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## ARGENTINA

### Contexts, agents and practices in science communication

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#### 1. Introduction

To tell the story of an ongoing process it is necessary to take some risks, though these are well worth the intellectual challenge they present. Under that premise, in this chapter we will analyse the emergence and expansion of science communication in Argentina. We will emphasise the incipient advancements accomplished since the beginning of this century in two areas: the field of practice and the academic field.

Our work is inspired by the ‘cultural cartography’ approach proposed by Gieryn (1999), which entails exploring the evolving dynamics of different domains of knowledge and practice whose boundaries are drawn and redrawn in the context of both epistemic and extra-epistemic factors. Rather than presenting an exhaustive but meaningless chronology of events, we aim to identify key moments in the development of the local field and to place them in the broader context of its interactions with other spheres: scientific organisations and communities, public policies, the mass media, and the cultural industry.

Although the first attempts to popularise science in Argentina can be traced back to the very beginnings of the country,<sup>1</sup> our analysis in Section 1 starts around the mid-20th century. It is in this period that the national system of research and development acquired its current form and when some of its most prominent institutions and members started to spread science to society.

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1 Argentina became formally independent from Spain in 1816.

The Argentinean Association for the Advancement of Science (AAPC), for example, played a leading role in promoting communication practices among its fellows with an explicit goal: to increase citizens' scientific literacy as a way to improve their attitudes towards local science.

Decades later, a professional scientist was the driving force behind another milestone for science communication. In 1984, chemist Enrique Belocopitow (1926–2007) envisaged the Program for Science and Technology Popularisation at the Campomar Institute of Research in Biochemistry.<sup>2</sup> In addition to promoting the creation of press areas at research centres, the program launched the first course exclusively dedicated to train science reporters. As described in Section 2, these and other achievements, accomplished between the mid-1980s and the early years of this century, set the future direction for the development of the local field.

Section 3 focuses on the last decade, which is certainly the richest and liveliest part of this story. A variety of dimensions converge during this period: from the increased interest of public policies in the diversification of popularisation agents and venues, to the growth of institutional press offices in scientific institutions, to a decline of specialised journalism in traditional media. As a result, a displacement of agents among different professional niches is currently occurring, visibly redefining the field's borders.

The last part of the chapter briefly describes the evolution of local public perceptions of science obtained through four national surveys given on this issue since 2004.

## 2. What is past is prologue

According to Cazaux (2010), science communication activities began to be developed in Argentina in the post-colonial period. Besides the establishment of local institutions devoted to promoting and spreading scientific knowledge—universities, museums, academies and societies<sup>3</sup>—nascent journals and other local publications were already including scientific and technical news among other news of cultural and political interest. However, as Nowak (2008) states, the available information is fragmented and insufficient to portray an accurate account of this embryonic stage of specialised journalism in the country.

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2 Since 2001, the Leloir Institute Foundation.

3 Among others, the first Museum of Natural History (1823, currently the Argentinean Museum of Natural Sciences); the Argentinean Scientific Society (1872); the Archaeological and Anthropological Museum of Buenos Aires (1877, moved to La Plata in 1884); the National Astronomical Observatory in Córdoba Province (1881); the Zoological and the Botanical Gardens of Buenos Aires (1888 and 1898).

During the last decades of the 19th century, under positivist ideas that identified science and technology as engines of progress, influential newspapers such as *La Prensa* [The Press] (1869) and *La Nación* [The Nation] (1870) started to include regular sections devoted to these topics (Cazaux, 2010, pp. 94–95). This trend was imitated by many popular outlets that appeared early in the new century to meet public demand. Though the role was far from being recognised as such, figures who might be regarded as scientific journalists emerged on editorial staffs. This is the case of physician and journalist Jacobo Brailovsky (1906–2005), who started working for *La Nación* in 1924 and soon after began covering science and related issues. Years later, he would start writing a weekly column called ‘Science in a Few Traces’. Brailovsky led the first Argentinean Association of Science Journalism (1969) and received several awards for his contributions to national science communication.

The strengthening of an articulated national system of science and technology in Argentina took place between 1950 and 1960 as part of a process of political and economic modernisation. Systematic policies for research and development were implemented for the first time during this period, following the international trend initiated at the end of World War II (Albornoz, 2007). It was also at that time that the first institutions outside universities emerged, driving the growth and consolidation of local science.

