The use of new technologies for research and teaching in political science in Uruguay[1]

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Abstract

This paper shows the process of incorporation of digitalization in the Uruguayan political science based on the evolution of the Institute of Political Science of the University of the Republic. The paper tells the growing use of new technologies for research and teaching from the formation of the Institute up to the present, and ends with a comparative study of the use of Academic Social Networks in five departments of political science in South America.

Introduction

Uruguay developed an early welfare state during the first decades of the twentieth century. In the absence of strong contending actors, the state acquired a central role in the economy and in the provision of all kind of public services. By these means the country forged a wealthy, integrated and modern society with outstanding achievements in educational and cultural matters and a sophisticated university system by the middle of the twentieth century. Nevertheless, social sciences had a late development in the country (De Sierra 2005).

Political Science, far from being an exception, had to wait for the redemocratization in the late eighties for acquiring its own academic space. The discipline acquired university status for the first time as a consequence of the creation of the subject of political science in the Faculty of Law in 1957 in charge of Alberto Ramón Real, who developed an approach very close to public law (Garcé 2005). Although the sixties represented an important impetus for the social sciences, political science could not gain momentum because of the predominance of structuralist approaches. Subsequently, the dictatorship largely truncated the development that the social sciences had been achieving during the sixties, in the same vein to what happened in the other countries of the southern cone of America, like Argentina and Chile (Altman 2005).

The Institute of Political Science (ICP), the first academic grouping of political scientists in Uruguay, was formed in a gradual process between 1985 and 1988, as a department of the Faculty of Law and Social Sciences of the University of the Republic (UdelaR). In that context, the ICP founded the Uruguayan Review of Political Science (RUCP) in 1987 and created the political science bachelor's degree in 1988, along with hiring the first small group of researchers in the discipline (Buquet 2012). Finally, as a conclusion of the founding phase, the ICP was incorporated in 1990 to the newly created Faculty of Social Sciences (FCS) as one of its five academic units. It is worth noting that, so far, the ICP is the only research and teaching centre in Uruguay exclusively devoted to political science[3].

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[3] There exist other academic institutions that conduct research and teaching in political science, like the Institute of Social and Political Sciences of the Catholic University or the Latin American Center of

A second phase of consolidation could be said to had an end by 1997, with the creation of the Political Science master's degree. During that period, the academic staff expanded with the incorporation of new professors -some of them trained in the bachelor's degree- and several areas and research programs were created. By the end of the last century, the ICP already had a teaching staff and an academic structure very similar to the current one (Buquet 2012).

Already in this century, important progress was made in the quality of the activities of the ICP. The doctoral degree in political science was created in 2005, which served to graduate several of the researchers of the ICP. Currently, the entire staff of ICP researchers have a doctoral degree[4]. In addition, the RUCP set out to meet international standards for scientific publications; as of 2006, it established the system of double blind peer review and was included in several international indexes of journals (SCielo, EBSCO, Redalyc and Latindex). Immediately after, a rigorous system of evaluation of the staff was established, that gives peer reviewed publications central relevance.

Teaching and Learning

During the nineties the FCS installed classrooms with computers in order to teach methodology courses using the appropriate software. Specifically, the bachelor's degree included as an optional subject a course of data analyses with SPSS.

Around the change of the century, teachers were incorporating increasingly the use of power point presentations to give classes. During the first years of the present century, all the classrooms of the FCS were equipped with computers and projectors, including internet connections.

The UdelaR introduced a centralized system of management of students' performance, that register all students' activities and grades. The system also allow students to sign up for courses and exams.

In 2006 the national government implemented a "one laptop per child" program (the Plan Ceibal), which made for a reductions of the "digital gap" in such a way that nowadays all university student are familiar with the use of computers and most of them have their own laptops.

The most important advance using digitalization for teaching was the installation in the UdelaR of the 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 in FCS is now generalized, even though most teachers use just a few features of the system, like uploading documents or sending messages.

