerably enlarged the spaces for citizens of Arabic-speaking countries to express themselves. This issue, widely studied in Western democracies where the focus is on the role of online participation in the re-invigoration of the political landscape and democratic legitimacy, has been little explored in the countries of the region, if at all, at least by political scientists.

Blind spots of the literature in this geographical and cultural area that I have noted include the following: First, many authors have concluded that digital technologies have had no significant impact on political practices and relationships to politics, and this because they have focused their attention only on online activism, which has proved to be a continuation of offline activism (De Angelis 2015, Badr 2015, Tohamy 2017). However, analysis of the ordinary uses of digital technologies would make it possible to provide opportunities for participation in democratic or public debate, depending on the contexts (Manrique 2011). This type of problematic focusing on ordinary uses requires the use of critical analysis of discourse that remains devolved to communication specialists, anthropologists and sociologists (Pastinelli & all 2018, Najar 2012, 2013 a, 2013b) and totally shunned by political scientists, with a few exceptions. As noted by Koren, the concept of "conversationalization" which refers to what is perceived as "oralized writing", and which is capable of introducing directly any speaker into the egalitarian sphere of verbal interactions of the Web "is nevertheless of interest to political scientists insofar as the subject who expresses himself on the Web sees his status and his mode of address being transformed" (Koren 2010).

While researchers are interested in the emancipatory and participatory potential of digital technologies, they remain centered on the Habermassian ideal of public space (Hammami 2006, Mejri 2017), based on the normative requirement of equal access to speech and rational argumentation. It is often concluded that digital technologies reproduce existing inequality in real life and that modes of expression are far from corresponding to maximum rationality. For example, Hammami questions the possibility of using the con-

cept of public space to analyze the historical development of mediated communication in Arab societies, and its relationship to ICTs given that the historical experience of modernity is behind the emergence, formation and evolution of communication in Western societies. From this distinction with the West, the author concludes that analyzing the organization of mediated communication in Arab societies should be done through the notion of neo-patriarchy which Sharabi explains as: "a hybrid traditional and semi-traditional structures […] where modernity and patriarchy coexist in a contradictory union" (Sharabi 1996). This perspective makes it possible to bring forth the weight of tradition insofar as it favors forms of regulation in the field of communication which are embodied in speeches of prescription, injunction as well as in censorship and coercion (Hammami 2006).

However, in spite of authoritarianism, inequality in terms of access, skills and argumentative capacities, digital technologies have made it possible to broaden the possibilities of expression and to demand the right to speak. Accordingly, the political potential that digital technologies would favor, would be better understood through the prism of "dissensus" from a Rancierian perspective. The notion of controversial space (Rancière 2014) is an appropriate conception to grasp online political discussions and public opinion not structured by a policed order. These discursive exchanges are characterized by disagreements on the identity of the subjects recognized as legitimate interlocutors, on the one hand, and disagreements on the very subject of political discussions on the other (Rancière 1995). Online political exchanges in the MENA region offer interesting cases of study insofar as they allow us to see the way in which the "*sans part*"[4], impose themselves as beings of words and call into question the existing order.

The transformation of political institutions in this region under the influence of digital technologies as well as the appropriation of institutional rules by individuals, are other unrecognized issues that would make it possible to see how public communication via digital devices, and the establishment of e-government affects the relationship of citizens to institutions and politics. Furthermore, the issue of the performance of political parties and militant organizations, their strategies of action and mobilization is surprisingly studied more by sociologists than by political scientists.

In addition to disciplinary compartmentalization, these blind spots of political science are also the consequence of the predominant approach in political science, particularly in this region, which privileges the macroscopic over the microscopic and the macro or meso level over the micro one (Sawicki 2000). We find, however, works focused on a dense description of a case, but mostly from a macro perspective that seeks to identify patterns in the social and political structure rather than in the individual logics of action. For example, Ayari has addressed the issue of the Web 2.0 revolution in Tunisia from a class divisions perspective, and Khoury Machool has attempted to demonstrate how modes of expression favored by digital tools make it possible to transform the modes of resistance and the political culture of young Palestinians, linking the socio-political conditions of the Palestinians to the use of the Internet as a cyber-resistance tool (Khoury-Machool, 2007).

By addressing the above-mentioned issues, political scientists would be compelled to change their scales and methods. The transdisciplinarity of digital technologies, coupled with a micro approach (centered on behavior, individual attitudes and social interactions, rather than on structures), would in fact require the borrowing of theories, concepts, observations techniques from other disciplines, mainly sociology, ethnology and communications. For instance, the analysis of discursive exchanges and visual representations re-

[4] "Sans part" refers to those whose speech is rendered inaudible, following a split between those legitimately allowed to express themselves politically and those whose words, status, visibility and the right to be heard are denied.

quires the use of linguistic discourse analysis techniques and visual and iconographic methods (Kovacs 2015, Lacquaniti 2015) and therefore calls for a poly-competence on the part of political scientists.

The question then is why do political scientists, especially local ones, remain confined (no matter the object) to a globalizing and state-centered approach? One possible element of explanation could, in my view, be the institutional anchoring of the discipline. Political science in the Arab region has struggled to assert itself as an autonomous discipline, and Tunisia is perhaps the most illustrative case here, or at least about which I feel more entitled to speak. Authoritarianism has indeed led to the marginalization of political science, which, although taught in Tunisian universities, was long perceived as a discipline with high subversive potential and is still avoided by students who cannot perceive the job opportunities it can offer. The obvious outcome of this has been to make political science a sub-branch of law, from which it has not achieved its own autonomy. Political science teachers are under the aegis of the public law department, although they are recruited as political scientists. There is currently no Bachelor degree in political science in public universities, only Masters degrees. As a result, a Tunisian political scientist can find herself constrained to work on the classical objects of political science in which law and politics are intertwined. For example, out of a total of 257 Ph. D theses defended at the faculty of law and political sciences in Tunis, only 48 (i.e. 18 %) are in political science, with the most remarkable fact being that the main topic chosen is usually international relations and international law. In other words topics that fall within the competence of jurists. Students are still reluctant to work on objects exclusive to political science or to adopt its methods and concepts lest they be penalized by the jurists who dominate the discipline.