Beyond government purposes, the AAPC played a leading role in that process. The association was created in 1934 by some of the most respected scholars from several different disciplines, together with a journalist. Although anecdotal, the AAPC’s origins are worthy of mention in these pages. In 1933, a senator publicly regretted the shortage of people in the country who were ‘exclusively dedicated to the study of philosophy and sciences, and to disseminate their research outcomes among their students’ (AAPC, 2017). Besides provoking the scientific community’s fierce reaction, his statement outraged a journalist at the popular magazine *El Hogar* [Home], which was the widest-circulating magazine at that time in Buenos Aires. In response to the politician’s statement, reporter Carlos Silva not only published a long series of articles devoted to highlighting the work of local researchers, he also became actively involved with them to create the AAPC, making him the only founding member who was not a scientist.<sup>4</sup>

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4 The AAPC’s first chair was Bernardo Houssay (Nobel Prize for Physiology and Medicine, 1974), who would also head the National Council of Science and Technology created in 1958.

The AAPC has published the magazine *Ciencia e Investigación* [Science and Research] since 1945, and it has resisted all adverse conditions faced since then.<sup>5</sup> Despite being a publication addressed to a limited public—presumably with certain skills and a previous interest in science—von Stecher (2017) highlights the strong focus on popularisation given by its creators and successive editors. An editorial note in 1950 clearly expresses the conception and values underlying the magazine's aims:

To make science comprehensive, to inform the public about its advancements and discoveries, to orientate the people and governments in the application of scientific knowledge for the common good, and not for the destruction nor slavery of man, and to seek the diffusion of scientific thinking. (von Stecher, 2017, p. 200)

Several decades before scientific communities were challenged to 'learn to communicate with the public, be willing to do so, and indeed consider it their duty to do so' (Bodmer, 1985, p. 6), the AAPC had already placed this commitment among the main *Duties of the Science Man*.

In 1966, the fragile Argentinean democracy suffered a new onslaught when a coup d'état placed the country under a civic-military government whose effects on scientific development would be devastating in the short and long term.<sup>6</sup> After a brief democratic interregnum (1973–76), the next dictatorship (1976–83) widened and deepened the decay of the academic and scientific system.

### 3. The true beginning (1985–2000)

The return to democracy in 1983 brought with it the need to rebuild the country in all its dimensions: political, economic, social, cultural and scientific. In this last sense, although the ideological persecutions that affected institutions and individuals were surpassed, both the magnitude of the brain-drain as well as the restrictions due to economic instability did not allow for a full recovery to the scientific and technological development levels of the 1960s. However, even with many ups and downs, between the end of the 20th century and the early 2000s, it is possible to identify a series of events that served as the basis for the future growth of the field.

5 *Ciencia e Investigación* is currently published digitally on a quarterly basis. See [aargentiniapciencias.org/publicaciones/revista-cei](http://aargentiniapciencias.org/publicaciones/revista-cei).

6 On 29 July 1966, students, researchers and authorities from the University of Buenos Aires involved in the resistance against the dictatorship were fiercely repressed by police forces. This event—known as 'The Night of the Long Sticks'—started a process of the dismantling of labs, groups and research centres of international prestige. Hundreds of scholars resigned or were dismissed, and a large number of them went into exile.

The process followed two main paths. The first was that during this period, formal efforts to professionalise human resources in science communication appeared together with the creation of specific areas within research institutions. The second direction saw science issues gaining increased visibility and recognition both in the mass media and the cultural industry.

### 3.1. Training and professionalisation of human resources

The systematic and institutionalised training of science communicators in Argentina did not begin with journalism or communication degrees, but with a life sciences research centre. In 1984, driven by his concerns about the weakness of scientific culture in local society, chemist Enrique Belocopitow created the first Program for Science and Technology Popularisation at the Campomar Institute of Research in Biochemistry, and activities started the following year. In tune with classical issues of the Public Understanding of Science movement (Thomas and Durant, 1987), Belocopitow was convinced that better strategies of science teaching and massive popularisation through the media were fundamental tools to increase the public's interest in and engagement with science and technology—hence his interest in training professionals to best carry out these functions (Belocopitow, 1998, p. 145).

As Neffa (2014) states, the original program consisted of two parts:<sup>7</sup> the creation of institutional communication offices and science journalism courses.

The first popularisation centre was implemented within the Campomar Institute with the purpose of sending news about its research activities to the mass media. From 1992 onwards, the initiative was expanded through an agreement with the University of Buenos Aires—the biggest university in the country—until all its faculties had a network of specialised communication areas.<sup>8</sup> Publications and other activities promoted from public research bodies and addressing the lay public grew steadily from then on, and some of them—such as *EXACTamente* magazine, edited by the Exact and Natural Sciences Faculty since 1994, became pillars of the field and remain so to the present.