"… the digitalization of higher education is the way that academics relate to and interact with their students, rather than the technologies themselves" … "… the ways of teaching and interacting with students as well as with colleagues started to change not because there was a

Human Economics (CLAEH), but they include other social sciences in their research and teaching programs.

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

specific need for change but rather because suddenly all those electronic tools and platforms were available, together with increasingly better and faster wireless access (Moser, 2013)"

In spite of the advances in using digitalization for teaching, there are no subjects in the bachelor's degree of political science devoted to the study of the relation between politics and new technologies.

Not all consequences of digitalization are positive. One clear negative consequence is the growing use of the internet by students to commit plagiarism when they prepare homework assignments.

The ICP and the ICTs

The foundational period of the ICP was coincident with the popularization of personal computers, considering that 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. But during the first half of the nineties computers were for Uruguayan political scientists not much more than sophisticated typewriters. That was partly due because the low power of the first generation of personal computers, but the main reason was the qualitative, mainly socio historical, approach of most of the researchers of the ICP. Nevertheless, the use of electronic spreadsheets was slowly incorporated along with the text processors[5], in order to gather and analyze data. In a more marginal way, some researchers begun to use the SPSS software for more complex statistical processes.

The creation of the FCS by itself introduced two innovations taking advantage of the then increasing new technologies. First, a data bank unity was created, originally intended as a repository of data bases provided by researchers, mostly surveys, in different formats including digital. Second, four different libraries were unified and digitalized in a single catalogue using the software ISIS, launched in 1985 by UNESCO.

In 1990 the University made an important investment in equipment and created the Uruguayan Academic Network (RAU), oriented to provide computer services and communications to academic institutions in Uruguay, through the Central Service of University Computing (SeCIU). In 1994, the RAU was integrated into the Internet network through a connection with the National Science Foundation (http://www.rau.edu.uy/rau/historia.htm).

Early in the nineties the first email system was introduced. In 1993 the ICP crated an email node called "cpolit" that allowed 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 e-messages. That innovation totally changed the way of academic interaction, specially promoting a fast and cheap communication with colleagues abroad. This made for a gradual internationalization of a mostly parochial discipline in those times.

Shortly after, during 1995, the ICP uploaded its first web page as part of the web page of the FCS that resided in the server of the SeCIU. It was a static web with the main information about the Institute: its objectives, the academic staff and so on. Simultaneously, the University

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

improved the infrastructure installing physical lines, modem equipment, routers and computers with analog or digital connections that connected all Faculties in the University. Taking advantage of that, the ICP (still in an isolated house) was connected with a dedicated line to the internet through a server in another building, and all PCs in the institute had its own connection. This possibility extraordinarily facilitated the access to new data and literature using web browsers as Netscape. Close to the end of the century, the FCS installed its web page in its own server (fcs.edu.uy) and the ICP created a new web page as a part of it.

By that time, the data bank of the FCS was divided into three different areas and one of them was named as "Area of Politics and International Relations", which began to upload Uruguayan political information (electoral results, composition of government and the legislative, etc.) to the internet through its own web site (http://cienciassociales.edu.uy/bancosdedatos/secciones/area-de-politica-y-relaciones-internacionales/). Simultaneously, the FCS library put its catalogue on line. By 2010 the FCS library installed the software Aleph (Automated Library Expandable Program) and integrated its catalogue in a unified university catalogue. Both initiatives increasingly facilitated the access to literature and data for students and researchers.

In 2006 the national government created the National Agency for Research and Innovation (ANII). The agency is devoted to the promotion of 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 Researcher (SNI) and the Timbó website. 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. The Timbó portal allowed all researchers and academic institutions in the country to access different literature sources like SCOPUS, JSTOR, etc. It could be said that by the second lustrum of this century all the needed stuff for research and teaching was on the internet.

Finally, the ICP made available its publications on line. The RUCP begun to be published on line in 2006 and all previous issues were scanned and uploaded (http://cienciassociales.edu.uy/institutodecienciapolitica/rucp-2-2/). Additionally, in 2009 the ICP substituted the publication of working papers as printed documents by on line working papers (http://cienciassociales.edu.uy/institutodecienciapolitica/dols_icp/).