Hence, what Tunisian political science suggests is not the risk of hyper specialization which would be detrimental to the advancement of science according to Morin because it prevents seeing the bonds of solidarity of a " an object dealt with in other disciplines (Morin 1990), but on the contrary to the dilution of political science in law.

3 The teaching of political science in Tunisia: what has been the contribution of digital technology?

In terms of teaching, the digital revolution has not had a major impact on political science in Tunisia. Two main reasons can explain this: the first reason relates to the particular historical circumstances around the emergence of political science in Tunisia as explained above. For political science to make best use of digital technology in its teaching, Tunisian universities need first to fully recognize the discipline.–

Political science as a discipline emerged from the study of law. While political science itself has become a serious and recognized discipline in Europe and North America, the same cannot be said of Tunisia where the discipline still has a long way to go to gain autonomy, in part due to Tunisia's relatively recent history of authoritarian politics. For the moment there is no Bachelor degree in Political science in Tunisia, apart from in one private university. Nor are there any political science departments, nor research centres, nor a laboratory of political science in the country. There are only three Masters of political science degrees in the whole country, housed within the faculty of law and social and political science at the University of Carthage, the faculty of law and political science at the University of Tunis el Manar, and the faculty of law and political science in Sousse. The discipline also suffers from a dearth of qualified teachers, with not many more than ten political science lecturers across Tunisia. Only 7 % of the Political Science faculty in

Sousse are actual political scientists, with most classes being taught by lawyers. The result of this is a hybrid curriculum, dominated by the instruction of law. Furthermore, most students choose to complete masters and Phd dissertations in public law, for fear of being sanctioned by a committee largely composed of professors of law.

There is an online virtual university in Tunisia, but it does not include a political science curriculum. Two classes in political science are dispensed within a course on law – one is a class on general politics taught by non-specialists and concerns mainly questions of the corporate world, while the other is on geo-politics[5].Universities in Tunisia have few resources to develop digital technology and make it accessible to teaching staff and students. Although compulsory pedagogical training for newly recruited University teachers includes an e-learning module, few academics practice it. Only the faculty of law and political science in Tunis has on-line classes in political science at the Master's level.

A recent forum on e-learning was organized in Tunis, but the program only dealt with the technical education sector[6]. Meanwhile, the head of the Tunisian government recently designated certain disciplines as 'noble', namely medecine and engineering in the context of a new program of affirmative action for students from disadvantaged regions, thereby discriminating against the humanities and social sciences. Despite the fact that Tunisia's authoritarian regime is over, we have not witnessed any increased interest for political science by the new Ministry for Higher Education and Research. As yet, the minister has not responded to numerous appeals for the creation of an institute of political science in Tunisia.

The second explanation for the limited impact of digital technologies is the persistent digital divide in Tunisian society, despite some improvement in this area. While Tunisia figures among one of the pioneering countries in terms of digitalization in Africa, (where the country is ranked number one), as well as within the Arab world (holding 4th position), according to the NRI index[7], only 46.2 of individuals were using the internet in 2016[8]. This is a score well below rates of access in developed countries. Tunisia is ranked 112/139 in terms of Internet use in schools for learning purposes[9]. The regional and generational divide in Tunisia is also a reality that must be taken into account, as both have been identified as priority areas for action by the Tunisian Ministry of Communication Technologies and Digital Economy within the framework of the Tunisia Digital 2018 initiative (Toumi 2016: 25).

Within the practice of political science education as it is taught classically[10], the use of digital technologies remains weak and limited to exchanges of emails between the teacher and his or her students, as well as the use of Dropbox and Facebook groups created by Masters students. Many students have no access to Internet and even when they do, we soon find they have a more recreational use of these tools, than a professional one. This has furthermore been confirmed by a quantitative study on internet use by youth in Tunisia conducted by the National observatory of Youth. 88.79 % of young people questioned use Facebook, while 11.79 % use Twitter. 5.11 % have a Website and 3.77 % run a Blog. Young Tunisians use Internet principally for social life (28.6 %), followed by artistic consumption (24.4 %)[11]. Elsewhere a qualitative and quantitative study conducted among students and teaching staff at the University of Tunis El Manar by Ben Hassine has demon-

5 Virtual University of Tunis http://rel.uvt.rnu.tn/course/index.php?categoryid=18

6 https://www.forumelearningtunisie.com/programme-officiel/#ParentTab2

7 Ministère de l'enseignement supérieur et de la Recherche scientifique et TIC, Tunisie digitale 2018 .

8 http://reports.weforum.org/global-information-technology-report-2016/networked-readiness-index/

9 http://reports.weforum.org/global-information-technology-report-2016/networked-readiness-index/

10 The author of the paper teaches in two masters out of the three existing in the country.

11 Observatoire National de la jeunesse (2014) : Jeunes et participation citoyenne : repenser l'engagement de la jeunesse tunisienne (unpubl.).

strated that despite equal access to ICT within Tunisian universities, female students and staff use the Internet far less than males. This is due either to a lack of interest and lack of digital competence among older career women, confirming the thesis of a generational divide, with older users being resistant to digital tools, or else time constraints for the early and mid-career women because of domestic responsibilities (Ben Hassine 2014 : 84).

Finally, the marginal status of political science as a discipline, the inadequate resources of higher education institutions and of the state itself, the economic conditions of students and a certain resistance to change are the main factors that explain the low impact and limited use of digital technologies in teaching programs in Tunisia.