Despite the relevance of the communication areas built at the behest of the program, Belocopitow's initiative would succeed mainly due to its emphasis on training human resources in the first courses on science journalism in the country. The plan consisted of two parts: over one semester, participants

<sup>7</sup> The third element is a science news agency created in 2006.

<sup>8</sup> Between 1989 and 1992, the science communication centres network produced coverage for *Diarios and Noticias* [Daily and News], the main private news agencies in the country at that time.

obtained theoretical and practical training; later, those who wanted to improve their skills received a full-time scholarship to work at a research centre and experience the nature of scientific practices ‘from the inside’. The program had a multiplying effect among other institutions, generating the emergence of similar initiatives elsewhere.<sup>9</sup>

Emphasising the practical aspects of science communication and addressing itself to graduates of scientific and humanistic programs, the course ‘aims to provide basic elements of discourse adaptation, textual organisation and journalistic style’ (Loewy and Calabrese, 2016, p. 3). Other specific goals are that students learn to write quality news articles and acquire a fluent handling of information sources, as well as reading and synthesising scientific papers. The program played a central role in building and delimitating the field, and also promoted efforts to secure its autonomy from other spheres, such as general journalism. It came to be the seedbed of science journalists and communicators for more than two decades. Not all of the approximately 1,000 students who participated in the seminar over the years have worked professionally in science communication. But, conversely, a large number of the local field’s agents have been trained at the Campomar/Leloir program and other more recently developed training initiatives (Rosen, 2018).

Nowadays, founding a science communication program in a research institution would by no means be regarded as an eccentricity. But 30 years ago, the situation in Argentina was quite different. As Neffa (2014) points out, the emergence and continuity of the enterprise have been possible mainly due to Belocopitow’s legitimacy, which allowed him to overcome the internal challenges generated by his initiative. It was his renowned epistemic reputation that permitted him to introduce and sustain such a ‘foreign’ matter in terms of the goals and functions of a life sciences centre. In the words of a former fellow of the program:

He [Belocopitow] incarnated the association between the two points [scientists and communicators]. No other person could have sustained this project at the heart of one of the most prestigious institutes ... No one else was conceivable for that task. (in Neffa, 2014, p. 228)

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<sup>9</sup> Some of those experiences, such as the popularisation seminars in the faculties of Pharmacy and Biochemistry and of Exact and Natural Sciences, still exist. Moreover, the latter inspired a postgraduate program on science communication launched in 2015.

### 3.2. Science in the media and the cultural industry

Along with the ups and downs of economic instability, science journalism and communication witnessed some flourishing moments during the middle of the 1980s and the late 1990s.

By then, the three main national newspapers—*Clarín*, *La Nación* and *Página 12* [Page 12]—had fixed pages for science news. In the first case, after minor changes of name and format, the space ‘eventually became a supplement dedicated to research news, having as a reference the traditional Science Times sections at *The New York Times*’ (Nowak, 2008, p. 2). The section was replaced in 1997 for a technology supplement, moving science coverage to the general news pages. In the early to mid-1990s, traditional science coverage in *La Nación* alternated between a weekly supplement and an unfixed segment, along with a monthly health section. Both spaces converged by the end of the decade under the title ‘Science and Health’, until its disappearance in 2011. Since then, science news has been spread over different sections of the newspaper. It is worth mentioning here the distinguished journalist Nora Bär: she has coordinated, edited and reported on science, health and technology for the newspaper since 1980, and has been widely recognised as one of the most important science journalists in the country.

*Página 12* entered the local market in 1987 and soon incorporated the supplement *Futuro* [Future] into its Saturday edition. Its editor was Leonardo Moledo (1947–2014), a physicist, mathematician and writer who also covered stories for the main section of the newspaper. With a special sensitivity to link together science, arts and humanities, Moledo became another emblematic figure in the field due to his large and diversified range of work, which included articles, popular books and novels, as well as television scripts and plays. He introduced scientific cafés to the country and led the *Galileo Galilei Planetarium* from 2000 until 2007. He is well remembered by his colleagues and disciples for his most repeated phrase: ‘Popularisation is the continuance of science by other means’.<sup>10</sup>

Popular science magazines also experienced a successful, although short period at the same time. Three monthly publications aimed at the general public were launched in the mid-1980s to the early 1990s by commercial editorial houses—*Muy Interesante* [Very Interesting] (1985), *Descubrir* [Discover] (1989) and *Conozca Más* [Know More] (1989)—and the non-profit association *Ciencia Hoy* [Science Today] released its own self-titled periodical