The use of academic social networks

Digitalization favors collaboration and co-authorships in political science (Fisher et al. 1998), and co-authorship, in turn, favors impact (Pike, 2010). The use of internet has promoted the interaction among researchers in different ways. One of the last advances in digitalization was the emergence of academic social networks (ASN). Simultaneously with the diffusion of the WoK and Scopus during the first years of the current century, systems that work by paid subscription, Google Scholar appeared to be a very attractive free website to search for academic literature. Little after, diverse undertakings provided free systems to share academic production. Thus, a number of academic social networks arose, like ResearchGate and Academia.edu, both founded in 2008[6]. In this kind of networks, researchers can have a profile,

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

upload and tag papers and data, interact with each other, and track metrics like citations (Jordan, 2015).

Research Gate has over 14 million members (https://www.researchgate.net/about) and Academia.edu reports over 57 million people that signed up (https://www.academia.edu/about). Nevertheless RG appears to be more popular than AE, based on Alexa estimations (Hagit and Pieterse 2017) and also according to a Nature survey (Van Noorden 2014). Even though, the most popular ASN by far seems to be Google Scholar[7] based on the Nature survey (see appendix).

Also according to the survey conducted by Nature, the main goal of researchers having profiles in ResearchGate and Academia.edu, is to be available in case someone wants to contact them. Additionally, the most valuated features of those networks are, posting content, looking for peers and papers, and tracking metrics (Van Noorden 2014).

But the ASNs are not necessarily positive. Some scholars alert that those networks could generate an addiction, like other internet services or games. Particularly, RG and AE send messages like "Congratulations someone, you reached a milestone" (RG) or "something was your top paper last week" (AE). Apparently, this websites are using a strategy called "gamification" which is "the use of Elements derived from games, in non-game contexts, to promote participation and engagement" (Bacelar et al 2017). In any case, there is a study that establishes that the self-promotion and ego-bolstering are central motives for academicians to use ASNs (Hagit and Pieterse 2017).

But the use of scientific social networks could be particularly beneficial for some underdeveloped countries. In particular, Brazil –among the top 20 countries for total WoS publications in 2013- shows a very high number of RG members and a relatively high RG score "reflecting particularly active engagement in the site" (Thelwall and Kousha 2015).

The three academic social networks (ASN) analyzed here have different characteristics anyway. Google Scholar is the simplest one and just allow researchers to have a profile with some information and documents. But the metrics that GS provide are the most powerful of all, because they are based in a hug database of academic papers. Additionally, GS can send mails informing for new citations and a possibility to follow other researchers. The other two ASNs, however, allow for more interaction among researchers, asking and answering questions and informing about new documents uploaded by followed peers, for instance. Essentially, those networks differ from GS in that: "1) they offer possibilities of networking, and 2) indicators other than the number of publications or citations are used for measuring performance." (Hammarfelt et al 2016).

A study comparing different ASNs that evaluate their available features divided into 12 broad categories, found that RG is the most powerfull one having a score of 61.1 per cent points. AE, obtained 48 percent points, placed in an "average" position[8] (Raj 2017). Additionally, there are other reasons that suggest that RG is better than AE. In the first place, in AE some profiles could be fake profiles, meaning that there are some profiles that do not look like as created by the researcher. In the second place, AE begun to ask for a premium subscription, hiding

[7] Google Scholar added the possibility of having a personal profile with the academic production and metrics based on citations in 2012.
[8] Google Scholar was not included in the study.

information that could be valuable for researchers, and allowing researchers to access it if they pay.

Finally, both networks also allow to group researchers by department, whereas GS just allow grouping by universities. The way Academia.edu takes affiliation for grouping researchers is very interesting, in principle, because it generates a subdomain with the name of the institution (like udelar.academia.edu). Nevertheless, the grouping that provides academia.edu is a kind of chaotic, because it depends on the way each researcher enter the corresponding information[9]. On the other hand, RG only allow researchers to pick an already established institution in such a way that there is only one option. This system is very useful, not only because it is easier to find colleagues, but also because it can provide metrics for the whole institution.