4 Conclusion

This article has aimed to identify the pressing problem of the place of political science as a discipline in the academic landscape of emerging regions. The challenges facing political science are many. To address the question of the role played by digital technology requires that one first address the status of political science itself in the MENA region and more specifically in Tunisia.

The challenges thus are twofold: on the one hand, there is the challenge to establish autonomy for the discipline which would enable it to produce knowledge and develop instruments independent from law studies and, on the other hand, to develop the recourse to interdisciplinarity which would foster political science. It is only by this double movement of delineating its field and reaching out to other disciplines that political science can succeed in making digital technology a legitimate object for the discipline, and to go beyond the sole problematic of revolution. A moot question would be: does the confinement of political scientists to the problematic of revolution replicate an academic representation about the Arab world as being inevitably confronted to two alternatives: to submit or to rebel (Badie 1987)?

This is an essential point for the development of political science in the MENA region: we need to first break with the notion of the exceptional character of this cultural area. Chraibi and Fillieule point out the contradictions related to the understanding of Arab revolts, which could be applied to our subject, since the literature on digital technologies remains focused on social movements and resistance patterns: “After having long questioned the “causalities of a lack” of democracy, we should now ask why the events of 2011–2012 sound the knell of the “exceptionality” of the Arab world and announce a new threshold in the process of universalization of the revolutionary fact. They are often the same “defects” and the same “anomalies” that were previously identified as the locks of democratization which, by the dint of the rise of real history, become the causes of revolt and its success.” (Chraibi, Fillieule 2012: 770). What would be beneficial for the development of political science in the region, would be not only to achieve interdisciplinarity but also to outgrow the thesis of exceptionality that makes the MENA region an irreducible space to the conceptual tools elaborated by the West.

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Digitalization and Political Science in South Africa

Christopher Isike

1 Introduction

Political science as a discipline in African universities has, since the post-independence era, come under immense scrutiny in terms of its relevance to the lived experiences of Africans. It is argued, for instance, that over 60 years of post-colonial African university education has not produced African epistemologies that inform teaching and learning at its higher education institutions (Nldovu-Gatsheni 2018; Mngomezulu and Hadebe 2018; Zondi 2018; Ngugi wa Thiong'o 2012; Nabudere 2011; Mbembe 2002; Ake 1982). The curriculum of post-colonial African education still reflects the legacy of colonial education which was hegemonic and disruptive of African cultural practices, indigenous epistemologies and ways of knowing. This partly explains why the continent remains at the margins of world affairs given the nexus between knowledge production and power, as well as the link between western epistemology and the intended learning outcome which was to produce job-seekers instead of job creators. For example, a number of studies document the continuous economic domination of the continent through the continuous colonization of its knowledge production as Kwame Nkrumah famously argued (see Ngugi wa Thiong'o 2012; Badat 2008; Amin 1975; Baran 1968). Similarly, Ake (1982) demonstrates how western social science scholarship in developing countries amounts to imperialism:

> It foists on the developing countries, capitalist values, capitalist institutions and capitalist development, shapes the learning outcomes in social sciences towards addressing questions of how to make the developing countries more like the West and more importantly, it propagates mystification, and modes of thought and action, which inevitably serves the interest of capitalism and imperialism (Ake 1982:76).

This raises fundamental questions about the content and relevance of the curricula of humanities and social sciences programs in Africa. However, apart from the impact of neo-colonialism and imperialism on knowledge production in Africa, the fourth industrial revolution has also affected African politics and development profoundly and in ways that raise new questions about the digitalization of political science education in universities across the continent. For instance, to what extent are digital tools integrated into teaching methods? Is the digital revolution sufficiently covered in the political science curricula? If not, are there specific reasons? Also, what role does the digital revolution play in research in an African university? How does digital interaction influence political science researchers in both general and specific ways? Has digitalization become an issue for political scientists in terms of its implications for political participation, process, institutional contexts, usage?

Does digitalization hold any prospects for decolonizing the conduct and study of politics in Africa? In the context of this chapter, what is the state of teaching and researching political science in South Africa in the present digital age?

In exploring the state of teaching and researching political science in South Africa in the digital age, the chapter examines the curricula of six universities, two each from what is classified in the country as comprehensive, traditional and technical universities. These are, respectively, the University of KwaZulu-Natal (UKZN) and University of Pretoria (UP); Rhodes University (Rhodes) and University of Zululand (Unizulu); and Durban University of Technology (DUT) and Tshwane University of Technology (TUT). The expert views of 18 academics (3 from each university) were also utilized to present an overview of the state of political studies and research in the digital era in South Africa.

2 The digital revolution and teaching and learning in South Africa

The digital revolution has impacted on teaching and learning in particular and on education in general at all levels in South Africa and in Africa as a continent. According to Robson (2008), the digitalization of education was intended to tackle such challenges as overcrowded class rooms and the shortage of teachers. The basic education sector thus benefited from the use of digital platforms such as e-learning books and virtual libraries. Initiatives such as the Via Afrika Digital education centres currently operate in primary schools across South Africa. These have helped to provide schools and libraries with materials such as tablets with Via Afrikas latest programs, apps and electronic textbooks (see Robson, 2008). The ClassDojo app also aids communication between teachers and parents across both private and government primary/high schools in the country.