10 Immediately after Moledo’s death, *Página 12* cancelled the supplement. Daily science news continued to be included in different sections of the newspaper.

in 1988.<sup>11</sup> Between 1991 and 1993, in what de Vedia (1998) calls ‘the golden triennium’, the first three together reached an average monthly circulation of 450,000, something quite unusual for these products in Argentina. However, the trend did not last: five years later, the figure had dropped drastically by 75 per cent, partly due to economic considerations, and partly due to the gradual increase of science popularisation products in journals and specialised television channels (de Vedia, 1998). As a result, *Descubrir* and *Conozca Más* disappeared from the market, and the local edition of *Muy Interesante* was replaced by the Mexican version in 2007. *Ciencia Hoy*, for its part, is still published thanks to subsidisation.

A similar downward trend affects the current journalistic context as part of a parallel process of expansion and contraction of the field described below.

### 3.3. Interactive science centres

The emergence of the first interactive science museums and centres marked another important milestone in the local scene between the 1980s and the end of the 20th century, echoing the earlier stage of these initiatives throughout Latin America (Cambre, 2015). A number of pioneering institutions of different scales appeared at this time in Argentina under the motto ‘Forbidden not to touch!’—this in overt contrast to the silent and contemplative attitude expected of visitors to traditional museums.

With the slogan ‘For the curious, from ages 4 to 100’, the Participatory Museum of Science opened its doors in 1988 in Buenos Aires, providing inspiration for subsequent experiences. Soon after came the New World Museum (1990), within the framework of the National University of La Plata’s popularisation program;<sup>12</sup> the Exploratorium Interactive Sciences and Arts Centre (1995), also in Buenos Aires; and, lastly, a project outside the capital was founded in 1996—the Puerto-Ciencia at the National University of Entre Ríos.

The number of such interactive science centres certainly grew in the 2000s, and the Argentinean Association of Centres and Museums of Science (AACeMuCyT) has actively worked to strengthen them since 2007. The outcome of a recent survey of Latin American countries (Massarani et al., 2015) shows that in 2015, Argentina possessed 18 institutions of this kind—a figure that might have slightly risen since then—with most

11 Based on its Brazilian equivalent, *Ciencia Hoy*’s profile of ‘high popularisation’ makes it more similar to the aforementioned *Ciencia e Investigación*.

12 This museum is a founding member of the Latin American and Caribbean Network for the Popularisation of Science and Technology (RED POP).

concentrated in the capital city and surrounding areas. This puts the country in third place in the region, followed closely by Colombia, El Salvador and Uruguay, but places them far from the 58 and 272 institutions found in Mexico and Brazil, respectively.

## 4. Current trends in the field (2005–18)

In 2001, Argentina was hit by an economic and financial crisis of an unprecedented magnitude, followed by a slow and arduous period of recovery in all its dimensions. National policies for research and development were re-appraised and that process culminated with the creation of the Ministry of Science, Technology and Innovation (MINCyT) in 2007. In a decision of highly symbolic and practical value, the scientific area reached the highest position in the government structure for the first time in the country's institutional history.<sup>13</sup>

Since the beginning, MINCyT has strongly promoted science communication initiatives among public institutions and in the media, and has also had a bandwagon effect on other actors' involvement. However, in the current context of reconfiguration faced by the commercial mass media, the other side of the coin is a clear retraction of science journalism spaces. Together, the attracting of governmental attention and the progressive decline of private editorial interest has led to a visible mobility of practitioners among different work scenarios. The growing hybridisation of the spaces for practice and professional roles are among the most salient features that characterise Argentinean science communication's current state of affairs (Rosen, 2018).

### 4.1. Public policies for science communication and scientific culture

In developed countries, policies devoted to improving scientific literacy were consolidated during the second half of the 20th century as a means of enhancing public interest and awareness of scientific and technological development. This original purpose has been significantly broadened during recent decades, both due to the emergence of new social demands and the increasing influence of the discipline's academic rhetoric on official discourse. Besides highlighting governmental efforts to ensure civil society's support, public policies on the issue currently foster new goals. Among others, these include: to democratise access to knowledge, stimulate the development

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<sup>13</sup> In a heavily resisted political decision, in 2018, the ministry was reduced to its previous position of Secretariat.

of an innovative culture, promote scientific vocations and extend public participation in controversial issues (see, *inter alia*, the essays compiled by Felt, 2003, pp. 47–108).