By 2015, the ICP decided to promote that all faculty staff create a profile in, at least, one of those three ASNs. The purpose was twofold: on the one hand, the website of FCS does not allow for dynamic personal websites for professors, so, having a ASN linked from the personal website in FCS, allow visitors to access the publications that the staff uploads in that network. On the other hand, there was the conviction that using ASNs, the production of researchers gains more visibility, so the staff was encouraged to make their documents available through those networks[10]. As a consequence currently 23 out of 24 professors of the ICP have a profile in, at least, one of the mentioned ASNs.

In order to verify comparatively the use of ASNs in the region I pick five departments of political science from five different countries of South America. Besides the ICP, I select one department from each of the four countries with more development in social sciences in the region: Argentina, Brazil, Chile and Colombia. The departments were selected form the list used by Altman (2011) and are listed in the following table.

Table 1. Political Science Departments selected

Country	University	Department	Acronym	Source
Argentina	Universidad Nacional de San Martín	Escuela de Política y Gobierno	EPG-UNSAM	http://www.unsam.edu.ar/escuelas/politica/docentes.asp
Brazil	Universidade do Estado do Rio de Janeiro	Instituto de Estudos Sociais e Politicos	IESP-UERJ	http://iesp.uerj.br/docentes-pol/
Chile	Pontificia Universidad Católica	Instituto de Ciencia Política	ICP-PUC	http://www.cienciapolitica.uc.cl/profesores/planta-academica
Colombia	Universidad de los Andes	Departamento de Ciencia Política	DCP-Uniandes	https://c-politica.uniandes.edu.co/index.php/profesores
Uruguay	Universidad de la República	Instituto de Ciencia Política	ICP-UdelaR	http://cienciassociales.edu.uy/institutodecienciapolitica/planteldocente/

[9] So, I found 22 different ways to found a department of political science at UdelaR.
[10] At least, a study published in 2015 by AE established that papers shared there get 83% more citations than those which not.

To compare the engagement of scholars with ASNs and some metrics about their performance I pick one indicator for each network: the H index for GS, the RG score for RG, and the number of followers for AE. The academic staff considered is the one included as professors in the corresponding webpage[11]. The following table shows the percentage of the staff of each department that have a profile in each of the considered ASNs.

Table 2. Percentage of researchers having profiles in ANSs.

	Faculty	**Researchgate**	**Google Scholar**	**Academia.edu**	**Some ASN**
ICP-PUC	19	58%	74%	63%	95%
EPG-UNSAM	35	51%	17%	71%	77%
IESP-UERJ	16	38%	50%	56%	69%
DCP-Uniandes	14	43%	50%	71%	79%
ICP-UdelaR	24	75%	63%	96%	96%
GENERAL	**108**	**55%**	**46%**	**73%**	**83%**

The first observation is that an overwhelming majority of researchers (83%) included in the study have a profile in at least one of the ASNs considered, and a clear majority of each department as well. Therefore we can state that the use of ASNs in the region is widely accepted. The second observation is that, to the contrary of the general trend, by far the most preferred ASN is AE, not only in general terms but also in each department, with the exception of the ICP-PUC, where the most preferred ASN is Google Scholar. To the contrary, it is noteworthy that only a tiny minority of the EPG-UNSAM have a profile in GS. Finally it is remarkable that in both, the ICP-PUC and the ICP-UdelaR, practically the entire staff (all but one) have a profile in at least one ASN.

In order to go one step further I will compare some performance metrics provided by the three ASNs considering the average value for each department. The average was calculated just for those who have profiles in that ASN. I recognize that this option could be biased because it can be assumed that scholars with low performance prefer not to have a public profile in an ASN. But I could verify that there are some prominent scholars in different departments that do not have any profile, showing that it is also possible that some renowned professors are old fashioned and do not consider important the use of the new technologies. The following table show the average value of the selected metrics for the five political science departments.

Table 3. Average metrics for Political Science Departments in ASNs.