At the Higher Education Institution (HEI) level, the digital revolution is also evident as most universities use digital platforms to aid teaching and learning with resultant advantages. For instance, with the emerging funding crisis universities face over free higher education for all (resulting from the #FeesMustFall movement), Digitalization provides viable solutions in terms of delivering higher education to more people at reduced costs. The University of South Africa (UNISA), for example, is more affordable for university education mainly because it is an open distance university (virtual learning). This allows students from all over Africa to obtain their degrees at a lesser cost than at traditional universities. Furthermore, online platforms such as *The Hub*, which caters to tertiary education in South Africa, and ERAOnline (which publishes e-books and also allows students to interact with authors, publishers and peers) show how the digital revolution in South Africa has changed the way education is organised to reach out to students across the globe (see Jackson 2017). Information and Communication Technology (ICT) policies are being implemented and more HEIs are incorporating ICT into their curriculum. Awareness is being created by governments and stakeholders on how embracing technology can improve lives (Jackson 2017). These provide prospects for economic growth and development. However, several challenges continue to militate against success and these shall be the focus of review in this section of this chapter.

Following the advent of democracy in 1994, there was a great deal of fervour for policies aimed at making higher education more inclusive (Leibowitz and Bozalek 2014). However, the role of digital technology in this regard was not made explicit until the emergence of the National Plan on Higher Education (Department of Education 2001) on which the potential of ICTs to bring about far-reaching changes was foregrounded. The plan draws on Manuel Castell's social theory to highlight the need for South African HEIs to improve ped-

agogy through the use of communication networks. A 20-year (1996–2016) literature review of technology-enhanced learning in South Africa's higher education sector by Ng'ambi et al (2016: 843–858) reveals four phases of digitalization namely, phase 1 (1996–2000), phase 2 (2001–05), phase 3 (2006–10) and phase 4 (2011–16). During phase 1, technology was used predominantly for drill and practice as well as computer-aided instruction with growing consciousness of the digital divide. In phase 2, institutions primarily focused on building ICT infrastructure, democratizing information as well as policy development and research. They sought to assess the effectiveness of teaching with or without technology. In the course of phase 3, "institutions began to include ICTs in their strategic directions, digital divide debates focused on epistemological access, and they also began to conduct research with a pedagogical agenda" (Ng'ambi et al 2016: 843). During phase 4, mobile learning and social media emerged with "the research agenda shifting from whether students would use technology or not to how to exploit what students already use to transform teaching and learning practices" (Ng'ambi et al 2016: 843). The fundamental issue that emerged from the last phase (2011–2016) and still subsists is the "role that higher education should play given that all students now own mobile devices, are socially connected, digital content is freely available and Massively Open Online Courses (MOOCs) are a buzzword" (Ng'ambi et al 2016: 850). It is the responses to this phase, according to the literature survey, that will define the future of higher education in South Africa in the next decade (2018–2028). For instance, how universities deal with issues around blended learning, free data provision, investment in e-learning tools such as blackboard and curricula change are critical.

Chukwuere (2017) draws a link between decolonization, Africanization and digitalization in the South African higher education system. According to him, as a nation that is only still healing from the wounds of the apartheid past and facing calls for the decolonisation of the education system, it is important for African Indigenous Knowledge System (AIKS) to be integrated into the Digitalization of the education system. This underscores the significance of digital technology in the quest for reinstating African knowledge systems and production which were lost to the epistemic violence committed against it by the colonialists.

One of the challenges facing HEIs in South Africa is the contradiction in acknowledging and progressing beyond systemic problems inherited from the apartheid era (Bozalek & Boughey 2012; Leibowitz 2012; Soudien 2012). This constrains efforts to attain participatory parity (Fraser 2008, 2009), and to prepare future generations of students for "emerging technologies" (Broekman, Enslin, & Pendlebury 2002; Veletsianos 2010). In particular, the fact that government contribution to higher education is not up to 5 % of its national budget presents a problem to digitalization. A further challenge is the differentiation factor[1] which continues to affect the research and teaching trajectories of previously disadvantaged universities especially those located in semi-rural and rural areas. For example, historically black universities such as the University of Fort Hare (UFH), Walter Sisulu University (WSU) and the University of Zululand (Unizulu) continue to lag behind historically white universities such as Rhodes University[2] where there is more assured access to computers and the internet. While these facilities are also available in the former universities, they are generally inadequate.

[1] To curb the fragmentation, inequality and inefficiency which bedeviled the pre-1994 South African higher education system, a 1997 White Paper (RSA DoE 1997) outlined the framework for a new higher education system that must be planned, governed and funded as a single national coordinated system. This laid the basis for merging the country's 36 public-owned tertiary institutions into 23 and the three categories of higher education institutions that emerged from the merger of higher education institutions were the Traditional Universities which offer primarily general and professional qualifications in the form of degrees; Universities of Technology which offer primarily vocational qualifications in the form of diplomas and Comprehensive Universities offer a combination of the two (Motshoane and McKenna 2014).

[2] This is even though UFH, WSU and Unizulu are also comprehensive universities like Rhodes.

Bozalek et al (2012) have also noted disparities between the technologies used by students and lecturers and those provided by institutions. There is little knowledge about the impact of emerging technologies on learning or the readiness of higher education institutions to employ such technologies in South Africa. Bozalek et al. use Roger's 2003 diffusion of innovations model to examine the diffusion, adoption and appropriation of emerging technologies in South African HEIs. They examine how these technologies are used in innovative pedagogical ways to transform teaching and learning across HEIs in the country. They conclude that, in order to foster greater uptake or more institution-wide diffusion of the use of emerging technologies, institutional opinion leaders need to create an enabling environment by giving recognition to change agents and developing appropriate policies.

The gap this presents in research on the role of the digital revolution in teaching and learning, and in particular the teaching and learning of political science in South Africa is the lack of literature in this field. Most studies conducted have mainly focused on the improvement of basic education. There is insufficient literature on higher education and on the role of the digital revolution on teaching and learning in political science. This is not to say universities in South Africa have not been adopting digital methods as the use of digital platforms and technologies have enabled online interaction between lecturers and students in ways that facilitate deep learning (Veletsianos 2010; Bozalek et al 2012). Yet this has shown to also have drawbacks as students have in many cases not been able to self-manage their studies with the reduced classroom contact that results from online learning (Interviews with respondents, 2017/18). What then is the situation of teaching and research in political science in South Africa in the digital age, and what are the challenges and prospects of digitalization for transforming the conduct and study of politics in South Africa?