Generally speaking, Latin American countries did not pay much attention to the matter until the beginning of the 21st century, when allusions to popularisation aims and activities started appearing more systematically in the framework of policy papers (Polino and Cortassa, 2015). With regard to Argentina, Neffa claims that, before this period, governments used to approach the issue of popularisation by means of some sort of ‘commonsense voluntarism’, making a series of vague statements like ‘building a knowledge society’, ‘promoting the cultural assimilation of science’ and ‘stimulating scientific vocations’, but without further reference to the means by which these objectives would be met (Neffa, 2014, p. 146).

The first document to explicitly embrace the topic was the *National Plan for Science, Technology, and Innovation* (2003), which was written within the framework of the aforementioned broader process of research and development reappraisal. In addition to introducing the first National Science Week, which has been held annually since then, the plan included a series of actions aimed at the training of human resources in science communication and improving cooperation with the educational system. The implementation of the first National Survey on the Public Perception of Science was also announced, underlining the importance of accurate statistical information as the basis for the formulation of scientific policies with major explicit and conscious support by the citizenry (SECyT, 2002).

The creation of MINCyT brought with it the strengthening of strategies aimed at the public circulation of science (particularly local science) on at least three levels as follows.

At the level of concrete actions, between 2013 and 2015, the ministry supported a broad spectrum of initiatives to promote scientific culture:<sup>14</sup> competitions for audio-visual media, photography and science literature; events such as National Science Week; scientific cafés; events organised along with the education sector (such as fairs, the Scientific Olympic Games and science clubs); the launching of TEC-TV (a science channel owned by MINCyT, which also produced popularisation content for other public TV stations); and subsidies for public or private projects. Additionally, in

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14 A survey among Ibero-American countries shows that, at this time, Argentina was part of the most dynamic group in this sense—together with Spain, Portugal, Chile and Brazil—with 15 or more actions carried out by governmental agencies, above the average of nine actions in the total sample (Polino and Cortassa, 2015).

2001, the first large-scale fair for science, technology and the arts, *Tecnópolis*, was inaugurated, and in 2015 opened the Science Culture Center (C3), an interactive space of popularisation. Its first director was scientist and science communicator Diego Golombek, one of the country's most prominent figures in science popularisation.<sup>15</sup>

At the institutional level, from 2013 onwards all those actions were unified in the National Program of Science and Innovation Popularisation, contributing to visualising and prioritising the field within the ministerial structure.<sup>16</sup>

At the discursive level, the *National Plan of Science, Technology, and Innovation 2012–2015* continued the trend to include specific courses of action to 'expand popularisation, culture, and literacy actions in science and technology, and promote an innovation culture in society, and create and/or strengthen territorial structures (museums, agencies, directions, etc.) of scientific culture'. Its main goal is to 'bring activities and products of science and technology closer to society in order to enhance community participation and the social appropriation of knowledge as well as to promote scientific vocations in children and young people' (MINCyT, 2013, pp. 88, 103).

The government's interest in scientific culture policies had a visible effect on other social actors and sectors, contributing to the experimental expansion of the field as we will describe in the next section.

## 4.2. Expanding frontiers

Three dimensions synthesise the recent growth of science communication in Argentina: a) the development of institutional communication; b) a new boom in the science cultural industry; and c) the diversification of professional career options and the socialisation spaces of the agents.

At a global level, one of the most utilised indicators for exemplifying the reach of science mediatisation—the 'communicative turn'—is the growth of communication areas in research institutions (Polino and Castelfranchi, 2012). As we previously said, a handful of organisations in Argentina have had stable areas or programs since the 1980s; however, the sustained trend of developing specific spaces is an ongoing process (Cortassa, Andrés and Würsten, 2017; Ruggiero and Bello, 2015). Papers presented at the Public Communication of Science Congress (COPUCI) show that stories and

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15 Golombek has authored several science books; he has also created and hosted acclaimed science television shows. He received several national and international prizes for his work, including the Kalinga/UNESCO Award in 2015.

16 Although the program no longer exists as such, some of its actions are still active.

analyses of experiences in institutional spaces have almost doubled between the first edition (2011) and the most recent one (2017). It can be said that, currently, the main universities and research organisations all have a communication office; some of them have also created their own science news agencies online. The first one, launched in 2006, was the Scientific and Technological News Agency at the Leloir Institute Foundation, created as part of the popularisation program already mentioned. More recently it was joined by the Science, Technology and Society Agency (National University of La Matanza, 2010), South–South Technology (National University of San Martín, 2013) and UNScience (National University of Córdoba, 2014).