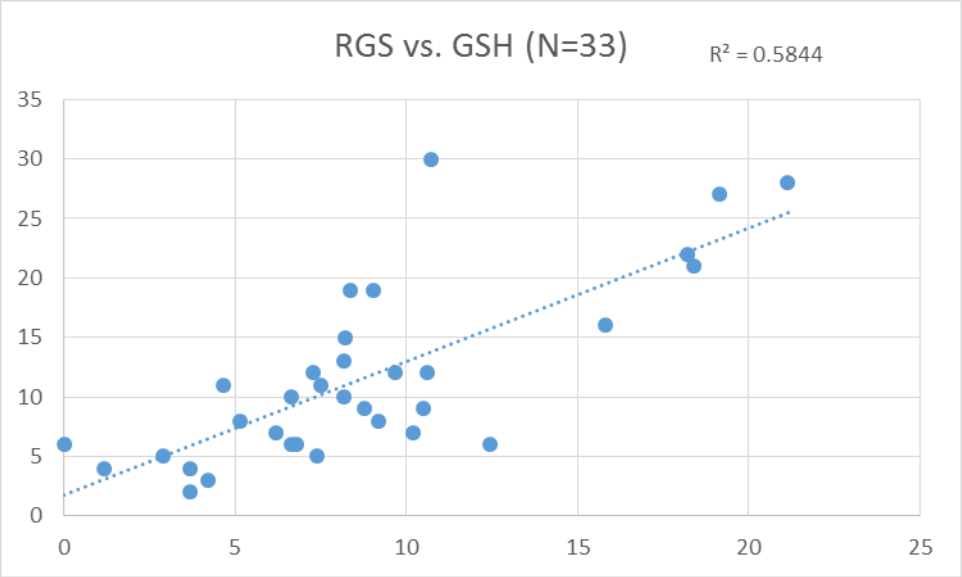
	Researchgate score	**Google Scholar H**	**Academia followers**
ICP-PUC	7.8	7.6	257.2
EPG-UNSAM	4.9	6.5	276.8
IESP-UERJ	12.5	14.4	351.3
DCP-Uniandes	8.9	11.4	166.6
ICP-UdelaR	6.1	10.9	139.1
GENERAL	**7.0**	**10.1**	**228.3**

[11] In the case of the EPG-UNSAM the staff considered is the one listed as “profesores-investigadores”, and in the case of the ICP-UdelaR the staff having degree 3 or above.

The figures show that the IESP-UERJ has the best performance in all indicators, but there is not a department with the worst indicators in all the three considered here. EPG-UNSAM has the lowest performance in RG score and the GS h index, and ICP-UdelaR the lowest number of followers in AE. DCP-Uniandes is above average in RGS and GSH, and ICP-PUC is above average in RGS but below average in GSH. These figures seems to confirm the negative bias that the creation of profiles can have, because the better the figures the lower the reach and vice versa. So, IESP-UERJ has the highest scores and the lowest presence in the three ASNs. But a clear exception could be the EPG-UNSAM in GS, because they have the lowest presence (17%) and the lowest score (6.5) in that ASN.

In terms of the relations of the three indicators selected, only two show a statistically significant correlation between them: RGS and GSH. So, the number of followers that a researcher has, seems to refer to a different dimension of performance, while RGS and GSH refers, at least in part, to academic impact. The following figure shows the plot of the scores of the 33 researchers that have both, a profile in GS and in RG.

Figure 1. Researchgate scores and H index in Google Scholar



Even though there is a clear association, the correlation between RGS and GSH in not too strong; as the value of one indicator explains less than 60% of the variance of the other one. Additionally, much of the relation depends on the few cases with the highest combined values of both indicators. If we take out the five cases with a RG score over 15, the value of the R squared drops to 0.25. In that sense, 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 & Kousha, in press).