2.1 Methodology

The chapter adopted a comparative case study approach. A total of six universities, two each from the three categorizations of universities in South Africa were selected as shown in Table 1 below:

Table 1: Typology of selected universities

Universities	Categorization A	Categorization B[3]	Categorization C
University of Zululand (Unizulu) Rhodes University (Rhodes)	Comprehensive	Green	Historically disadvantaged
University of KwaZulu-Natal (UKZN) University of Pretoria (UP)	Traditional	Red	Historically advantaged
Durban University of Technology (DUT) Tswane University of Technology (TUT)	Vocational	Blue	In between

Source: compiled by author, 2017

[3] The South African Council on Higher Education (CHE) grouped universities into "red", "green" and "blue", which do not entirely mirror the three types of traditional, vocational and comprehensive universities in the country (Motshoane and McKenna 2014). There were five research-intensive universities in the "red" cluster, namely: Cape Town, Pretoria, Rhodes, Stellenbosch and the Witwatersrand. They produced the bulk of postgraduates and future academics and had high student success and graduation rates, high proportions of academic staff with PhDs, high research outputs, high income and low staff/student ratios. There were nine universities in the "green cluster, namely: Free State, KwaZulu-Natal, North-West, Fort Hare, Limpopo, Western Cape, Johannesburg, Nelson Mandela Metropolitan and Zululand which all scored in the middle on the variables. The "blue" cluster had eight institutions including two rural historically disadvantaged universities and six universities of technology. They had relatively lower postgraduate enrolments, success and graduation rates, qualified staff, research outputs and income but high enrolments in science, engineering and technology and high staff/student ratios (see MacGregor 2010).

The political science curricula in each of these universities were thematically analyzed in line with the broad research questions. Comparisons were made between the selected universities in terms of the digitalization of the of teaching and learning in the field of political science. In-depth interviews were also conducted with 18 colleagues, 3 from each of the 6 selected institutions between October 2017 and July 2018. The interviewees were selected to represent the professor, senior lecturer and lecturer levels. Their responses provided deeper insights into these issues with a focus on prospects and challenges for the future.

2.2 Discussion of findings: teaching and learning in the digital era

2.2.1 General information on the state of political science in the digital era

The impact of digitalization on teaching and learning political science in HEIs in South Africa is not different from the general impact and trends of digitalization on teaching and learning in general. Most universities, including those ones sampled for this study have their own e-learning platforms. These include digitalized libraries with portals where books, reports or journal articles can be accessed. Each university (from ClickUP in UP, RUConnect in Rhodes to Moodle in Unizulu) has digital tools used to facilitate teaching and learning especially by younger lecturers (below 45 years) across departments. The study finds that lecturers in UP, Rhodes and UKZN tended to use these digital tools more than those in Unizulu, DUT and TUT. The historical legacy and post-apartheid differentiation amongst universities is a main causal factor as UP, Rhodes and UKZN are better funded as research intensive universities, and as such, attract more established and high profile-researchers than Unizulu, DUT and TUT. However, in all 6 universities, these digital tools are used more often as mediums of communication between students and lecturers than as teaching aids although this has changed a bit since 2016[4]. UP, Rhodes and UKZN are better equipped with digital facilities than Unizulu, DUT and TUT and as such they use digital tools for teaching political science more than it is used in the latter universities. Again, differentiation is an explanatory factor of why some universities (Rhodes, UP and UKZN) have more and better equipped digital classrooms than others (Unizulu, DUT and TUT). Acknowledging his positionality in the study, the author who has taught at three of the selected universities (UKZN, Unizulu, UP) in the last 14 years (2005–2018) also confirms the findings on the digital differences between these universities. For example, in comparing Unizulu where he was for nine years, and UP where he has been since January 2018, the disparity is wide. The Unizulu Moodle system is still developing and not as advanced both in terms of interactive features and accessibility to all students compared to the UP ClickUP system which has tens of interactive features that facilitate not only communication between lecturers and students, but are used more as teaching and learning aids in live and virtual classrooms.

ClickUP[5] is a comprehensive and flexible e-learning platform that delivers a complete course management system. At its most basic level, it is used as a digital space for lecturers to make class notes, study guides, readings and videos available to students for each course. In addition to these basic functions, ClickUP allows the lecturer to conduct online tests and online submissions of assignments which have built-in anti-plagiarism software.

[4] Emphasis on digitalization increased dramatically after the #FeesMustFall protests by HEIs students which rocked South Africa in 2015. For example, during similar protests by UP students in 2016 and early 2017, the university employed various digital strategies to facilitate teaching and learning when students could not come to school.

[5] The commercial name for ClickUP is Blackboard Learn; an e-learning software.

ClickUP is also a very effective tool for communication as lecturers can post announcements and learning content to a large number of students in a class. It enables lecturers to create digital lectures using sound and video recordings similar to MOOCs which the International Political Science Association (IPSA) has been actively promoting in the last five years. ClickUP also has a collaborate tool which it uses in a synchronous way (real time) to engage with students from anywhere they may be outside the lecture room. This can also be used to create and deliver asynchronous (delayed time) recorded lectures which students can access at their own time to learn at their own pace in ways that also foster independent learning. The University of Pretoria ClickUP system has a number of recording tools which can be used to create and deliver both synchronous and asynchronous digital lectures and they are all available to lecturers, easy to use and accessible to students who have smart phones. Some of these tools include, powerpoint with sound[6], office mix[7] and blackboard collaborate ultra[8]. The Turnitin function, a plagiarism detection software program enables lecturers to detect research misconduct such as plagiarism and fosters deeper learning and academic integrity.