A second feature that reflects the local field's expansion is the reinvigoration of popularisation products in diverse platforms and formats. The editorial market, for instance, has experienced a noticeable growth in recent years. One of the most relevant projects has been the collection *Ciencia que Ladra* [Barking Science, Siglo XXI Editorial], which published more than 70 titles and sold more than a million copies in 15 countries by 2010 (Bacher, 2010). More recently, the University of Buenos Aires editorial house launched the book series *Ciencia Joven* [Young Science], while other commercial houses have strongly promoted scientific titles to take advantage of the increasing demand.<sup>17</sup>

Popularisation programs on television also experienced an accentuated heightening in this period, especially on public and university networks, in an overt contrast to the marginalised status of science topics on newscasts that will be discussed below. Besides the creation of TEC-TV, the MINCyT channel, other state broadcasters have included science shows of great popularity, such as *Proyecto G* [G Project], *El Cerebro y Yo* [The Brain and Me] and *Conversaciones* [Conversations], all presented by Diego Golombek. Perhaps the most significant example of this flowering—and its current uncertain state—is the flagship program *Científicos Industria Argentina* [Argentinean Industry Scientists] presented by Adrián Paenza, a mathematician and another leading figure in local science communication. After 13 years on air, the show ceased broadcasting near the end of 2016.<sup>18</sup>

The third indicator of the local field's expansion during the last decade has been the strengthening of the training options for specialised communicators. Besides the specific subjects included in journalism and mass communications

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17 For example, in 2014, four popular books on neuroscience were among the 10 most read in the non-fiction category (Berdichevsky, 2015).

18 A producer's farewell letter suggests that the show ended due to the presenter's ideological differences with current government science policies.

undergraduate degrees, four postgraduate programs were recently launched<sup>19</sup> at the National Universities of Córdoba, Río Negro, Buenos Aires and Buenos Aires Province. These courses are heterogeneous as regards their goals, ranging from those that seek to provide practical tools for practitioners in various areas, to others more focused on academic research (such as the longstanding master's in Science, Technology and Society at the University of Quilmes, the first of its kind in the country).

A recent study by Rosen (2018) explores the agents' 'entry to the field', as well as the different training opportunities that allow them to accumulate the background to be recognised as 'professional science journalists/communicators'. Through interviews with experienced practitioners, the author found that although most of them affirm that they obtained their expertise through working practice, they also complemented this empirical training with specialised courses throughout their careers. Many respondents agree that these courses marked a 'before' and 'after' in their respective personal pathways—that is where they became aware of the full potential of science journalism as a career opportunity.

According to Vara (2015), the expansion of formal training is a clear signal of the professionalisation of the sector, as is the emergence of two active spaces that bring together agents and interests: the Argentinean Network of Science Journalists (RADPC, created in 2007)<sup>20</sup> and the Public Communication of Science Congress (COPUCI), organised in 2011.

The RADPC now has more than 100 members, including communicators, journalists and even researchers who work in mass media and scientific institutions. Some of its objectives are 'to promote the debate on practices and professional ethics as well as the exchange of experiences, knowledge, and concerns with colleagues of other countries; to develop and promote activities and opportunities for professional training; and to allow the exchange and appropriation of research on the relationship between science, technology, society, and the mass media'.<sup>21</sup> The association frequently organises or participates in events to train and update journalists, having also an active presence in international networks such as the World Federation of Science Journalists. It also edits an annual volume containing selected pieces published by their members.

19 According to Massarani, Reynoso, Murriello and Castillo (2016), 65 per cent of current Latin American courses were created during the last decade.

20 As previously mentioned, the first association of this kind was created in 1969, and another attempt emerged during the 1990s. Nevertheless, unlike the current one (RADPC), 'these associations never had more than a small group of fellows and were dissolved for different reasons, that we must investigate' (Vara, 2015, p. 2).

21 RADPC website: [radpc.org/](http://radpc.org/).

The multiplication of venues and the growing number of practitioners have been accompanied by the strengthening of the vernacular academic research and reflection on science communication. COPUCI conferences emerged as a relevant realm to articulate the several groups of actors committed to the matter. These events—organised yearly between 2011 and 2015, and biennially since then—have allowed the establishment of a rich and sustained dialogue, and partnership between journalists, communicators, researchers, stakeholders and policymakers, boosting a critical and reflective vision on their respective practices, goals and responsibilities.

### **4.3. The decline of science journalism and new job market scenarios**

The local development of science communication in Argentina has followed a similar pattern to other countries, where the diversification of actors, spaces and problems constitutes a distinctive feature of the field (Bucchi and Trench, 2008, p. 3). Nevertheless, its recent expansion did not follow a regular pattern; on the contrary, science journalism in the country appears to be in a worrying decline.

