National Overview on Scientific Culture: France. Unpublished report prepared for the PLACES Open Project

Suzanne de Cheveigné

This report was produced in the PLACES project, funded under EU FP7
https://cordis.europa.eu/project/id/244449
https://www.ecsite.eu/activities-and-services/projects/places

National Overview on Scientific Culture: France

Suzanne de Cheveigné
Centre Norbert Elias, France
February, 2012

1 Introduction: national context

France has traditionally been a science and technology-oriented country. Nevertheless, gross domestic expenditure on R&D was only 2.26% of French Gross Domestic Product (GDP) in 2010. This represents a slight increase compared to the previous year, after several years of slow decrease. This proportion is above the Eurozone average of 2.06% but it is well below the Lisbon target of 3%[1]. Research is under the charge of the Ministry of Higher Education and Research (http://www.enseignementsup-recherche.gouv.fr/). Over the past few years, the public research system has undergone deep organisational changes. A programmatic law on research was passed in 2006[2] and in that framework, a High Council for Research and Technology was set up (http://www.hcst.fr/). A number of other counselling bodies for establishing research policy exist in France, including an Academy of Science and an Academy of Technology. Indeed, according to a recent report of the "Cour des Comptes", the control body for all French public institutions[3], there are too many.

Although the French research system still remains quite specific, in particular because of the weight of research organisations such as the National Centre for Scientific Research (CNRS, http://www.cnrs.fr/index.php), it has had to change a lot to adjust to international norms. This has taken place in part under the pressure of EU funding requirements and of the influence of the Bologna reform. More recently, a strong impetus was given by the discovery of the Shanghai ranking where French universities came very low. This was interpreted as indicating that French universities are too dispersed (there were about 90 public universities in France with 13 in Paris alone). A new Law of Reform of Universities[4], among

[1] http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/R_%26_D_expenditure. See also the MASIS report on France (*w*ww.**masis**.eu/).
[2] http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000426953
[3] In a report entitled "La gestion de la recherche publique en sciences du vivant" (The management of public research in the area of life sciences), 2007, http://www.ccomptes.fr
[4] LRU - Loi de réforme des universities, n° 2006-450, 18 April 2006

other reforms, allowed the universities to become autonomous with respect to the State and encouraged them to group together. For instance, cities like Strasburg or Marseille had several public universities that have now merged. In 2012, this process is nearly complete but its impact has yet to be fully measured.

Among the same series of reforms, an agency for competitive research funding (National Research Agency, ANR, http://www.agence-nationale-recherche.fr/en/project-based-funding-to-advance-french-research/) was set up in 2007. Nevertheless, other sources of research funding also remain: Ministries, research organisations, NGO's and foundations (particularly for medical research) as well as business sector contracts. An independent evaluation agency (Evaluation Agency for Research and Higher Education, AERES, http://www.aeres-evaluation.com/) was also set up the same year. It evaluates academic institutions on all their missions, one of which is "diffusion of scientific and technical culture and information" according to the new university law. AERES's 2010 guide for the evaluation of universities included two objectives entitled "Relations with local authorities" and "Relations with socioeconomic environments". The latter includes two points "Place of socioeconomic environments in the institution's bodies" and Place of professionals in research and training activities". Communication activities are described as "Affirmation of the institution's identity through a communication policy" with the objective "Develop a sense of belonging". No real focus is put on SiS activities.

2 The place of science in society

Science and technology have occupied an important place in French society, following a tradition that goes back at least the French Revolution. The population, compared to its European neighbours, appears to be relatively interested in science: 41% of the French respondents to the 2010 Eurobarometer survey on science and technology declared that they are "very interested in new scientific discoveries and technological developments" and 46% "moderately interested", compared to EU averages of 30% and 49%. Nevertheless, when confronted with a statement that expresses a sort of all-out optimism towards science - "science and technology make our lives healthier, easier and more comfortable" – 66% of French respondents "totally agree or tend to agree" (exactly EU average) and 15% "totally disagree agree or tend to disagree" (EU average is 12%).[5]

France has a relatively top-down technocratic tradition of governance of science and technology. Citizens are generally only informed (and occasionally consulted) about S&T decisions and developments. However, some signs of increasing attention to the science/society interface appeared over the past few years, such as the

[5] Special Eurobarometer 340, Science and Technology, 2010, http://ec.europa.eu/public_opinion/archives/eb_special_en.htm

creation of a Science and Society unit in the Ministry of research (Secteur Science et Société, http://www.enseignementsup-recherche.gouv.fr/pid20007/sciences-et-societe.html) or the nomination of a Science and Society advisor in CNRS (however, neither appear any longer on the organisation charts).