Finally, UP has since 2016 significantly improved the digitalization of teaching and learning by collaborating with community partners to enhance higher education. During the various #FeesMustFall protests at the university, more lecturers were encouraged to use ClickUP to deliver voice recorded lectures which were made available to students outside the classroom. Students who did not have internet access during the protests were able to utilize the free Wi-Fi service of the City of Tshwane Municipal Council (Interview with UP Lecturer, July 2018). The university engaged the Council to provide 1 GB per student for their use on the assumption that most students had some form of smart device (tablet, phone, laptop). Those who did not have were afforded access to computers made available by UP and the City of Tshwane Municipality via public libraries (Interview with UP Lecturer, July 2018). According to this lecturer, "as a researcher and lecturer at Tuks (UP), I find digitalization has generally helped with teaching and communicating with students, and the university is using modern digital tools to make this happen". In essence, and from the author's own experience, the sophistication of digital tools at UP is suitable for effective teaching and learning, and caters to a wide range of the learning needs of students and teaching goals of lecturers. However, this is not the case in relatively poorer universities such as Unizulu, DUT and TUT.

Overall, it should be noted there are challenges associated with digitalization as well. Some of these include an overreliance on technology with some lecturers overusing or over-relying on technology. Students learn in different ways and direct contact sessions with lecturers remains vital to learning especially for students who are not in open access (online) or virtual universities (Interviews with respondents, 2017/18). Also, the use of technology is affecting class attendance as students now know that learning materials are made available online (Interview with UP Lecturer, July 2018). However, this has been mitigated to an extent by the use of class registers, unscheduled pop tests and limited/selective uploading of class notes online which have tended to force students to attend class.

[6] Narrated PowerPoint with sound recorded within PowerPoint and then converted to a video file format that can be uploaded on Click through YouTube

[7] A powerful tool that makes authoring and sharing of online lessons/presentations simple. It allows lecturers to make them interactive with quizzes and labs

[8] A real time multi-functional virtual classroom or web conferencing environment that gives lecturers and students the opportunity to meet online instead of in a classroom. Students log on at the same time for a live classroom session.

2.3 Content aspects: digitalization and political science curricula

None of the six universities had any courses that focus on the digital revolution as a subject of study. However, four of them (Unizulu, Rhodes, UKZN and UP) each has one international relations course that deals with the role of social media in political change developed after the Arab Spring in 2011 as well as small aspects of digitalization. However, this is mediated with the research projects and dissertations of honours and Masters students who work on digitalization issues. Respondents from these universities (Unizulu, Rhodes, UKZN and UP) indicate that there are efforts by postgraduate supervisors within their departments to encourage students to consider the effects of digitalization and technology on political matters.

At DUT and TUT, there are no stand-alone political science departments but political science related courses are taught within the public administration/management programs. However, none of these focus on the digital revolution nor deal with the role of social media in political change. None of the respondents from both universities have encouraged their postgraduate students to study digitalization neither were they aware of any of their colleagues who have done so. One reason for this is the public administration/public policy bias of the departments.

This shows digitalization does not feature sufficiently in the political science curricula of the selected universities and this is generally the case across the other 17 universities in South Africa. According to the colleagues interviewed, the dearth of digitalization could be traced to a number of factors including the absence of dedicated professorships in politics and the digital revolution/internet; scant research on politics and the digital revolution by political science researchers within departments, the bureaucracy associated with changing course contents and names, dearth of younger researchers in the discipline who are more likely to embrace the use of digital tools as well as general ignorance on digital technology (Interviews with respondents, 2017/18).

2.3.1 Institutional aspects of political science teaching

The political science departments at Unizulu, DUT and TUT are smaller than those at Rhodes, UP and UKZN in terms of staff numbers. At Unizulu, the departmental staff include one PhD holder and 3 Masters' degree holders. There are no professors. There are also no full or associate professors of political science at DUT and TUT. Apart from the challenges[9] of attracting and retaining top professors of political science at these universities, their small size makes it easier to be overrun by tyrannical university managers who lack the political will[10] to support and develop political science as a discipline to its full potential. Impliedly, in universities with small political science departments, there may not be enough will to appoint full professorships in traditional political science research areas much less in politics and the internet.

[9] Some of these include context specific challenges which make them unattractive to top political scientists such as the rural location (Unizulu), poor or lack of retention strategies, low ranking and prestige amongst the comity of universities.

[10] Tyrannical university managers are often intolerant of criticism of any sort and are unable to stand the perceived challenge to their authority which a renowned political science professor may pose. Also because these tyrants often 'keep a tight leash', they are unwilling to contemplate the political education and consciousness that such professors may inculcate in their students and the larger student body depending on how much the political science professor engages in community work and academic citizenship within the university. This point is better appreciated against the background of a perennial history of violent student unrest in these institutions.

Although the other universities with bigger political science departments do not have dedicated professorships in digitalization and politics, the prospect for that is higher in these universities where political science professors are amongst the most productive researchers and attract a lot of funding to the universities. For example, the department of political sciences at UP has started exploring more content and research on politics and the internet. At the faculty level (Faculty of Humanities), there have been seminars on the effects of technology, artificial intelligence and digitalization, and in 2018, there were a few calls for abstracts on the effects of technology on the humanities as a whole.

3 Research and innovation in the digital era

3.1 General information on the state of political science research

As is the case elsewhere in the world, the digital age has impacted on political developments in Africa and South Africa. One of these is expanding political participation in ways that foster public accountability and transparency in governance. In South Africa for example, in the heels of the Arab Spring in North Africa, political participation of young South Africans has increased with greater activity on social media platforms (Facebook, Twitter, Instagram, WhatsApp) (Robinson 2015). The FeesMustFall movement, could be linked to the 'discovery' of the utility of social media as a tool of political change following the Arab Spring which dislodged ruling despotic regimes in Tunisia, Egypt and Libya. According to Robinson (2015), between 16 and 22 October, 2015, the #FeesMustFall hashtag was used over 258,574 times with the majority of posts generated from Twitter. Leaders of the movement used social media to mobilize support among young and old South Africans and they eventually succeeded in influencing government's position on fees in 2016 and 2017 (no fee increases) culminating in its announcement of free higher education and training for poor and working class South African undergraduate students in December 2017.