With the turn of the century, science seemed to be gaining notoriety in the media in contrast to what has been registered in previous years (SECyT, 2006). The position was summarised by Calabrese, Geller and Loewy (2013, p. 5): ‘news on science and technology and especially in medicine, appear more frequently in the daily agenda of traditional media and there is an explosion of science popularisation in digital media’.

One of the communicators interviewed by Rosen (2018) perceived a comparatively more receptive attitude among editors in recent years: ‘20 or 25 years ago all the editors, everyone, thought science didn’t attract the public ... In the last decade the amount and quality of science coverage in the media has grown’. However, the same study shows that this view is not frequently shared by her colleagues, who are much less positive about the current state of science journalism in the country. While acknowledging the recent expansion of science communication, the interviewees also express a clear concern about the setback in job opportunities for full-time science journalists. That is especially true among those seeking to cover science independently from science institutions or governmental agencies—currently two of the most prominent job providers, and both more interested in conveying a non-neutral, highly positive view of the subject.

In this context, many testimonies express worries about the progressive loss of science sections in the national media. *La Nación* cancelled its weekly section in 2011 and so did *Página 12* (in 2014) with *Futuro*, another longstanding symbol of local science journalism.<sup>22</sup> Although in both cases science coverage continues to be found in the general pages, the cutbacks or closure of spaces are perceived as symptoms of a larger retraction process. In the same vein, in contrast to the growth of popularisation initiatives, science news on Argentinean television is still marginal: by 2014, only 0.8 per cent of all news content covered these topics, occupying the 15th of 20 places among covered subjects (Halpern, 2015).

Although most of the practitioners interviewed by Rosen held a pessimistic view of the current state and the future of local science journalism, their perceptions cannot be fully confirmed considering the lack of systematic studies about either science coverage in the media or the evolution of the job market. However, some of her findings are suggestive: of 21 informants, only four worked as full-time science journalists at the time the data were collected (2016), 12 were sporadic collaborators or freelancers, four worked at institutional press offices, and the remaining four were employed by governmental agencies. These data somehow support the generalised opinion about the existence of better work opportunities outside the traditional journalistic niches and justifies the gradual displacement of many reporters to other realms in pursuit of better wages, job stability and greater prospects for professional advancement.

## 5. The public perception of science and technology

Four national surveys on public perception of science and technology were carried out in Argentina between 2003 and 2015 (SECyT, 2004, 2007; MINCyT, 2014, 2015),<sup>23</sup> with their frequency depending on budgetary considerations. The questionnaires follow the standard model that measures attitudes on general topics related to the public's degree of interest and information, information sources, attitudes towards science, and images of scientists and public support for research, avoiding from the beginning any questions regarding scientific literacy (SECyT, 2004). Except for the most

<sup>22</sup> A testimony gathered by Rosen (2018) states categorically: 'Everybody says 'science sells' ... but on the other hand you see that, at least in the print press, there is less and less science content. If science is so attractive, what's going on with science journalism?'

<sup>23</sup> The data was gathered, respectively, in 2003, 2006, 2012 and 2014. A fifth survey was supposed to be held in 2019, but it has not been implemented thus far.

recent one, each survey has included questions on the perception of issues related to a current public policy interest: GMOs in 2003, nuclear power and software development in 2006, and scientific vocations in 2012.

A cross-temporal comparison of the data shows that, broadly speaking, positive attitudes towards science grew 18 per cent between 2012 and 2015, reaching 74 per cent of the respondents to the survey. Since the second edition, the state has been more progressively seen as the main source of funding for research and development<sup>24</sup> and more than half of respondents believed that support should increase. It is not a coincidence that these figures started rising at the same time the government began heavily promoting its sectorial policies and efforts to the public. Even so, seven years after its creation, by 2015 MINCyT was still unknown by nearly half of those surveyed, and *Tecnópolis*—the high-profile science and technology exhibition opened in 2011—generated great interest (75 per cent of the sample in 2012, 83 per cent in 2015), but few visitors (15 per cent of the sample in 2012, 17 per cent in 2015).<sup>25</sup>

In line with international trends, scientists rank among the best-reputed professionals in Argentina. In 2015, eight out of 10 respondents highly appreciated their work, a proportion that had increased through successive surveys. The majority considered them to be the most reliable source of information in cases of uncertainty and/or controversial public issues. Nevertheless, the percentage of people who could not identify a single national scientific institution rose from 60 per cent in the first survey to 70 per cent in the last. One might say that almost everyone likes scientists, but only a few know where they can be found.