The role society is playing in the making of science policy is slowly increasing. In 2008, the Ministry of Higher Education and Research developed a National Strategy for Research and Innovation[6]. Quite a wide consultation was carried out, which is a new process for French science policy making. Stakeholders (industry, NGO's, etc.) were included in the working groups and an Internet forum was run in parallel. The first edition (2009-2012) set three priorities, health, well-being, food and biotechnology; environmental emergencies and environmental technologies; information, communication and nanotechnology.[7] A Council for the development of the humanities and the social sciences was set up in 2009 to make policy recommendations in that area. It did not include stakeholders and focussed more on the conditions of practice of the social sciences and humanities than on prioritizing specific themes.[8] A recent law has widened the scope of public debate around environmental topics[9].

Science and Technology are only moderately present in the general media. For instance, a count of news items in the main TV bulletins in 2009 gave 1.8% of all news items for science and technology, 3.7% for environment and 6.1% for health.[10] On the other hand, the country has quite a flourishing market of science magazines and a dense network of local science, history or ethnography museums or centres.

The main debates concerning science and technology over the past few years, ranked roughly by order of intensity of media coverage, were about the following issues:
• the environment including biodiversity and climate change.
• biotechnology, with GMO's regularly appearing in the news.
• bioethics
• nanotechnology
• possible adverse effects of electromagnetic waves
• a recurring debate concerning the history of France.

---

[6] Elaborated under a steering committee composed with only 11% women.

[7] Stratégie nationale de recherche et d'innovation, http://www.enseignementsup-recherche.gouv.fr/pid20797/la-strategie-nationale-de-recherche-et-d-innovation.html

[8] http://www.enseignementsup-recherche.gouv.fr/pid23414/conseil-pour-le-developpement-des-humanites-et-des-sciences-sociales-cdhss.html

[9] Law n°2010-788 of 12 July 2010, known as Law of Grenelle 2.

[10] *Ina Stat* N° 16, 2010 (http://www.ina-sup.com/ressources/ina-stats). A detailed analysis of S&T television news by topic can be found in *Ina Stat* N° 20, December 2010.

3 Science centres and museums

In France, there are a several major science centres as well as large natural history, ethnography or history museums. There is also quite a dense network of smaller museums and science centres. Among its public museums, the Ministry of Culture counts 113 "Nature, science and technology" museums, 335 History museums and 246 "Society and civilisation" museums (i.e. ethnography or local tradition).[11]

A periodic survey of cultural practices[12] provides interesting information about the visitors to science museums. Among respondents who declared that they had visited a museum during the previous year (the latest survey was run in 2008), 20% had visited a science museum, 36% a history museum, 15% a prehistory museum and 22% an ethnography museum. The main science museum, Cité des Sciences et de l'Industrie (City of Science and Industry) in Paris, was included in the category "park" (it is indeed quoted in the questionnaire as an example of the category, alongside the more image-based Futuroscope in Poitiers[13]): 54% of the respondents said they had never visited such an establishment (34% of those who live in Paris intra-muros).

Reaching a less educated and less enthusiastic public always remains a problem. Visiting a museum is strongly dependant on level of education: 34% of the respondents with no diploma say they have never visited one *versus* 2% of those who have had 4 or more years of higher education. Among people who say they have visited a museum over the past year, the fact of visiting a science museum is also education dependent: 11% of those with no diploma have visited one *vs.* 29% with 4 years or more of tertiary education. Interestingly, this is not true of history museums.

The largest science centre in France is *Cité des Sciences et de l'Industrie* (CSI) in Paris (http://www.cite-sciences.fr/fr/cite-des-sciences/). It was created on the model of the San Francisco Exploratorium, in a "hands-on" spirit which was then new to France, and opened in 1986 in a reconverted industrial slaughterhouse, at the north-eastern edge of Paris *intra-muros*. It houses a permanent exhibition, including a very successful children's section, and also presents temporary exhibitions, on a total floor space of about 150 000 m². It is also active in organising public conferences and debates on science and technology topics. Cité des Sciences was the fourth most visited museum in France in 2009, just behind the Centre Pompidou and before the Musée d'Orsay. It received 3 042 000 visitors in 2008, 3

[11] www2.culture.gouv.fr/culture/deps/...cles2011/03-musees-2011.pdf. Unless otherwise indicated, the data given in this section comes from this source.

[12] Les Pratiques culturelles des Français, 2008, http://www.pratiquesculturelles.culture.gouv.fr/08resultat_chap7.php. A detailed breakdown of the data is available according to socio-demographic variables, including size of city/town of residence.