While the digital revolution has facilitated civic and political participation in South Africa, it remains to be seen how much this development has generated research from political scientists in the country. How many political science experts or departments have researched the impact of the digital revolution not only on political participation, but also on political processes, policy-making and institutions? Furthermore, how many are engaging in research on the impact of the digital revolution on their teaching practice and content? An overview of article titles and abstracts of two key political science journals in South Africa (*Politikon* and *Politeia*) over a 10-year period (2009–2018) indicate that there has been little done in these areas. Out of the 214 articles published by *Politikon* during this period, none was on issues related to politics/political science in the digital era. In 2013, the journal did a special issue on 40 years of political science in South Africa and none of the 14 articles in that issue made reference to the impact of digitalization on political science research, and teaching. Similarly, in apparent response to the calls for decolonizing university curricula by #FeesMustFall protests, *Politikon* published another special issue in 2018 on decolonization after democratization in South Africa which focussed on decolonizing knowledge production in political science. However, none of the nine articles in that issue broached the state of the discipline in the digital age. The situation is not starkly different with *Politeia* which published 101 articles between 2009 and 2017 with only two of these (in 2016 and 2017) remotely addressing the impact of digitalization on politics in Nigeria. Although, these figures do not tell the full story of the lev-

el of engagement with digitalization as there are many other journals in South Africa that publish political science research in South Africa, *Politikon* and *Politeia* are the foremost journals of political science in South Africa[11]. Furthermore, only 4 of the 18 academics interviewed had done research related to the impact of the digital era on politics and its study which they presented at national and international conferences but none of these research was published in *Politikon, Politeia* or other peer reviewed journals.

3.2 Content aspects: research focus

Research on the state of political science as a discipline in South Africa has often focused on epistemological and pedagogical issues, and not much on teaching and learning methods. As stated earlier, there is paucity of research on digitalization and its mutually reinforcing impact on research and teaching and learning. However, as was observed in the case of publications in *Politeia*, there is some research by political scientists in the country on the impact of digitalization on the conduct of politics; electoral democracy, political participation even though they are on Nigeria and on the link between decolonization, Africanization and digitalization. Postgraduate student research also focused on these subjects including the impact of digitalization on teaching and learning political science.

3.3 Institutional aspects

At the institutional level, the South African Association of Political Studies (SAAPS), the professional association of political scientists in the country had a sub-theme titled: The practice and teaching of politics and international relations in the digital age" in its calls for papers for the 2018 national biennial conference which held in October 2018 and the resulting panel was well attended. This indicates awareness of the reality of digitalization as it affects the discipline. However, SAAPS is yet to have a research committee/caucus on politics and Digitalization or on digital aspects of political science within and outside universities. There is also no existing journal in the discipline that focuses specifically on digitalization and its impact on the conduct and study of politics in South Africa. The picture become more gloomy considering there is no established professorship/chair on politics and the internet in any university across South Africa.

4 Desiderata: prospects and challenges

The digital revolution is also a revolution of politics and citizenship in South Africa. For one, the availability of information through the internet and social media has helped to foster public accountability through active political participation (new culture of political inquiry) which exposes the shenanigans of politicians and public officials.[12] As digitalization increasingly impacts politics in ways that could possibly redefine it, we expect to see

[11] Almost every renowned political scientist based in South Africa has published an article or more in either *Politikon* or *Politeia* or both in the last 10 years and none has published research work on political science in the digital era in South Africa.

[12] The South African social media space is awash with both fake and real stories/news of the activities (private and public) of politicians and other public servants which have set citizens thinking and talking about

political scientists fully embracing digitalization and researching it so that they are not left behind. Although the mutually reinforcing impact of digitalization on the practice, research and teaching of politics is still budding in South Africa, it has good prospects for growth in ways that will revolutionize the conduct of politics. More universities are embracing the use of technology as teaching aids and to facilitate communication/interaction between lecturers and students. Also, more young academics (especially those below 40 years) are increasingly embracing the use of digital technologies for teaching and learning. All the six universities sampled for this study have digital platforms and classrooms to facilitate teaching and learning well into the 21st century and beyond. They have all integrated social media into digital classrooms in ways that equip the classroom for mobile and blended learning. Although, depending on their individual status, each of these universities is at a different stage of digitalizing teaching and learning, it is instructive none of them is completely left out. In time, lecturers will be forced to embrace digitalization in their teaching and political scientists. And although the digital aspects of teaching and conducting politics is under-researched, as more lecturers embrace digitalization, research into digitalization will become inevitable.

The SAAPS is sufficiently sensitized on the digital aspects of teaching and researching politics. However, this can be pursued further by establishing a research committee on politics and digitalization, and which will then be followed up with panels and round-tables on the subject in subsequent regional colloquia and national conferences in years to come. At a wider institutional level, South Africa's first international workshop on digital humanities (DH) was convened at North-West University (NWU) in 2015. The workshop focused on the digitalization of the various disciplines in the humanities such as ancient and modern languages, archaeology, history, communication studies, the arts, music, anthropology and the likes (see http://sastudy.co.za/article/d-is-for-digitisation/ accessed 08/08/18). The workshop also saw the birth of the Digital Humanities Association of Southern Africa (DHASA). According to Prof Attie de Lange, Research Director: Unit for Language and Literature in the South African Context at the NWU, the need for establishing a Digital Humanities Association for Southern Africa was "to enable the association to take the lead in driving and developing all DH issues. Another objective is to become the centre of all DH projects in Southern Africa. Digital Humanities can even become a field of specialization that can lead to the birth of new degree courses. We do indeed have the expertise and the resources to make the digitisation of the humanities world-class. All it needs is much more attention". This is a positive development for the humanities and general political science in particular.