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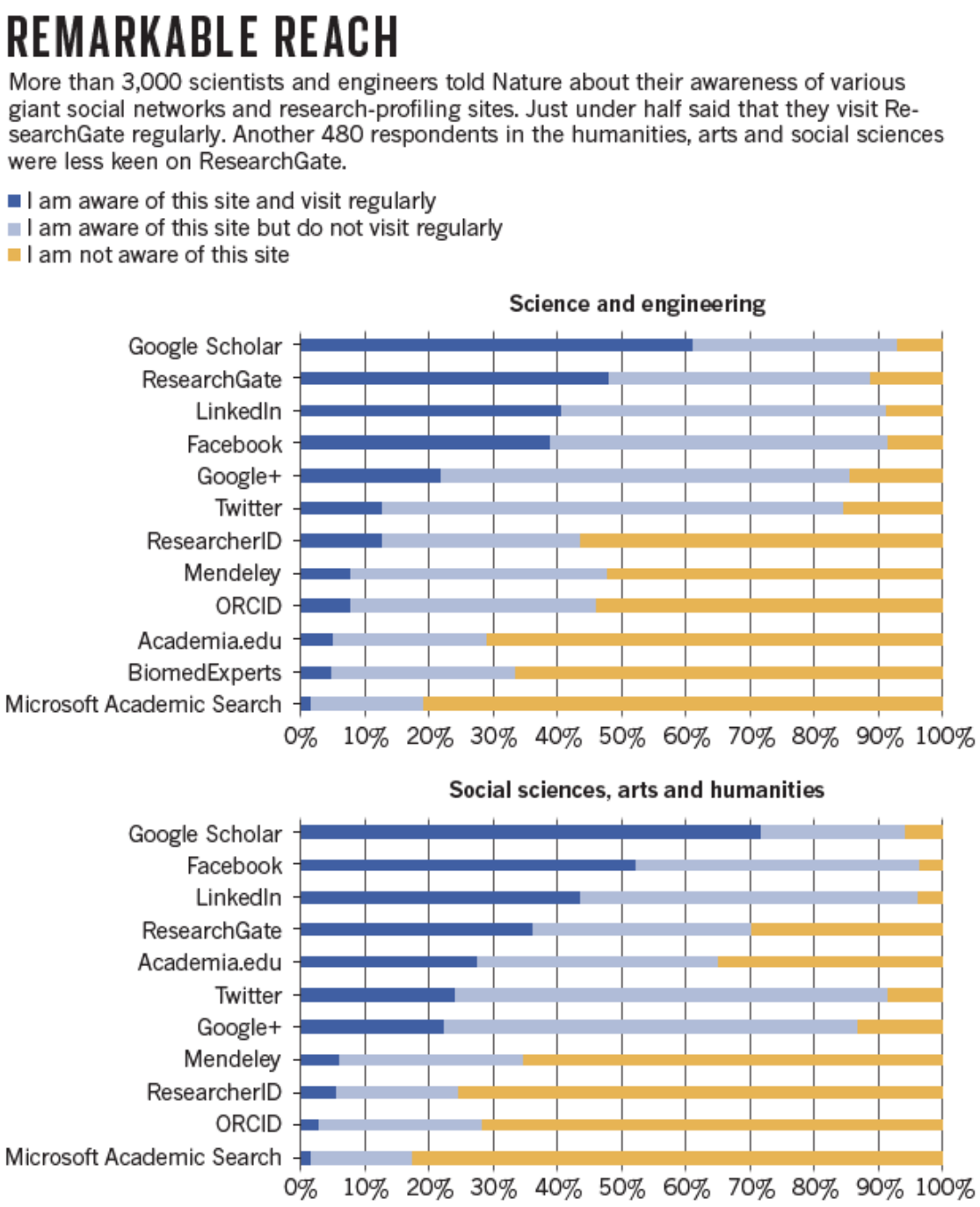
APPENDIX



From Van Noorden, R. (2014). Scientists and the social network. *Nature*, 512(7513), 126.

"The most-selected activity on both ResearchGate and Academia.edu was simply maintaining a profile in case someone wanted to get in touch — suggesting that many researchers regard their profiles as a way to boost their professional presence online. After that, the most popular options involved posting content related to work, discovering related peers, tracking metrics and finding recommended research papers."