[13] The question refers to "Going to a park like Futuroscope or Cité des Sciences in la Vilette" (Aller dans un parc comme Futuroscope ou Cité des sciences de la Villette)

058 000 visitors in 2009[14] and 2 667 000 in 2010[15]. In 2008, 13% of all their visitors came from Paris intra-muros, 37% from Paris suburbs, 37% from other regions if France and 18% from abroad.

Palais de la Découverte, situated in the centre of Paris, is a much smaller (25 000 m²) and more traditional science museum – a characteristic very much appreciated by its aficionados (http://www.palais-decouverte.fr/index.php?id=309). It was created in 1937 (under the left-wing Front Populaire government that also laid the ground for the creation of CNRS). It has permanent exhibitions, including a planetarium and a spectacular demonstration of electrostatics, and also runs temporary exhibitions. It is housed in the Grand Palais, built for the Universal Exhibition of 1900, and it received 517 000 visitors in 2009.

Cité des Sciences and Palais de la Découverte were brought together administratively into Universcience (http://www.universcience.fr/fr/accueil/) in 2009. Universcience is a public establishment under the authority of the Ministry of Culture and Communication and the Ministry of Higher Education and Science.

The second most successful French science-based museum, in numbers of visitors, is in fact the Quai Branly Museum on ethnography, also situated in Paris. (http://www.quaibranly.fr/en/). The museum was inaugurated in 2006 with a building specially built for it by architecte Jean Nouvel. It presents collections that were previously housed in other Paris museums (mainly the old Musée de l'Homme - Museum of Man). It too is a public establishment under the authority of the Ministry of Culture and Communication and the Ministry of Higher Education and Science. It received 1 496 439 visitors in 2009 and occupies about 40 000 m².

The Musée des Arts et Metiers (Museum of arts and crafts, http://www.arts-et-metiers.net/?lang=ang), also in Paris, focuses on technology and presents historical collections of machines and vehicles as well as temporary exhibitions. It dates back to the French Revolution, but benefitted by collections that had been assembled earlier. It is a national museum, under the Ministry of Higher Education and Research. It received 203 066 visitors in 2009.

The National Natural History Museum (http://www.mnhn.fr/museum/foffice/transverse/transverse/accueil.xsp?cl=en also dates back to the French Revolution but was set up on the pre-existing Royal Gardens. It presents both permanent and temporary exhibitions. It received 595 680 visitors in 2009 in its Great Gallery of Evolution, reopened after a spectacular renovation in 1994, and 305 299 in its Compared Anatomy and Paleontology Gallery (where the dinosaurs are). It also houses botanical gardens, the Jardin des Plantes, and a small zoo, all within Paris. (The larger zoo in the suburb of Vin-

[14] *www2.**culture**.gouv.fr/**culture**/deps/...cles**2011**/03-**musees-2011**.pdf*

[15] http://www.universcience.fr/fr/nous-connaitre/contenu/c/1239028678579/visiteurs-de-la-cite-des-sciences/

cennes, plus a number of other sites, also are administratively part of the Museum.) It is a national museum, under the three ministries of Culture and Communication, Higher Education and Research and Environment.

A whole network of Natural History Museums was created in the 19th century in all the major French cities. These are managed by locally (though they also usually receive national subsidies). One of the more successful ones is the one in Toulouse (that also presents ethnographic collections). It originally opened in 1865 and was recently thoroughly renovated. It received 199 532 visitors in 2009 (http://www.museum.toulouse.fr/index.php?lang=fr). Another example of a local Natural History Museum is the one in Nice, opened in 1846, that is planning a renovation (114 479 visitors). The one in Dijon, now called the Science Garden (Jardin des sciences), also includes a planetarium (101 847 visitors).

Among the science and technology museums outside Paris, several attract large numbers of visitors. The Memorial de Caen (Caen-Normandy Memorial, http://www.memorial-caen.fr/portailgb/) is a museum on the history of the Second World War that opened in 1988. It received 112 452 in 2009. Another example, in a more technical field, is Cité de l'espace (Space City) in Toulouse, http://www.cite-espace.com/en#accueil that received 274 680 visitors in 2009.[16] Vulcania, created in 2002 in Auvergne, region in the centre of France with many ancient volcanoes, is an attraction park with quite a strong science base (http://www.vulcania.com/index.php?id=2&L=2). It received 313 400 visitors in 2008.[17] These three museums were created through local initiatives, in the first two cases, mainly supported by the cities that host them, in the third case by the region.

Most of these major museums are important to the cities where they are located, specially in terms of tourist attraction. They are often an important part of a local cultural policy (Paris being in a particular situation since it is the major beneficiary of national cultural policies). Most of them have specific activities aimed towards children and develop membership policies. Many open their facilities for private events.