Finally, with regards to the interest in and consumption of scientific news, the variations in the questions over the survey's editions hamper an accurate comparison of the data. However, a general trend shows that, even though most of the population positively values the social and individual importance of scientific information, in the informants' self-reported information levels the topic ranks lower than others such as sports, arts and culture, politics and religion—except, perhaps, for medical and health issues, on which more than half of respondents considered themselves to be 'well' or 'very well' informed (MINCyT, 2015). In the first three surveys, television programs and documentaries were the most cited sources of information, followed by the print media, internet sites, radio programs, popular magazines and books, in

24 Although national expenditure on research and development is scarcely 0.6 per cent of the GDP, the government funds around 70 per cent of the overall spending against less than 20 per cent that comes from the private sector (Ibero-American Network for Science and Technology Indicators: [www.ricyt.org/?layout=blog](http://www.ricyt.org/?layout=blog)).

25 That is understandable given that the surveys are carried out nationwide and *Tecnópolis* is located in Buenos Aires. Since 2016, the fair has had thematic itinerant exhibitions.

that order. The last poll's available data only reflects that in both 2012 and 2015, only three out of 10 people knew about the existence of the public channel TEC-TV but, among those who did, viewership increased by 12 percentage points (41 per cent of the sample in 2012, 53 per cent in 2015).

## 6. Concluding remarks

Even though science communication in Argentina has a relatively short history, during the last 15 years the field has grown slowly but steadily in importance and visibility. This is especially so between 2003 and 2015, when public policies focused on strengthening the national system of science and technology as a whole were formulated, encouraging not only knowledge production and application but its social dissemination as well. It is still unknown whether this positive evolution will continue under the current government, which, since 2015, has shown not quite favourable signs.

One of the main features that characterises the local field's expansion has been the creation and further consolidation of areas devoted to science communication and the general promotion of scientific culture at universities, research centres and government agencies. The emergence of more and better training options can be considered another positive indicator, as well as the growing number of specialised research groups spread throughout several universities in the country.

With regards to science journalism, some actors perceive the ups and downs experienced from 2000 onwards as worrying symptoms of a rapid and systematic decline, while others see them as part of the current trends and transformations taking place in the global press. In any case, these changes put an additional strain on science journalists' already fragile identities, which must deal with a high level of job insecurity and the consequent need to adapt to distinct roles, values and practices. The multiplication of *hybrid* professionals—who work simultaneously in journalism and press or public relations in institutional areas—raises new challenges for the shaping of the field's boundaries; for instance, when practitioners working for research centres or governmental agencies display values more related to journalism, such as objectivity, critical scrutiny and professional autonomy. To what extent this situation involves a potential or actual conflict of interest is at the core of a lengthy internal debate between community members.

The current state of development of science communication in Argentina is the result of a rapid evolution during which the local field's dynamic has been marked by a constant hybridisation of practices, actors and values. After

decades of generally successful initiatives, through advances and retreats, the field today faces several exciting challenges posed both by internal and external factors. Hopefully this account of a recent but rich history will stimulate further and deeper reflections, debates and dialogues towards the domain's consolidation.

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## Timeline

Event	Name	Date	Comment
First interactive science centre established.	Participative Science Museum	1988	See <a href="http://www.mpc.org.ar/home.htm">www.mpc.org.ar/home.htm</a>
First national (or large regional) science festival.	Science and Technology Youth Fair	1967	
Association of science writers or journalists or communicators established.	Argentinean Association of Science Journalism	1969	Currently the Argentinean Network of Science Journalism (2007). Website: <a href="http://radpc.org/">radpc.org/</a>

## COMMUNICATING SCIENCE

Event	Name	Date	Comment
First university courses to train science communicators.	Program for Science and Technology Popularisation – Campomar Institute of Research In Biochemistry	1985	The first courses to train science communicators did not start at a University but at a life science's research centre
First PhD students in science communication graduate.		1993	
First national conference in science communication.	Public Communication of Science and Technology Congress	2011	
National government program to support science communication established.	National Program of Science and Innovation Popularisation	2013	
National Science Week founded.		2003	
A journal completely or substantially devoted to science communication was established.	<i>Science and Research</i>	1945	
First significant radio programs on science.		1980s	Mostly on health issues
First significant TV programs on science.	TN Science: <i>Todo Noticias</i>	2003	
First awards for scientists or journalists or others for science communication.	Konex Foundation Awards for Communication and Journalism	1987	(Special Mention for Science Journalism) 2007: National Award on Science Journalism 2010: National Award for PCST

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