However, challenges still abound. For one, beyond digitalizing the political science classroom, the content of political science taught at universities also need to be transformed in South Africa. Apart from decolonizing the curriculum and making it Afrocentric as has been called for by the #FeesMustFall movement and scholars (see Zondi, 2018), there is also the need to digitalize the curricula to include modules that will cover all aspects of politics and the internet including their mutually reinforcing impact on politics and its study. The findings here show that digitalization is not sufficiently covered in the political science curricula of the selected universities and this is generally the case across the other 17 universities in South Africa. Although, none of the six universities studied had courses focusing on the digital revolution as a subject issue of study, 4 of them (Unizulu, Rhodes, UKZN and UP) have one international relations course each that makes reference to the role of social media in political change. Though commendable, this is not good enough as

their needs, demands and expectations of a democratic South Africa. These have tended to elicit responses which shape both government policy, rhetoric and action.

it is still far from embracing the reality of the digital era and its profound impact on the conduct of both domestic and international politics.

Secondly, none of the selected universities had dedicated professorships in politics and the internet or other related digital aspects of political science in spite of global trends. This is also the situation in the other 17 universities with political science departments across the country. Thirdly, in spite of the efforts of the post 1994 governments to transform higher education, the gaps between historically white and historically black universities in the country remain wide. For instance, historically black universities were not considered then as research institutions because of the racist thinking that blacks were incapable of doing research and producing worthwhile knowledge (Bunting 2002; Motshoane and McKenna 2014). This kind of thinking affected not only the research funding and capacity of these universities (such as Unizulu, DUT and TUT), but also the funding of their teaching and learning activities (Isike, 2018: 110). The resulting differentiation which has continued in many ways since 1994 account for the gaps in digitalization profile between the three sets of universities considered in this study.

Fourthly, the dearth of young researchers in the discipline who are more likely to embrace the use of digital tools to facilitate teaching and learning as well as research is a problem. The more established researchers in the field are nearing retirement. This generation is usually referred to informally as 'traditional' and 'analogue' because many of them are not digital information management savvy. Finally, given government's decision to deliver free higher education in South Africa in the face of budgetary constraints and a struggling economy, universities expect cuts in government funding which are already inadequate. This will no doubt have an impact on digitalization given the high costs of digital infrastructure for research and the learning as well as the reality of an increasing number of students accessing higher education each year.

5 Conclusion

This chapter focused on the state of teaching and learning political science in South Africa in the digital era. It analyzed the curricula of six universities, two each from among comprehensive, traditional and technical universities. These are the University of KwaZulu-Natal and University of Pretoria (traditional), Rhodes University and University of Zululand (comprehensive) and Durban University of Technology and Tshwane University of Technology (technical). The findings show that the mutually reinforcing impact of digitalization on the practice, research and teaching of politics is still emerging in South Africa. However, there are good prospects for growth in ways that will revolutionize the conduct of politics. All the universities studied have digital tools that are used to facilitate teaching and learning and these are used frequently by lecturers (especially the younger generation) in the various departments. The situation is the same across South Africa.

While South Africa, compared to other African countries, has made relative progress in digitalizing education, there are still challenges it needs to overcome to realize its full potential as an education tourism destination in Africa and as such emerging soft power in the Global South. The most fundamental of these challenges is bridging the gaps between historically white and historically black universities in the country. This would necessitate increasing funding to historically black universities and instituting monitoring and evaluation mechanisms to ensure proper governance of the digitalization process. Given the staffing challenges especially in historically disadvantaged universities, there is need for strategic planning and implementation of recruitment policies aimed at attracting and

retaining qualified young and emerging political science scholars who will be tasked with using blended learning in research and teaching.

South Africa, given its apartheid history is a veritable ground for democratization, political change and transformation, and it has students who are genuinely interested in understanding and participating actively in politics. This interest itself is a potential for the continued relevance of the political science discipline in South Africa and digitalizing political science research and teaching and learning in South African universities will be key to sustaining and harnessing that interest for national development. According to the South African Department of Labour, political science is a critical but scarce skill in South Africa. This explains why there is a perennial shortage of qualified political scientists who hold doctoral degrees.

The legitimate need for some form of affirmative action to enable the employment of South African citizens to teach at universities has also inadvertently contributed to the perennial shortage of political scientists in the country as although this is slowly changing, most South African citizens with doctoral qualifications in political science prefer to go for higher paying government positions than being employed as university lecturers and researchers. One short term way out is to recruit young scholars from around the world, especially Africa, as postdoctoral fellows who can be tasked with research performance targets to develop research niche areas in politics and the internet, politics and digital communication as well as political consultancy in the digital era. After an initial five years, postdoctoral fellows who qualify can be given fixed long term contracts of five years and above with the target of progressing into professorships in digital politics and also transferring their skills to young South African political scientists. Finally, research institutes such as the National Research Foundation (NRF) and related civil society organizations have a role to play to institute research fellowships and professorial chairs in politics and the internet.

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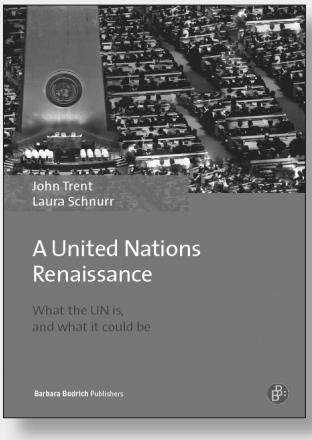

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