A large number of small museums and science centres also take part in science communication on a local level throughout the country. There is a network of local science centres whose activities and resources tend to more or less developed, according to the support they get from their region or city (Centres for scientific, technical and industrial culture, http://www.ccsti.fr/).

[16] Cité de l'espace press release, March 2010

[17] http://www.vulcania.com/a-propos-de-vulcania/historique.html

4 Science events

In France, science festivals and events attract quite a numerous public. Nevertheless, as with museums, reaching the less educated and less enthusiastic public is difficult. Science festivals are unfortunately not distinguished from other types of festivals in the Cultural Practices survey referred to above so we do not have as much information on their participants. By nature, the attendance of such events is also more difficult to estimate and little quantitative data is available.

A network of NGO's active in science communication and popular education, many of whom organise science events, was set up in the 1980s - the Collectif Inter associatif pour la Réalisation d'Activités Scientifiques et Techniques Internationales (CIRASTI, Collective NGO group for International science and technology activities, www.cirasti.org/article_patrice.php3?id_article=108). Among other coordination activities, the network runs a series of local contests called « Expo-science », on a model invented in Quebec in the 1960s, where young people present science and technology projects that they have prepared.

One of the better-known science events is the Fête de la science (Science festival), an initiative that that first originated in France in 1991 (http://www.fetedelascience.fr/) and that has since spread across Europe. It is organised by the Ministry of Higher Education and Research, the network of science centres (CCSTI, see above), other NGO's as well as local communities. It reaches over a million participants every year, mainly but not exclusively in university cities. Activities that are organized within this framework are very diverse: exhibitions, workshops, visits to laboratories or to natural or industrial sites, conferences, debates and discussions, movies, etc.

On the other hand, Scientists' night (Nuit des chercheurs), http://www.nuitdeschercheurs-france.eu/contact/, launched in 2005 by the European Commission, is not really a major event, although the 2011 edition did run in 17 cities in France. It is organized by an NGO, Scientipôle Savoirs et Société, and various local institutions participate.

Several science film festivals are held in France and are open to the public. One of the oldest ones, created in 1986, is called "À Nous de Voir (We should see) and is held in Oullins, near Lyons (http://www.anousdevoir.com/). It is hosted by the local cultural centre. Created more recently, in 2005, another science film festival called Parisciences takes place in Paris. It is run by an NGO, Association Science & television (http://www.science-television.com/en/festival/). On a more institutional basis, the National research centre, CNRS, set up a film festival in Bordeaux in 2008, Cinemascience (http://www.cnrs.fr/cinemascience/). It took over from a previous festival, Images et Sciences (http://www.image-science.cnrs.fr/), that had been running for many years and that used to present its films in a spectacular auditorium located on the first floor of the Eiffel Tower in Paris.

An increasing number of events are organized to present science books. The Salon du

Livre d'Histoire des Sciences et des Techniques (Festival of History of Science and Technology books) is run by an NGO active in science communication, ASTS (Association science technologie, société) in Ivry-sur-Seine, in the suburbs of Paris. It includes conferences and book presentations (http://www.asts.asso.fr/cms/index.php?option=com_flexicontent&view=items&cid=95:memoire&id=146:ivry-sur-seine-18-19-20-novembre-2011-). Another example, organized, in Brest (Britany) is Festival Sciences métisses, a festival of popular science books. The last edition was on biodiversity and cultural diversity. It too was organized by ASTS with local parners (http://www.sciences-metisses.infini.fr/). A similar one ran in Villeneuve d'Ascq, in the north of France, with exhibitions, workshops, conferences and the selling of popular science books.

Finally, several cultural events take place in France that are not specifically science-oriented but that can concern the topic. One example is the organisation of a "Museum Night" that allows all-night visits to museums (Nuit des musées - http://nuitdesmusees.culture.fr/index.php?l=FRA). A number of science museums participate. Another such occasion is provided by the highly successful Heritage Days (Journées du patrimoine - http://www.journeesdupatrimoine.culture.fr/), a week-end when exceptional buildings, including places related to science, such as observatories, are made accessible to the public. Most museums are free on those days too.

5 Scientific culture in local policies

In France, still a very centralized country, national policy is an important element in the development of scientific culture. The diffusion of their results is part of the missions of every University or research organisation as well as those if individual scientists. Some more elaborate Science and Society policies were developed in the mid 2000s by the Ministry of Higher Education and Research or the CNRS, although they appear to have been receiving less attention recently.

The role played by the regional and local levels in science governance is increasing. Generally speaking, since the Law of Decentralisation in 1982, regions, departments and cities have seen their competences extended and regions in particular have increasingly become actors in research policy-making, since they have competence for matters concerning tertiary education. A number of city-based structures (or in some cases more extended ones) have appeared, in particular regional competitiveness clusters (poles de compétitivité) aimed at increasing interaction between business and research sectors and regional higher education poles (PRES, pôles régionaux d'enseignement supérieur) that group universities and other higher education institutions locally. A recent law that promoted the auton-

omy of the Universities (LRU, see above) is also leading to a relative decline in the importance of the national level.

The level of attention paid to scientific culture activities in different cities is highly variable. Paris, as the capital of a centralised country, is a specific case since it benefits by national policies. It was named a European Science City in 2008 and a three-day exhibition with free entry was organized in the Grand Palais (http://www.enseignementsup-recherche.gouv.fr/cid22762/la-ville-europeenne-des-sciences-14-au-16-novembre-2008-paris.html). It expected 50 000 visitors (we have not found the effective numbers). The event opened the Fête de la Science and the notion of a "European science city" was not really put to the fore outside that context.

Outside the capital, strong local research activities, as in Grenoble, can favour action in the field of scientific culture – one could certainly say that science works in practice as a "brand" for this city. Although its website doesn't announce it on first page. However, "Science and Technology" is directly under "Culture" which is on the front page. The presence of high-technology industry can work in the same way, as is the case in Toulouse where Airbus Industry and the French space agency are located (although science appears deeper on the website than in Grenoble). The city has a particularly active scientific culture policy. Some smaller cities and even towns can be quite active in the area. To give just on example, Fleurance, a town of barely more than 6000 inhabitants in the south-west of France, runs a very successful astronomy festival (http://www.festival-astronomie.com/) during the summer.

Clearly, the level of local support for such initiatives is a crucial factor in the development of science culture activities and the publicity given to them. However, national support is also an important factor. In 2011 the Ministry of Higher Education and Research, as part of a wider program called Investments for the Future (Investissements d'avenir), decided to fund four projects for "Territorial dissemination of scientific, technical and industrial culture (STIC)" (Diffusion territoriale de la culture scientifique, technique et industrielle, http://www.enseignementsup-recherche.gouv.fr/pid24820-cid57667/12-projets-soutenus-pour-le-developpement-de-la-c.s.t.i.-et-pour-l-egalite-des-chances.html). One of the grants went to Universcience (the association of Cité des Sciences and Palais de la Découverte in Paris – see above) to coordinate a national network for STIC. A second one went to a consortium of cities (Bordeaux, Caen, Rennes, Paris, Grenoble and Toulouse) to allow them to acquire for digital equipment to support their scientific culture activities. The other two went to local sites (the lower Loire valley and Vitry-sur-Seine, located in the Paris suburbs) to develop their activities in the area. It is too soon to evaluate the impact of these measures but the funding is substantial.

Bibliography

Caune, J. (2006 -2nd édition). Culture et communication. Convergences théoriques et lieux de médiation. Grenoble, PUG.

Chaumier, S., *"Quand les objets s' animent. De la visite au muséum d'histoire naturelle à la promenade au zoo", Techniques et culture, 2008*

Davallon, Jean. 1999. L'exposition à l'oeuvre. Stratégies de communication et médiation symbolique. Paris, l'Harmattan, coll. « Communication ».

Dias, N. Le musée du quai Branly: une généalogie, *Le Débat,* 2007

Le Marec, J., 2005 "Ignorance ou confiance : le public dans l'enquête, au musée et face à la recherche", in *La Publicisation de la science*, I. Paillart (Ed), Grenoble : Presses Universitaires de Grenoble.

Le Marec, J., *Publics et musée, la confiance éprouvée*, Paris : L'Harmattan,. *2007*.

Le Marec, J. *and Serge Chaumier, Evaluation muséale : Hermès ou les contraintes de la richesse, La lettre de l'Ocim, 126 (2009) 7-14*

Rodica Ailincai and François-Xavier Bernard, "Apprendre hors de la classe : l'exemple d'une sortie scolaire au Musée de l'Espace de Kourou*", Pratiques éducatives dans un contexte multiculturel. L'exemple plurilingue de la Guyane.* CRDP et IUFM de la Guyane (Ed.) (2010) 57-72

Roth, M., "Collectionner ou accumuler ? A propos des musées ethnographiques et historiques régionaux en Allemagne et en France, *Terrain n°12 avril 1989*

Jean-Michel Côté (dir.) *La fabrique du musée de sciences et sociétés*, Paris : la documentation française, 2010